

CONFIDENTIAL MATERIAL

CHAMPLIN PETROLEUM COMPANY

1979 LOSS CONTROL/SAFETY AUDIT

CORPUS CHRISTI REFINERY

CLARK 000001

CHAMPLIN PETROLEUM COMPANY
FORT WORTH, TEXAS
LOSS CONTROL AUDIT SHEET

LOCATION: Corpus Christi Refinery

DATE: November 13, 14, 15, 1979

	<u>NAME</u>	<u>LOCATION</u>
MEMBERS OF AUDIT TEAM:	1. C. L. Strunk	Ft. Worth
	2. Joe Gay	Ft. Worth
	3. Bill Childers	Ft. Worth
	4. Jim Bolliger	Enid
	5. Max Waggoner	Enid
	6. Darrel Mason	Enid
	7. Jim Fletcher	Wilmington
	8. Leon Shelton	Corpus Christi
	9. Guy Whipple	Corpus Christi
	10. Jim Tansey	Corpus Christi
	11. August Uehlinger	Corpus Christi
	12. Brack Routh	Corpus Christi
	13. Jerry Akers	Corpus Christi

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INTER-OFFICE CORRESPONDENCE

TO: C. G. Barnes

FORT WORTH, TEXAS

FROM: C. L. Strunk

DATE: December 3, 1979

SUBJECT: 1979 Loss Control Evaluation, Corpus Christi Refinery

The second Loss Control Audit in the past two years has been completed at the Corpus Christi Refinery. Representatives were again used from all three Champlin refineries. All team members were encouraged to comment on areas that were good, as well as those in need of attention. In those areas in need of attention, they were asked to make recommendations. These were included in the narratives from the various team members. The cooperation among all the team members and all personnel was appreciated.

The same general format was followed with special emphasis in certain areas to determine if improvements had been made since the 1978 Audit. Unfortunately, it is the general opinion of all team members that the areas needing improvement in 1978 are still the same with further deterioration this past year.

A summary of the major areas in need of attention follows with recommendations for improvement. For further detail and more specific comments, the total report needs to be studied. It is suggested that the recommendations be included with the Keith Stevens Study now in progress in order to lessen or eliminate any confusion.

I. HOUSEKEEPING:

A. The entire refinery needs attention including control rooms, process areas and tank farms. Items observed were:

1. Maintenance materials from completed jobs
2. Soft drink cans
3. Trash
4. Abandoned ladders and tools
5. Hoses uncoiled
6. Small hydrocarbon, steam, and water leaks
7. Other

B. RECOMMENDATIONS:

In order to turn this situation around, several things should be considered:

1. Indoctrination of all supervisors, hourly personnel and contractors that good housekeeping is part of their job.
2. Institute a plantwide clean-up campaign.
3. Including Housekeeping as a subject at each weekly safety meeting.
4. Either abandon soft drink cans or require them to be disposed of at the dispenser.
5. Enlist the assistance of the Union Committee.
6. Divide plant into designated geographical areas and conduct housekeeping inspections every week with a department head, line-level supervisor, and the hourly person responsible for the area.

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7. These inspections should include general housekeeping appearance, fire equipment, safety and personnel equipment, electrical grounds, leaks and so forth.

II. SMOKING:

- A. There is considerable evidence of smoking in unauthorized areas. In authorized areas, they have been extended beyond the smoking shelter provided.

B. RECOMMENDATIONS:

1. Smoking in an unauthorized area should be cause for dismissal.
 - a. At this time, the smoking rules appear to be widely violated which creates the impression that this is condoned by management.
 - b. To properly control smoking in the plant, management at the department-head level through the line-level needs to inform everyone as to the necessary requirement to adhere to the established policy.
2. Establish butt cans with snuffing sand at each location.
3. Have weekly trash clean-up at each smoking area.
4. Better define the actual Smoking Area and eliminate all extra benches that have accumulated at the smoking areas.
5. Consider restricting operators to one being in a smoking area at a time.
6. Consider a specific time of day for Maintenance smoking breaks.
7. Indoctrinate contractors on smoke rules and require them to comply. (This should be policed by the Safety Department.)
8. At construction sites, the Safety Department should approve smoke area separate from plant personnel.

III. CONTROL OF IN-PLANT DELIVERIES -- OTHER THAN WAREHOUSE:

- A. There are several instances described such as caustic deliveries into acid tanks and vice-versa.

B. RECOMMENDATIONS:

1. With the many different types of chemicals, lube oils, catalysts, etc. being delivered to operating areas, it is mandatory that the operator in charge check the delivery and have it monitored by responsible personnel until the delivery is completed.
2. Color code yellow all vessels and pipeline handling acid or caustic.

IV. NEW FACILITIES INSTALLATION OR FACILITY MODIFICATION CONTROL:

- A. There have been instances where facility changes have been made in the plant without the approval of the Technical Services Department. This can cause a mis-application of proper materials, quality control and a general non-conformance to code requirements.

B. RECOMMENDATIONS:

1. Establish a procedure through which all installations or modifications are approved by the Technical Services Department and, where appropriate, by the Safety Department.
2. Solicit the help of the Purchasing Department to NOT order any item that is not a replacement item without approval from the Technical Services Department.

V. HOT WORK PERMITS:

- A. Numerous violations of the established procedures cited in the various reports.

B. RECOMMENDATIONS:

1. All line supervision, craftsmen, and operators need a review of established Hot Work procedures. This requires enforcement by supervisors.
2. Better define the Safety Department's responsibility with regards to signing off on certain types of hot work permits in all operating areas.

VI. EMERGENCY TRAINING FOR OPERATORS:

- A. In addition to procedures being described in the Operating Manuals, the Operators should not assume their people know what to do in various emergency situations.

B. RECOMMENDATIONS:

1. Consider establishing a specific time on each shift for each operator to teach or conduct refresher training for his people.
2. Have training aids developed and displayed for ready reference.
3. Exercise dry-runs.

VII. REFINERY FIRE WATER SUPPLY:

- A. See Joe Gay's report for specific recommendations.

- B. Generally, it is accepted practice to have:

1. The fire system completely separate from plant service water, plant process water and plant sanitary system.
2. Temporary connections to fire system, such as filling a storage tank for testing, permitted by Safety Department for a specific time period.
3. No permanent connections even for intermittent use.
4. Raw water rather than treated water for fire service.

VIII. PREVENTIVE MAINTENANCE:

- A. There are several areas that programs need to be established or established programs need to be accelerated.

1. These are in relation to safety relief valves, conservation vents and flame arresters, run-in on all spare pumps, instrumentation check-outs, fire equipment, and safety and personnel equipment.

B. RECOMMENDATIONS:

1. In reference to safety relief valves, suggest Mechanical Inspection Department have responsibility for:
 - a. Records on all relief valve settings
 - b. Witness testing of relief valves and tag them with proper setting
 - c. Be responsible for all relief valve testing and inspection within minimum time frame consistent with turnaround requirements
 - d. Inspect for leaks monthly all relief valve installations with operator in charge. If block valves are used, see that they are chained and locked open.
2. CONSERVATION VENTS AND FLAME ARRESTERS:
 - a. There was evidence that these items are not inspected as often as they should be, if at all.
 - b. RECOMMENDATIONS:
 1. They be inspected, screens cleaned or replaced, painted and repaired as necessary, once per year. (This may be a full time job for someone year 'round.
 2. Records be kept by the Mechanical Inspection Department.
3. SPARE PUMP RUN-INS:
 - a. It was not established by the Audit teams as to whether or not an existing program for run-in of spare process pumps is being utilized.
 - b. It was established that fire pumps are not routinely run-in.
 - c. RECOMMENDATIONS:
 1. Consider establishing every Friday all spare pumps be actually operated with an operator and pump mechanic on site.
4. INSTRUMENTATION CHECK-OUT:
 - a. The attached report of Jerry Akers showing the amount of by-passing of interlocks indicates insufficient instrument maintenance.
 - b. If interlocks are necessary, they should be maintained. If not, they should be removed.
 - c. This item could be included on weekly housekeeping inspections by department heads.

5. FIRE EQUIPMENT:

- a. Widespread deficiencies in this area.
- b. Will cover recommendations later under Safety Department Duties and Responsibilities.

6. SAFETY AND PERSONNEL EQUIPMENT:

- a. Numerous reports in this area on deficiencies
- b. Recommendations will be covered under Safety Department Duties and Responsibilities.

IX. SAFETY DEPARTMENT DUTIES AND RESPONSIBILITIES:

- A Many of the suggestions made below are already included in the duties and responsibilities of the Safety Department. A special effort needs to be made to see that adequate trained personnel are available in the Department and that the Department is carrying out its duties and responsibilities:
 - 1. Responsible for recommending proper location, selection, purchase and installation of fire extinguishers, foam chambers, and tank farm fire-fighting facilities.
 - 2. Responsible for either the actual maintenance and replacement of an item such as the fire extinguishers, or responsible to see that proper maintenance is performed.
 - 3. Responsible for monthly inspection, and tagging of fire extinguishers, indicating last inspection time.
 - 4. Fire-fighting chemicals.
 - a. Responsible for proper location and storage of all fire-fighting chemicals.
 - b. Responsible for serviceability of chemicals.
 - c. Responsible for maintaining adequate fire fighting chemical inventory.
 - 5. Fire pumps:
 - a. Responsible for inspection and testing of all fire pumps on an adequate, routine basis with the assistance of an operator and pump mechanic witnessed by the Safety Department with records being kept by the Safety Department.
 - b. Responsible for initiating promptly Work Orders for any repairs.
 - c. Responsible for reporting housekeeping violations in fire equipment areas to the Operating Department.
 - d. For specific details, refer to Joe Gay's report to me dated November 21, 1979.
 - 6. Safety Showers:
 - a. Refer to Joe Gay's report.

7. Fire-Water System:

- a. Analysis for adequacy -- refer to recommendations in Joe Gay's report.

8. Safety Lectures:

- a. Reported to be uninteresting, ineffective and, more importantly, that management is giving "lip service" to this activity.
- b. The Safety Department should be responsible for developing effective, interesting safety programs.
- c. The Safety Department should attend, monitor and control the meeting so that it doesn't deteriorate into a bull session.
- d. Occasionally a department head should attend and always the supervisors.
- e. Enough variety, including film strips and descriptions of specific instances that relate to the work situation should be developed into the programs.
- f. Special effort should be made to have regular safety meetings with shift personnel.

CONCLUSION:

In order to effectively re-establish management control over all areas covered by the Loss Control Audit, participation by all levels of management should be instituted.

There was evidence of poor morale in the new areas by the Operations and Maintenance, and Operations and Terminating. Part of this is probably due to the long overtime hours experienced for the past three months. Some of it, however, appears to be due to the general deterioration of management in holding responsible people accountable for their actions.

If the various recommendations included throughout this report are generally accepted, it is suggested that a special arms-length committee be established to see that everyone is doing their part. Perhaps this special committee could be established from the experienced Champlin personnel completing their assignments at CCPC. It is also recommended that the corporate Safety Department have quarterly follow-up reviews with refinery management to maintain emphasis in this important activity.

C. L. Strunk

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MANAGEMENT SERVICES — SAFETY AND LOSS PREVENTION

SPECIAL SAFETY MANAGEMENT SURVEY

CHAMPLIN PETROLEUM COMPANY

CORPUS CHRISTI REFINERY

November 4-6, 1980

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 Audit on November 4-6, 1980. The primary purpose of the survey was to assess the current status of implementation of the activities incorporated into the refinery's safety effort as a result of the DuPont safety management consulting program.

OVERALL EVALUATION

A comprehensive safety management program is underway at the Corpus Christi refinery. There are many effective activities underway, some of which are enumerated in the following section of this report. Members of management at all levels are personally involved in these activities.

Many of the activities, such as the safety huddles, investigation of equipment malfunctions, and use of the STOP cards are increasing the emphasis devoted to safety by first-line supervisors. One indicated area for improvement is regarding the intensity or degree of top management's involvement. Several deviations from the original program have resulted. These include a change in chairmanship of the Central Safety Committee, elimination of scheduled management audits and of the overlapping, departmental safety meeting structure.

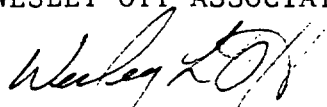
The safety staff has recently been enlarged and assignments made to provide increased staff support to the operating and maintenance areas.

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Specific suggestions for improvements of refinements of the safety management program are included in the following sections of this report, where appropriate.

Respectfully submitted,

WESLEY OTT ASSOCIATES, INC.



Wesley L. Ott, P. E., CSP
President

ACTIVITIES OF SPECIAL NOTE

There are many positive aspects of the overall safety effort at the refinery. Some of the activities that are being implemented especially well, and for which management should be commended, include:

- o There is now nearly 100% attendance of hourly employees at the monthly safety meetings conducted by safety department personnel. Most contractor personnel are also in attendance. This is a great improvement over previous attendance at these meetings.
- o Weekly safety huddles are conducted by members of first-line supervision with members of their crew. Suggested topics and resource information for these safety huddles are provided by the safety staff.
- o A committee investigation is conducted on all injuries resulting in lost-time or doctor's treatment.
- o The general publicity and awareness campaigns at the Corpus Christi refinery are excellent. Many persons have mixed feelings about the advantages of these types of programs. Although persons do not always read the signs, posters and safety messages, I feel the concept of subliminal perception is utilized to some degree.
- o A program was recently begun in operations to have the unit operators review an emergency shutdown procedure each week with other unit operators. These reviews are documented.
- o There is an excellent training program underway for Emergency Response Team members.
- o A program has recently begun in operations to have operators document and investigate all equipment malfunctions and process upsets. This program could contribute significantly to ferreting out conditions, operating procedures and possible training deficiencies that lead, not only to equipment malfunctions, but also to employee injuries.

- o A spot-check of work order logbooks in two control rooms revealed that there is not a large backlog of work orders over three or four weeks old. Also, safety engineers are involved in the scheduling of maintenance work. This helps insure a balanced priority of safety related work orders.
- o Summary reports and resource materials prepared by the safety office are very thorough and provide managers and department supervision with good sources of information to help them maintain an awareness of their areas' performance.
- o The assignment of safety engineers to various areas of the plant is a very positive step which can afford an increased awareness of on-going conditions and practices in the areas. Their increased presence should be beneficial to area supervision as they seek to maintain a safe environment.
- o The practices of labeling individual vessels and pieces of equipment such as heat exchangers and columns is excellent. This practice should be extended to all areas of the refinery. This is especially helpful in training of new employees, operators and maintenance personnel.
- o The laboratory employees recently completed ten years without a lost-time injury. Employees in this department are congratulated on this achievement.

GENERAL AREAS FOR IMPROVEMENT

Based on the review of activities underway and discussions with members of management and operators, there has been a deviation away from the original concepts and approaches to safety management adopted at the refinery in three areas. These include:

- o The Central Safety Committee is not being chaired by the Refinery Manager. Instead, the Safety Manager is chairing this meeting.
- o The cascading or overlapping safety communication structure does not exist. Safety matters are a part of the routine discussions in the morning meetings with the Refinery Manager. These meetings are attended by the Safety Manager.
- o Audits by members of upper management, specifically members of the Central Safety Committee, are no longer conducted. Members of management are sometimes scheduled to participate on the "plantkeeping" inspections and each manager makes individual tours of the refinery areas.

There are continual demands on the time of each member of the staff at the Corpus Christi refinery. These time demands have been compounded by the start-up and operation of new facilities during recent years, revamping older units, and increases in the overall responsibility of each manager.

If there is a weakness in the overall safety effort, it is not a lack of desire to operate safely. However, because of the demands on management's time, some of the safety matters are perhaps pursued with less intensity than necessary to provide adequate personal follow-up on programs and activities to insure the required degree of control to achieve the desired performance. Indications of this, in addition to the deviations highlighted above, include:

- o Limited knowledge regarding the number of first-aid injuries in their area,
- o No communication in some departments regarding injuries resulting in other departments, including those with lost time.

- o Lack of knowledge (by one manager) of how safety programs within the department are functioning.

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SUGGESTIONS FOR IMPROVEMENT

Specific suggestions which are offered to help increase the intensity of managements' emphasis on safety within the refinery include:

1. The original reports resulting from the DuPont study and consulting effort should be reviewed and those sections pertaining to the Central Safety Committee, cascading department safety meetings, and management audits should be reproduced and distributed to Central Safety Committee members. These should be reviewed individually by each member of the Central Safety Committee and scheduled for discussion at a forthcoming meeting.

Management should analyze the current practices and activities and determine if they are sufficient or whether modifications would result in greater management awareness of, and impact on, the safety effort.

A specific discussion and decision should be made on each of the program elements.

2. Management's intensity of emphasis on safety matters could be increased by devoting more attention to minor injuries. These can be used as an effective indicator of performance. They can provide valuable information regarding trends, training deficiencies, or existing employee work practices which need attention, to upgrade performance or reduce exposures.

A plan that could be utilized to accomplish this is outlined below:

- A. Each employee should report to his immediate supervision either before or after treatment at first-aid.
- B. The injury report form should be partially completed in first-aid and returned to the supervisor, preferably by the employee.
- C. Upon receipt of the forms, the supervisor should make some investigation and inquiry regarding the circumstances surrounding the injury and complete the remaining information.

- D. Communication regarding the injury, circumstances surrounding the injury, and follow-up action taken should be conveyed to other levels of supervision no later than the day following the injury. For example, at the meeting between the superintendent and his staff, a brief discussion regarding the injury would be appropriate. If the injury is of a serious nature, more detailed investigation should be planned.
 - E. Similar discussion should take place in the refinery managers' meeting to communicate the fact that an injury occurred and supervision reacted to it. Where the potential was very serious, detailed discussion may be in order and plans for correction of similar exposures should be made. The detail of the verbal reports should be consistent with the seriousness of the injury.
 - F. When necessary, the safety engineer representing the area in which the injury occurred should do some independent investigation regarding the circumstances surrounding the injury. On occasion, he may prod area supervision into making more detailed follow-up investigation.
- 3. Another method of increasing managements' emphasis on safety would include a verbal communication with their staffs to discuss the investigation results of serious injuries and equipment upsets. Some minimal verbal communication should be held on all injuries upon which an investigation is made. The extent of the discussion and follow-up would depend on the investigation results and recommended actions.
 - 4. The area safety engineers can provide a valuable assistance and advisory service to management by monitoring effectiveness of safety huddles, stop card use, work practices, investigation of equipment malfunctions or process upsets, and the extent of emergency shutdown training, etc. Their feedback to management can allow them to become personally involved when needed or provide added emphasis to insure that area programs function effectively.

SUPPLEMENTAL SUGGESTIONS

The following sections of this report include comments on specific activities or elements of the safety program.

Light Duty Policy

Corpus Christi management has recently adopted a firm stance against light duty for injured employees. This has had the effect of increasing the number of injuries that are classified as "lost-time" injuries and the number of lost workdays experienced by employees. Future lost time injury performance will not be as good as that experienced in the past, when light duty or restricted work assignments were utilized.

Mr. Gay, Corporate Safety Director, has been requested to review the corporate stance on light duty, and develop a proposed guideline for refinery review. Refinery personnel should have an opportunity to participate in the development of this proposal.

Monthly Safety Meetings

In spite of the improvements made in the attendance of the monthly safety meetings, and other refinements of these meetings, there are still employees who comment negatively regarding the interest level of the meeting topics. This is to be expected, considering the number of employees in attendance each month.

A schedule has been developed for 1981 meeting topics. One suggestion to help overcome some of the adverse reactions to the meetings is to involve representatives from the various departments in the preparation of the meeting resource material. A method of doing so would be to have a task force, composed of area representatives (primarily supervision), assigned the responsibility for planning and procuring meeting resource materials.

Consideration should be given to having a member of the task force also take responsibility for presenting the material. This could require an inordinate demand on their time to do so.

Another approach to varying the presentations would be to rotate responsibility for presentation among different members of the safety staff. This would also broaden their capabilities and provide some variety of the meetings.

STOP

The current program of using STOP cards may be more counter-productive than helpful. Each member of supervision is asked to complete one STOP card each week. The majority of these cards are being returned with the statement "no observation" or "none" on the cards. Also, some departments are not following through with the program. It is suggested that some plan be continued to utilize the STOP cards and apply the concepts of observation established in the STOP training program. Some suggested methods for doing so include:

- o Continue to have each member of supervision make at least one observation per week.
- o Require that each observation be directed at employee work practices. Observations of equipment conditions should not be acceptable. (An alternate would be to accept an employee created condition such as hose left lying on pad, or ladder left in area.)
- o Supervision should observe "positive" work practices as well as violations or unsafe practices. For instance, if an employee is observed drawing a sample, working on a valve, or even just walking through an operating area, this could constitute an observation. If the task is being done safely and in accordance with procedure, and if the employee is using all required protective equipment, he should be commended or thanked for doing so. An observation card might record:

"Observed employee taking sample from splitter. Using all required protective equipment and performing job correctly." Action taken would be: "Thanked employee for working safely and contributing to a safe operation. Asked employee if he knew of any hazards or problems associated with that task."

- o The employees name should be recorded on the observation cards.

- o Consideration should be given to advising employees that any violation of standard safe practices or procedures would be considered as a "second offense" violation, and the card would constitute a written warning. A copy of the card should go in his file. Unsafe practices of a "judgment" nature would be considered verbal warnings. The card should be discarded after recording for trends, etc.
- o Regardless of the methods used, it is important that a discussion be held in the Central Safety Committee to determine the procedures to be followed, and a uniform method for use of the cards established. The plan for use should be verbally transmitted through each level of the organization.
- o The above method of using the STOP cards would be a method of getting supervision to apply the concepts of observation contained in the STOP program and apply the techniques of "positive re-enforcement" to obtain the desired behavior. Current safety researchers and practitioners are beginning to agree that this is a more effective method of obtaining the desired level of safe performance than the punitive or negative approach.

Safety Huddles

The safety huddles are an excellent method of establishing communication between the first-line supervisors and their crews. If the supervisors or employees begin to react negatively to the topics and materials prepared by the safety staff, an alternate approach to select topics would be:

- o Use a periodic meeting to develop a list of topics or potential danger sources or hidden hazards. In this way, operators or mechanics would have input into the topics they felt should be reviewed to contribute to a safer operation or help make them aware of hazardous operations in their area.
- o An alternate approach would be to make assignments to one or more members of the crew each week, asking for a report at the next safety huddle. For example, operators could be

asked to survey the areas for safety signs that might need to be replaced, to comment on areas where signs could be placed, to make a survey for hard to operate valves, etc.

Safety Department Responsibilities

Emphasis on having safety engineers assume responsibility for specific areas of the plant should be continued. Each member of the safety organization has special skills in a particular area such as training, fire protection, emergency equipment, etc. The assignment to a particular area and assumption of total responsibility for that area should help to broaden the safety engineers' capabilities. Some of these responsibilities include inspecting emergency equipment within the area on the scheduled frequency, monitoring area inspections of this equipment, investigating injuries and potentially serious injuries, participating in follow-up investigations of equipment malfunctions, monitoring work practices, and effectiveness of training such as shutdown procedures, etc. Such area representation should help the safety personnel become more effective in performing their role as consultants and advisors to the line organization. Their increased presence and follow-up in the areas should help them to more quickly detect potential trends and deficiencies in the area and to suggest corrective action.

A suggestion to help insure uniform understanding of the desired working relationships is to have each department head prepare an outline of what he would like to receive in regard to safety advisory and support services. The department head could meet with members of the safety staff and outline his expectations and suggestions on "How you can help me administer the safety effort in my area."

Laboratory

A walk-thru of the laboratory facilities and discussion with the laboratory supervisor revealed serious deficiencies regarding laboratory ventilation. These deficiencies are recognized and an AFE has been authorized to revamp and improve the laboratory facilities, but no definite plans have been made to do so. Some

problems are anticipated by the laboratory supervisor regarding continued operation during the remodeling, when it is undertaken.

It is suggested that a thorough discussion and review of existing laboratory deficiencies be conducted. The hazards associated with the current facility should be enumerated and a hazard classification placed on these. Consideration should be given to the potential exposure to laboratory employees, potential OSHA citations and their effect, and the effect of continued operation on employee morale. A decision should be made on the seriousness of the above, and plans made regarding future operation of the laboratory and for modernization.

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INTER-OFFICE CORRESPONDENCE

TO: Audit Team Members FORT WORTH, TEXAS
FROM: C. L. Strunk DATE: 11/13/79
SUBJECT: 1979 LOSS CONTROL AUDIT -- CORPUS CHRISTI REFINERY
Specific Areas for Emphasis as Indicated From
1978 Loss Control Audit

ASSIGNMENTS:

OSHA inspection -- Joe Gay/Bill Childers
Maintenance -- Darrel Mason/Jim Tansey
Operations -- Jim Bolliger/Guy Whipple
Terminals -- Max Waggoner/August Uehlinger
Safety -- Jim Fletcher/Brack Routh

MAINTENANCE:

D. Mason, Jim Tansey

1. Housekeeping in each shop area.
 - a. Be specific in regard to each craft.
 - b. Determine general attitude toward housekeeping.
2. Maintenance housekeeping in operations area.
 - a. Identify items and locations.
3. Review hot work procedure.
 - a. Describe recent examples with location and people involved.
4. Obtain report on safety work requests for last six months.
 - a. Report on safety work requests backlog.
 - b. Describe procedure for setting priorities and getting work done.
 - c. Service of safety work requests naming individuals writing requests.
5. Review and describe lock-out procedure.
6. Describe maintenance of tank conservation vents, flare systems and safety relief valves.
7. Determine and describe extent of preventive maintenance programs.
8. Describe control of Cheater pigtails.
9. During field inspection, note any apparent violations of smoking rules.

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10. Describe maintenance responsibility for maintaining fire and safety equipment.
11. Make recommendations.

OPERATIONS:

Max Waggoner, August Uehlinger, Jim Bolliger, Guy Whipple

1. Describe responsibility for maintaining safety equipment in refinery.
2. Describe procedure for hotwash permits.
3. Describe extent of running maintenance performed by operators such as greasing valves, oiling motors, tightening valves and pump packing glands, etc.
4. Describe methods used to insure maintenance of safety relief valves, fire and personnel safety equipment.
 - a. Be specific in regard to fire pumps, fire extinguishers, safety showers.
5. Describe control of outsiders during afterhours and weekends.
6. Control of smoking in unauthorized areas.
7. Describe extent of emergency operation training.
 - a. Comment on who conducts training.
 - b. Amount of refresher training.
 - c. Comment on what type emergencies training covers.
 - d. Discuss with operators on each unit.
8. During field inspection, note any leaks, type, location and approximate amount.
9. During field inspection, note general housekeeping condition by unit.
10. Note any obvious safety hazard.
11. Make recommendations.

SAFETY:

Jim Fletcher, Brack Routh

1. Check every fire extinguisher in refinery noting:
 - a. Location
 - b. Condition
 - c. Date of last inspection.

2. Describe responsibility for hot work permits.
3. Check every fire pump noting:
 - a. Location
 - b. Condition
4. Check every control room for personnel safety equipment noting:
 - a. Location
 - b. Condition
 - c. Comparison to requirement list.
5. Check every safety shower in plant noting:
 - a. Location
 - b. Condition
6. Describe Safety Department responsibility for contractors working in plant.
 - a. Comment on maintaining safety rules, indoctrination procedures for safety rules, hot work permits.
7. Make recommendations.

cc: Joe Gay
Bill Childers
D. Mason
J. H. Tansey
Max Waggoner
August Uehlinger

Jim Bolliger
Guy Whipple
Jim Fletcher
Brack Routh
Allen Michael w/Keith Stevens
Leon Shelton

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INTER-OFFICE CORRESPONDENCE

TO: C. L. Strunk

FORT WORTH, TEXAS

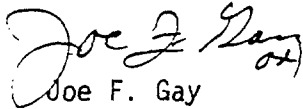
FROM: Joe F. Gay

DATE: November 21, 1979

SUBJECT: Corpus Christi Refinery
Safety Audit

Attached are the results of the corporate safety department audit of the Corpus Christi Refinery. The results are broken down into three parts.

1. The firewater system tests, including recommendations that resulted from the tests and inspections of the plant firewater system.
2. Review of the firewater supply discrepancies (Unibon Unit Fire).
3. General refinery recommendations which deal with all other comments relative to our audit.


Joe F. Gay

JFG/od

Enc.

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FIREWATER SYSTEM TESTS

1. Tests were conducted to establish the flow rates and friction loss across the plant firewater system as well as to establish the general condition of the firewater system. Tests results indicated that significant improvement has resulted from the addition of the one new cross connect between the old and new systems. The installation of the additional cross connects previously recommended should serve to upgrade the system to acceptable performance levels.

The 10" connection from the new pumps on the west side was blocked in from the old system.

2. Flow tests conducted at the dock indicate that the single 8" line to the dock is inadequate to provide an acceptable level of protection. We can only provide approximately 3,000 gallons at 30 to 40 psi with all six pumps operating.
3. All pumps had been preset to operate at 1,250 rpm. Operating speeds for the east pumps and the old pumps on the west side should be 1,750 while the new pumps on the west side should be 1,900 rpm. Operating these pumps at 1,250 rpm reduces the pumping capacity by at least 35%.
4. External corrosion on west pumps is significant. Above ground piping at the old pumps is severely affected as well as portions of the pumps themselves. Gauges are not dependable to measure correctly. Jockey pump at old pump location is leaking badly. Tachometers on one of the old pumps and one of the new pumps were inoperative. The heaters on the new pumps were inoperative. Automatic features on old pumps are inoperative. Automatic features on new pumps had been circumvented by placing both battery circuits in the "off" position.
5. Maintenance and testing of pumps is being performed by outside contractor (Mundy) with employees who might be considered marginal. The safety department stated that maintenance was performed monthly but was unsure of what this entailed, if records were kept, if check lists were used, how long the pumps were run, etc. An attempt was made to establish these details but we were unable to find someone who accepted the responsibility for detailing the monthly tests.
6. The discharge manifold of the new west pumps has a back pressure controller (set @ 150 psi) that dumps back into TK 65. This valve and controller are fully insulated and apparently electrically heat traced. The heat tracing is fed by an extension cord that is plugged into a receptacle near the pump controller.
7. One of the dump valves on the new west pumps leaked continuously during the test.
8. The deluge systems throughout the plant all indicated some maintenance was needed.

Page Two - Firewater System Tests

9. At the new splitter in the #4 Plat, risers have been provided for the deluge system installation on the fin fan and pumps, but so far no deluge system has been installed.
10. The oscillating monitors that protect SW's pipe rack near the sphere were improperly positioned and would have been useless had a fire occurred.
11. A number of service water connections, both permanent and temporary, to the fire system were noted during the inspection.
12. Severe external corrosion was noted on some of the above ground fire-water system, notably in the platformer area northwest of TK 1028, northwest of office building.
13. Many valves in firewater service were leaking.
14. Several PIV's were without visible indicators, view glasses properly positioned to indicate the direction of the line or seals.
15. Many valve caps were missing on hydrants and foam lines to tanks.
16. Some of the caps were galled and extremely difficult to remove.
17. Many hydrant wrenches were missing.
18. Some PIV's are not marked or numbered to indicate control function.
19. Many foam maker connections were laying flat on the ground.
20. Anyone can call the old boiler house and have a fire pump started without question.
21. Operating handles on many system control valves are inadequately located.
22. The two monitors between safety office and BTX unit have block valves open and water flow is being controlled by the nozzle.
23. Some hydrants and sectional block valves were extremely difficult to operate.
24. The most current (September 1979) plant firewater system print is inaccurate and inadequate. A check of this print in the new section of the plant and selected tank farm and dock areas pointed out a number of inaccuracies.

RECOMMENDATIONS - FIREWATER SYSTEM TESTS

1. In order to assure the most efficient and effective performance of the firewater system as designed, the 10" valve in the cross connection between the old and new systems should be maintained in the open position.
2. Due to the excessive flow and pressure loss experienced during those tests it is recommended that the 8" firewater line to the dock be extended to make a loop system back into the new (west side) fire grid.
3. A system of both written instructions and documented compliance should be initiated to assure that all variable speed fire pump drivers are preset and continuously operated at designed speeds.
4. An assessment of the corrosion associated with the west firewater pumps and its related equipment should be initiated on a priority basis followed by actions indicated to provide system integrity. The west firewater pumps should be revamped to the extent necessary to comply with minimum requirements of the NFPA recommendations for firewater pump installations.

Serious consideration should be given to requesting the manufacturer's representative to review the pump and motor installations in light of refurbishing to acceptable standards including the required automatic starting system, the external water jacket heaters, and the pressure relief valves.

Strong consideration should be given to providing enclosed shelters for all firewater pumps and drivers. These shelters should be heated to maintain a minimum temperature of 70° F as recommended by the NFPA.

Audible and visual alarms should be provided at the appropriate control point to indicate any malfunction, shutdown, failure to start, or change in automatic starting mode for each firewater pump driver.

5. All fire pumps should be run weekly for 30 minutes. The maintenance and testing of these pumps should be done by qualified pump mechanics (preferably Champlin employees) and records kept. Check list should be developed to detail the items that are to be checked on the engine, pump and automatic controllers.
6. This temporary wiring should be replaced with adequate wiring in fixed conduit. The back pressure controller should be set to 10% above the working pressure.
7. The dump valves should be checked and reset to 10% above the working pressure of the pumps.

Page Four - Firewater System Tests

9. In order to provide the necessary fire protection for the fin fans and pumps at the new splitter in the #4 Platformer the installation of the intended deluge system should be installed.
10. These oscillating monitors should be preset and locked in the proper position so that overlapping streams will provide exposure protection for SW's pipe rack. The monitors should be included on a monthly inspection check list.
11. The use of firewater for other than emergency situations (fires, spills, etc.) should be restricted. All permanent connections to service water and cooling water services should be eliminated. The use of firewater for purposes other than emergency situations should be controlled by written permits issued by the safety department.
12. Priority should be given to inspecting all above ground firewater piping and setting up a corrosion control program.
13. All firewater equipment should be repaired and a monthly inspection program established.
14. All post indicator valves should have indicators positioned so that the open and shut positions are correct and the directional flow of controlled piping is designated. All PIV's should be sealed in the correct position with small lead and wire seals. This equipment should be included on a monthly inspection check list and a yearly maintenance schedule that includes lubricating and exercising.
15. Valve caps (thread protectors) should be provided for this equipment and attached to the equipment with chains to insure their availability. This equipment should be placed on a monthly inspection check list.
16. Threads on this equipment should be cleaned and lubricated to insure that the connections can be utilized easily during emergencies.
17. Wrenches should be provided for each hydrant and this item should be made part of the monthly inspection check lists.
18. All PIV's should be numbered, color coded or otherwise identified to indicate their control function, i.e., solid red for section block valves, red with white caps to indicate controls for individual pieces of equipment.
19. An ongoing program should be initiated that will assure the relocation/ repositioning of foam maker line connections so as to be readily accessible and properly supported approximately three feet above ground.

Page Five - Firewater System Tests

20. All four firewater pumps located near the old boiler house are equipped with automatic controls. These controls should be repaired and set up to provide a staggered start for all four pumps. One of the new pumps should be set up as the primary pump with the other new pump secondary. The two old pumps would follow in succession. The boiler house could be used to shut down the pumps on authority from the safety department or other designated management official. They could also start pumps selectively when firewater permits have been issued by the safety department. This would allow wear and tear on pumps to be controlled. Boiler house personnel could be assigned to monitor pump performance and firewater storage level during emergencies.
21. All valves should be provided with extensions that will allow operation of the valve from approximately waist high.
22. All control valves for the firewater system should be maintained in proper operating condition with repair and/or replacement of fixed protection operating valves maintained on a priority basis. The use of fire nozzles as replacements for water control valves should be strongly discouraged.
23. All hydrants and firewater control valves should be placed on a yearly maintenance program that includes both lubricating and exercising. Exercising these valves could best be accomplished by using an engine driven hydraulically operated wrench that has an adjustable torque for the various size valves. This would allow valves at offsites such as tank farms and docks to be maintained easily and expediently.
24. An updated, as built, print of the complete firewater system should be developed and field verified in order to provide a document for reliable reference and future planning relative to firewater needs. This print should be made to include all aspects of the fixed firewater system including sprinkler, deluge and weir systems, any fixed attachments or ties and all visible related fire line equipment, such as city fire hydrants, fire truck connections, outside water supplies, etc. Upon completion, the appropriate sections of print should be posted in each operating area.

REVIEW OF THE FIREWATER SUPPLY DISCREPANCIES
(UNIBON UNIT FIRE)

The following comments are offered relative to the Unibon fire.

The fire began at approximately 7:00 p.m. and according to the log in the new boiler house the raw water feed pumps to the demineralizer were shut down sometime after midnight. The boiler feed water tank (17,000) barrels will last approximately 16 hours under normal usage. This assumes that the tank is near full when the demineralizer is shut down completely. It should be pointed out that a 6" tie in directly from the city main will allow partial operation of the demineralizer (according to the operator) when the raw water pumps are shut down.

During the fire approximately 5,500 gallons per minute were used. According to the safety department, the lowest level reached in the tank was about 50%. At 2:30 a.m. (after pumping 7½ hours) the level in Tank 65 was 70%. However, one pump was inoperative and we cannot be sure what the second pump was pumping because the throttle setting had been changed.

Normally firewater supplies for refineries and chemical plants are based on a minimum of 150% of the rated capacity of the pumps for four hours. This supply must be from a reliable source and can be supplemented by makeup water, provided the source is also considered reliable. The city of Corpus Christi is considered a reliable source.

The pumping capacity of the two pumps taking suction from TK 65 is 6,000 gallons a minute at 150% of the rated capacity of the pumps. Hence, normal storage capacity should be 1,440,000 gallons. Tank 65 is a 40,000 barrel (1,680,000 gallon) tank with a 76% (1,275,800 gallon) dedicated to firewater usage. Disregarding makeup this leaves us 164,200 gallons short of having a full four hour supply. If makeup water is provided at a rate of 685 gallons per minute we can fully satisfy the four hour supply requirement. This system was originally designed to provide 3,000 gpm from the 16" city water main that runs from west to east on Dempsey Street. Assuming that we can maintain this 3,000 gallons per minute makeup rate to Tank 65, this would provide us with a seven hour supply.

It is our recommendation that engineering determine what makeup rate is actually available to TK 65. If the full 3,000 gallons per minute is not being provided then they should determine the most feasible means to establish this rate. It should be pointed out that while the makeup line to the tank is a 12" line that comes from the 16" city main, that the flow is actually routed through an eight inch meter that is bypassed around a 16" block valve (normally closed). The 16" block valve is provided with an orifice that I assume restricts the maximum water flow rate to Champlin because of obligations to other customers on this section of city main. We should establish what flow rate can be established through this eight inch meter with the 16" block valve closed. If the required rate cannot be maintained, then we should determine what rates can be established by opening the 16" city block valve and establishing flows through both the orificed valve and the meter. If adequate flows can then be maintained we should get permission to open this valve during emergencies. Obviously if this is acceptable, then someone will have to be assigned the responsibility of opening this valve immediately when an emergency occurs.

Page Two - Firewater Supply Discrepancies (Unibon Unit Fire)

The following services are currently being provided through the 8 inch meter.

<u>Service</u>	<u>Capacity Needed During Emergencies</u>
1. Old west side fire pumps	4,500 gallons/minute
2. 6" emergency supply to demineralizer	?
3. Cooling tower makeup	?
4. Service water	?
5. City fire hydrants	?
6. Other (dock, etc.)	?
7. Tank 65 makeup	3,000 gallons/minute

All city water departments require provisions in the water systems to provide integrity to the city system where water may be used for other than domestic purposes. The city requirements should be determined and rigidly adhered to for all Champlin connections.

GENERAL REFINERY RECOMMENDATIONS

1. Fire Equipment

Many fire extinguishers were noted as being in need of painting, having broken seals and/or being out of place. Equipment is not numbered and the inspection tags attached to the extinguishers are not being initialed monthly. Yearly maintenance was being recorded on the inspection tags.

Recommendation - Fire Equipment

It is recommended that a much more vigorous inspection and maintenance program be established for all fire extinguishers.

All units should be numbered (on the attached inspection tag) and a corresponding number be painted on the designated spot for the extinguisher. When units are removed for maintenance or recharge the replacement extinguisher can be assigned the number on the inspection tag. Each unit including wheel units should have inspection tags that indicate the month and year of inspection. Each operating area including off-sites should be assigned to someone who is held accountable for inspecting the equipment monthly and initialing the inspection tag. Safety personnel should spot check all operating areas at least monthly to insure that inspections are being performed.

2. Fire Brigades

There appeared to be some confusion about the organization of the fire brigades especially on the off shifts.

Recommendation - Fire Brigades

Agreeing to serve as a member of the "Emergency Response Team" should be a condition of employment. The term "Emergency Response Team" should be used in lieu of "Fire Brigade" to indicate a multifunction unit that can handle all emergency situations, i.e., fires, spills, evacuations, first aid, rescue, etc. These individuals should be well trained and equipped. They should be recognized by management for serving in this capacity and we should make every attempt to build an esprit de corps in the organization. Providing special hard hats, jackets, coveralls, patches, etc. might be considered. Sufficient numbers of personnel should be trained to insure that a minimum of ten qualified team members are available on each shift.

3. Vehicle Traffic Control

Vehicle traffic control within the plant is very inadequate. The large number of vehicles traversing the plant is a long standing problem that has not improved. Roadways are not well defined and acceptable parking areas have not been established. Some roadways cross over tank farm walls into the diked areas. Motorized equipment is being left inside

3. Vehicle Traffic Control (continued)

the tank farm overnight. Controlled access roadways into operating areas are not blocked off to prevent vehicles from inadvertently entering. There were reported incidents of material being off loaded into the wrong receiving tanks. Vehicle entry permits (written) are not being issued to control vehicles entering controlled access areas.

Recommendation - Vehicle Traffic Control

Management should review the necessity of having the present number of vehicles inside the refinery. Personal cars that are not used in the conduct of business should be parked outside the refinery. Roadways that can be traversed safely during normal operations should be defined and some type of barricade (chains, etc.) should be provided for those roadways that might need to be closed rapidly should a spill or other hazardous condition arise. For those roadways determined to be controlled access, barricades should be provided that can be easily removed and replaced when vehicles are allowed to enter. All barricades (chains, pipe gates, etc.) should be made visible by adequate lighting, reflectors, etc. Parking areas should be determined and defined. Unattended parking along roadways should be prohibited where emergency equipment could be blocked. Motorized equipment working inside tank farm walls should be removed on the dark shifts. Written vehicle entry permits should be written for vehicles entering controlled access areas. These permits should define the exact area where the vehicle is allowed and specify the time allowed. Blanket permits should be limited to only those situations where it is the only practical solution (such as shutdowns). When vehicles hauling hazardous materials enter the plant the guard should check and initial the bill of lading to verify the exact product. He should then notify the appropriate receiving department that the shipment has arrived. The supervisor of that department should designate someone to meet the driver at the gate and to accompany him to the area where the material is to be off loaded. The safest and most direct route should be followed, i.e., loads of chlorine should be routed down wind of the major concentrations of people when possible. The supervisor should be held responsible for insuring that the bill of lading is verified and initialed prior to the product being off loaded.

4. Safety Meetings

The chief complaints about safety meetings was inappropriate subject material, many employees not attending, supervisors not attending, and the safety department holding all the meetings.

Recommendation - Safety Meetings

It should be recognized that the employer is held responsible for providing training to all employees regarding hazards that they might encounter in the work place. Unfortunately, many subjects must be

4. Safety Meetings

Recommendation (continued)

covered that will seem boring and appear only vaguely related to some individuals. Many subjects have to be covered repetitively to reinforce thinking and to insure that new or transferred employees have been reached.

Continuing effort is required to upgrade the scope and content of these meetings. The new training room offers an opportunity to diversify these meetings and receive maximum benefit. Content of some meetings should be developed by line personnel with help from the safety department. The use of supervisors as well as hourly personnel (both qualified) to present these meetings is highly recommended.

The use of outside speakers to present programs periodically should serve to stimulate interest as well as upgrade presentations.

Attendance at these meetings is a condition of employment and failure to do so should be treated as an unexcused absence. Again we might point out that we are required by law to provide training. Supervisors should attend these meetings unless it is absolutely essential that they be elsewhere. It is also important that management personnel actively participate in these meetings both to become informed on certain subjects and to emphasize management support.

5. Safety Warehouse

Much of the material currently stocked and issued at the safety warehouse appears to be more suited for general stores issue and control.

Recommendation - Safety Warehouse

A review should be made of the current safety warehouse stock to determine if those items, such as slicker suits, coveralls, work gloves, rubber boots, safety shoes, hard hats, liners, goggles, safety belts, etc. could not best be handled by the tool room or stores. The handling of this equipment by the Safety Manager and the Engineers is very time consuming and it is felt this time could be better utilized in surveillance of other plant activities.

6. Smoking Control

There was evidence that smoking is occurring in unauthorized areas. The present plant policy restricts smoking to only authorized areas and prohibits the carrying of strike anywhere matches or lighters without protected flint wheel. However, the guard does not question persons entering the plant nor is a sign apparent at plant entrances that prohibits these items.

6. Recommendation - Smoking Control

A concerted effort to control smoking must be instituted by all employees. Beginning with contract personnel, but obviously including Champlin personnel, disciplinary action (termination) should be taken against any person found smoking in undesignated areas. The carrying of matches or lighters inside the plant should be expressly prohibited. Security guards should be responsible for controlling this at the time of entry. Lighters (electric tilt or zippo types chained to fixed objects) should be provided at each designated smoking area. Adequate butt containers should be provided in each designated area. All designated smoking areas should be specifically defined and posted with signs. A readily visible sign should be displayed at the entrances to the plant that specifies the Smoking and Dematching Policy. The "No Smoking" signs currently displayed in certain areas of the plant should be removed or replaced with signs that state "Smoking Permitted Only in Designated Areas."

7. General

A number of contract personnel were observed in all areas of the plant with what appeared to be limited, if any, Champlin surveillance or supervision.

Recommendation - General

Due to the number of contract personnel observed in all areas of the refinery with a lack of apparent supervision or surveillance it would appear appropriate that management conduct a review of current manpower requirements/utilization relative to assuring that adequate supervision is being provided for both contract and company personnel.

8. Safety Department Organization

The level of activity at the refinery has increased to the point where contract safety personnel are being used to supplement our safety personnel. While it is recognized that we cannot staff for peak levels of plant activity we do recommend that management review the current manpower requirements. The review should take into consideration the level of activity that we have experienced since the startup of the new facility, the logistics problems created by the new docks and off-site tank farms, the projected levels of activity created by future expansions, and the level of surveillance and responsibility the refinery deserves from its safety personnel.

Recommendation - Safety Department Organization

It is our recommendation that each safety engineer be assigned to a specific area of the plant with responsibility for providing full safety engineering services for their assigned area. This responsibility would include but not be limited to the following:

8. Recommendation - Safety Department Organization (Continued)

- a. Daily routine surveillance of all work site and construction activities within the assigned area;
- b. Evaluation of the effectiveness of routine and preventative maintenance programs established for the area fire and safety equipment and systems;
- c. Assistance to supervisory personnel involved in the development of safety training and education programs applicable to the area;
- d. Provision of assistance deemed necessary in developing compliance with all safety permit procedures;
- e. Provision of daily advice and consultation to the respective area supervisory personnel relative to occupational safety compliance;
- f. Development of industrial health and hygiene monitoring programs, such as sound pressure surveys, ambient air contamination surveys, heat stress analysis, etc.;
- g. Performance of routine audits of both safe practices and conditions within the assigned area;
- h. Monitoring effectiveness of repair, installation and/or modification of fire and safety systems;
- i. Providing supervisory personnel the necessary assistance in establishing effective self-audit programs.

This type of general area responsibility assignment should produce, as a spin-off benefit, safety engineers with broad based experience capable of promotion within the corporation.

CLARK 000041



INTER-OFFICE CORRESPONDENCE

TO: C. L. Strunk

OFFICE: Enid Refinery

FROM: Darrel G. Mason

DATE: Nov. 14, 1979

SUBJECT: CORPUS CHRISTI REFINERY SAFETY AND LOSS CONTROL AUDIT, NOVEMBER, 1979

STATUS OF HOUSEKEEPING:

MACHINE SHOP:

1. Need pipe set in concrete to keep vehicles off sidewalk and away from shop.
2. Fire extinguisher #TR-5 had no seal, hard to get to.
3. Fire extinguisher #TR-6 had seal broken.
4. Ground wire clipped off 3-prong electric plug on fan.
5. Observed three grinders with directions on them to wear face shield when using, did not see a face shield.
6. Entire area needed housekeeping attention.
7. Cabinet door standing open over drinking fountain.
8. Big floor fans with metal bases sitting on electric cords.
9. Cigarette butts on floor.
10. Plain glass windows in shop.

WELDING SHOP:

1. Wooden cabinets lining the wall and cardboard boxes on the floor, definite fire hazard.
2. Strong vapors entering welding shop, no one seemed to know where they were coming from.
3. Oxygen bottle standing up without safety chain.
4. TR-9 fire extinguisher by front door was blocked by a trash barrel and a piece of tank steel.
5. Extension cords and lights piled on floor. They had not been separated, checked, or returned to proper storage.
6. Cigarette butts on floor.
7. They do have some safety meetings, but they are boring.

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(STATUS OF HOUSEKEEPING-continued)

INSTRUMENT SHOP:

1. Have safety meeting on monthly basis covering subject of the month.
2. Have safety meeting before going out on hazardous jobs.
3. Need housekeeping attention in storage and shop area.
4. Cigarette butts on floor.

STATUS OF MAINTENANCE HOUSEKEEPING IN UNITS:

1. Do they clean up when job is completed?
I visited the crude heater tube replacement job which was not completed. They were cleaning up, but had a long way to go. They don't appear to clean after their jobs as well as they should.
2. Hot Work Responsibility:
I did not observe an area where a Hot Work Permit was needed, but understood that a craft could move in, start a job without a Hot Work Permit, and no one was aware they were in the area.
3. Safety Work Order Report:
 - A. Please find attached Work Order sheets from April thru October, 1979.
 - B. I can't determine their backlog of work orders and do not have the date they were submitted.
 - C. Cannot calculate percentage.

LOCK OUT PROCEDURE:

Did not view actual case on their lock out. The pumpmen have a pad-lock with a long shank, the electricians have a short shank. Could be tagged or color coded to improve communications with Operations.

DESCRIBE MAINTENANCE PROGRAM ON TANK BREATHERS:

They have a program to clean at least once per year.

PREVENTIVE MAINTENANCE ON ROTATING EQUIPMENT:

Pump Department has a man check oil on rotating equipment plus Operation people. Any abnormal noise or vibration is reported, checked, and necessary repairs made. Pump Shop keeps an updated record.

ARE CHEATER PIGTAILS USED?

Yes

IS THERE ANY VIOLATION OF SMOKING RULES?

There didn't seem to be any rules or designated locations in shops.

ARE SMOKING AREAS IDENTIFIED?

Authorized smoking areas around plant were not identified with a sign.

ARE THERE CONTAINERS?

No butt containers in authorized areas. Very few trash containers.
The trash containers that were around were running over.

DESCRIBE MAINTENANCE RESPONSIBILITY OF FIRE AND SAFETY EQUIPMENT

1. The Maintenance Department maintains the fire pumps, fire plugs and fire lines.
2. The Safety Department maintains the safety equipment.

GENERAL OBSERVATIONS:

1. Housekeeping needs attention in all shops and all over refinery grounds.
2. Trash barrels and trash bins running over.
3. Did not see any PSI labels on any air lines.
4. Fire extinguishers should be more easily accessible. Too much trash in front of most extinguishers. Some needed checking and resealing.
5. Pipe and trash in front of fire plugs. Some caps off.
6. Unlimited access to tank dikes and tanks. No permits asked for.
7. Observed a well built scaffold with a ladder to the work area that was at least three feet too short.
8. No penalty for human error, such as running a tank over.
9. Wooden boards across ditches and wooden steps over tank dikes to walk on.
10. Too much congestion on the streets.

(GENERAL OBSERVATIONS-continued)

11. Did not wear a badge while touring refinery, but I was never questioned.
12. Could not believe the number of cigarette butts on the grounds and shop floors, and I am a smoker.
13. Need better communications with contractors on company policy regarding Hot Work Permits, smoking areas, wearing apparel and all safety programs.
14. Safety programs need to be less boring. Variety of presentations and instructors necessary.
15. Employees didn't seem to have time for safety in most departments, but they must take the time.

Darrel G. Mason
Darrel G. Mason

C C REF

champlin 

4 OF SAFETY AUDIT

UPDATE ON SAFETY WORKORDERS

WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK Month Of:		
70185	03033	Replace H ₂ S caution signs @ 50 block	4-10	4-10
69079	03151	Label foam lines at connection with tank number	4-11	
70413	03029	Replace ladder angle-iron with chains	4-16	5-17
69078	03151	Install foam lines to tank 917	4-18	4-25
65823	03157	Clean up around docks #1 Term.	4-20	5-4
65543	03132	Replace monitor valve on #4 Plat.	4-25	5-4
50843	03153	Repair all fire plugs on West Street	4-25	
73050	03157	Replace cable on wench at SWR Barge Dock	4-25	4-25
30018	03152	Attach new flags or day-glow tabs to guy wires	4-27	5-1
63943	03101	Repair doors on #1 Cooling Tower	4-27	4-27
63949	03117	Replace fan covers SWS pumps (p-14 & 15)	4-27	4-27
63952	03117	Remove 2" pipe - it's a tripping hazard	4-27	4-27
63965	03154	Repair fence and gate around big cond. Fin Fan	5-2	
85353	03103	Build barricade around field gas knockout drum	5-25	6-11
65507	03153	Install sign reading "Sound Horn"	5-30	6-11
65511	03153	Install mirror at drive at Warehouse	5-30	5-30

Champlin Petroleum Company
P.O. Box 9176
1801 Nueces Bay Blvd.
Corpus Christi Refinery
Corpus Christi, Texas 78408
512/882-8871

CLARK 000046



WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK Month Of: MAY		
70889	03053	Alarm at API separator shower	5-1	5-1
63965	03101	Repair fence and gate around big cond. Fin Fan	5-2	
63206	03154	Clean oil up @ boilers	5-3	5-3
85258	03103	Inspect and repair tube on E. end "N" 2-oil Fin Fan	5-8	5-8
50843	03152	Ice machine leaking on side/slipping hazard	5-8	5-9
65505	03153	Reverse door knobs on training room door	5-10	5-14
88780	03117	Make foot stool for Hane	5-11	5-14
85307	03101	Clean up oil around Desalter and Exchanger	5-16	5-17
85306	03101	Clean up oil around unit and around pumps	5-16	5-17
30105	03152	Paint labels on drums and rack (Lab)	5-16	5-17
87908	03021	Remove scaffolds from C.U. Comp. Bldg.	5-17	5-18
87815	03023	Clean up oil around feed surge drum and E-2 Exchangers	5-17	5-18
88055	03117	Remove scaffolding from pipe rack, old cat	5-17	5-17
88070	03117	Insulate 1½" stm. line going to stripper chg. drum Ht	5-18	5-18
87632	03043	Clean up oil spill @ N. end of boiler @ oil drum rack	5-22	5-22
85999	03133	Clean oil and debris from #4 Plat.	5-24	5-25
85353	03103	Build barricade around field gas knockout drum	5-25	6-11
65507	03153	Install sign reading "Sound Horn"	5-30	6-11

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CLARK 000047



Safety W.O.'s

DESCRIPTION OF WORK

Month Of: MAY page 2

DATE
SCHEDULED

DATE
COMPLETED

65511

03153

Install mirror at drive at Warehouse

5-30

5-30

85706

03128

Clean oil and water from Comp. House floor

5-30

5-31

P.O. Box 9176

1801 Nueces Bay Blvd.

Corpus Christi Refinery

Corpus Christi, Texas 78408

512/882-8871

CLARK 000048

WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK Month Of: JUNE		
73126	03056	Install bar type door opener on inside	6-1	6-22
65549	03132	Mount bracket and fire extinguisher at Hydrogen	6-1	6-4
65550	03056	Replace G-3 and G-4 air pak cabinets	6-1	6-22
87468	03021	Construct brackets to hang chains out of the way	6-4	6-5
65510	03152	Repair waste pipe leaks in basement of lab	6-4	6-26
65509	03152	Install metal guard over belt drive	6-4	6-6
87058	03027	Paint chains glo-orange	6-5	
88116	03156	Repair or replace eye wash for boiler 11	6-5	6-5
82335	03133	Clean up oil around regen gas blower	6-6	6-7
30154	03152	Remove sample older than 3 mos. Keep updated	6-6	6-6
65512	03153	Make stop signs conform with change of roads	6-6	6-8
65508	03152	Repair Renco refrigeration	6-7	6-7
85598	03128	Clean oil from Comp. building floor	6-7	6-7
82775	03132	Install plug in acid unloading line to Cooling Tower	6-8	6-8
82762	03132	Install steam hose	6-8	6-8
82774	03132	Install eye wash and shower @ H ₂ Treater	6-8	
82758	03132	Repair clips on Breathing Air case	6-8	6-8
87150	03028	Install light at Comp. 32-C-1	6-8	6-11

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CLARK 000049

WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK Month Of: JUNE		
82761	03132	Move span gas cylinders	6-8	6-8
82341	03151	Replace fire nozzle on fire monitor	6-8	6-8
88908	03117	Insulate sample water line @ B-11	6-11	6-15
73570	03163	Flood light burned out at Tank 609	6-11	6-11
82579	03038	Replace or fix drying equipment	6-8	6-11
65547	03153	Construct galvanized container for ice machine	6-12	6-18
82757	03132	Relocate fireextinguishers to East door	6-12	6-12
65555	03066	Fix fire monitor	6-12	6-13
82575	03038	Build racks for the warning signs	6-13	6-19
87146	03027	Install light at spent catalyst slide valve	6-13	
82369	03133	Clean up oil around regen gas blower	6-13	6-13
65554	03159	Repair fire water line valves on Tank 2003	6-13	6-18
51045	03060	Construct barricade around each fire plug	6-15	
85423	03101	Clean up oil around #1 and 2 Gasoline pumps	6-15	6-15
65557	03121	Mount 2 air pak cabinets @ BTX	6-15	6-22
72786	03034	Repair fire monitor leak	6-18	6-18
87723	03034	Clean algae from "C" boiler 61-1B-1C	6-18	6-19
88582	03123	Empty damaged anti-foam barrel.	6-14	6-15

WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK Month Of: JUNE		
85460	03101	Remove 1" pipe from Gas. Tower	6-19	6-19
30141	03152	Stop leak and clean up oil	6-20	6-21
88514	03120	Paint nitrogen lines; color code	6-5	6-22
87729	03043	Inspect unloading hose	6-20	6-25
73698	03157	Water line to fire monitor; repair	6-22	6-22
82648	03038	Repair the two E-Z-Riser	6-21	6-22
82430	03133	Clean oil from docks	6-20	6-27
82440	03132	Clean oil from #4 Plat.	6-21	6-27
00924	03108	Safety shower does not work	6-26	6-28
65558	03053	Hydrostatically test fire hoses	6-22	6-27
00495	03027	Install fire hose nozzle	6-28	6-29
00496	03027	Install fire hose nozzle	6-28	6-29

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CLARK 000052

WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK Month Of: JULY		
65510	03152	Repair waste water leaks	6-4	6-26
82759	03132	Install coupling guards on O.H. pumps	6-7	7-11
65559	03179	Put electric outlet box at fire ext. loading mach.	6-22	7-9
82431	03133	Repair reg. blower	6-20	7-11
00876	03101	Re-route drain line	7-2	7-6
77002	03021	Repalce protective post at deluge monitor	7-3	7-27
61765	03022	Clean up asphalt on ground	7-5	7-6
01043	03135	Tie in city water line to eye washes	7-5	7-6
01044	03136	Tie in city water line to eye washes	7-5	7-6
30159	03152	Install 110 volt receptacle in lab hallway	7-6	7-18
61533	03021	Clean oil off platform 11-H-1	7-10	7-10
61593	03032	Need to clean oil from charge pump area	7-11	7-12
30161	03152	Replace bare and rotted wiring	7-12	7-12
02007	03118	Route cooling water from East C.T. fan to C.T.	7-17	7-18
65694	03153	Construct metal poles for grounding purposes	7-17	7-18
01181	03153	Remove worn out hoses 11-H-1, west	7-18	7-23
65693	03132	Paint wide red stripe around fire ext. (OSHA req.)	7-18	7-20
01284	03153	Remove scaffolding from 11-P-3A	7-18	7-20

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CLARK 000053

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CLARK 000054

WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK		
		Month Of:		
02068	03154	Fill in hole dug for concrete slab	7-13	8-3
76170	03107	Clean up Corexit 205 at #3 Unif.	8-2	8-3
65570	03021	Paint all red areas where extinguishers are located	7-30	8-3
65565	03153	Mount fire extinguisher brackets in Warehouse	7-26	8-8
65651	03144	Repair seals on fire pumps	7-6	8-6
02530	03157	Clean up sulfur from sulfur Tank	8-3	8-9
02511	03069	Replace fire extinguisher, #2 Dock	8-6	8-9
65695	03153	Construct 12 fire extin. holders and mount in trucks	7-17	8-14
03123	03043	# CP06 Caustic valve is leaking	8-9	8-10
76166	03132	Elect. exhaust fan not working in control room	8-2	8-14
76069	03151	Place walkway gratings around pumps	7-23	8-17
03623	03117	Remove insul. around flange at valve on vapor line	8-17	8-17
03237	03043	Replace valve F103 flow meter leaking	8-20	8-20
30165	03152	Remove obsolete samples from Retain Room	8-14	8-21
01060	03101	Clean algae and dirt from sidewalk #1,2,3, C.T.	7-11	8-17
02120	03157	Need to fix steps at SWOR Barge Dock	8-21	8-21
76220	03131	Clean oil up around booster compressor	8-14	8-17
05086	03034	Oil spill, Clean up 50 Block	8-22	8-23

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CLARK 000055



WORK ORDER NO.	AREA	Safety W.O.'s	DATE SCHEDULED	DATE COMPLETED
		DESCRIPTION OF WORK Month Of: SEPTEMBER		
30171	03152	Switch for flash machine sparking	9/10	9/10
65513	03179	Install safety glass cleaning stations	5/20	(?)
87146	03027	Install light at spent catalyst slide valve	6/6	9/8
30227	03152	Gasoline leaking, repair diaphragm	9/6	(?)
65559	03179	Put electric outlet box at fire ext.	6/22	7/9
02530	03157	Clean sulfur off sulfur tank	8/3	8/3
31074	03152	General clean up, oil and water from lab floor	9/14	9/14
30235	03152	Repair flood light, N.W. corner of lab	9/18	9/20
30229	03152	General clean up; duck board broken	9/13	9/17
30222	03152	Repair hinge on steel door, cold room at lab	8/23	(?)
02459	03158	Repair walkway steps on firewall .	8/24	8/27
02642	03153	Install fire extinguisher cabinets in varied places.	8/16	8/16
02643	03179	Install fire extinguisher cabinets in varied places.	9/6	9/10
03051	03154	Make new metal manhole cover .	9/18	9/21
04011	03101	Mount Scott Air Pack on wall in cooling tower	8/29	9/21
61346	03027	Repair portion of broken guard rail on catwalk.	9/21	9/21

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CLARK 000057



INTER-OFFICE CORRESPONDENCE

TO: C. L. Strunk

OFFICE: Enid, Oklahoma

FROM: Max A. Waggoner

DATE: Nov. 21, 1979

SUBJECT: Loss Contract Audit 1979 - Corpus Christi

Start Of Inspection On Outlying Areas:

Road to Blender Building and Dock 1 & 2 areas. Plant and field people working on Dike at tank 1004, not wearing safety glasses.

Excavation North of tracks and along road to Docks, not barricaded or marked.

#2 Dock Area:

Excavation around sewer pump - open and not marked, flanges - left on walkways, air hoses - left unrolled. Shower operates properly, one side of eye wash stopped up. Housekeeping of the Dock was good, operating instruction posted in proper manner. No personnel present.

#1 Dock Area:

Contractor smoking out of designated smoking area, also cigarette butts around trash container and portable John, no butt or trash can on site of Smoking Building. Saybolt Petroleum Inspector was cleaning gauging equipment without safety glasses, Champlin Dockman wearing unapproved sun glasses. Maintenance personnel left wood chips, steel, pipe and rags stacked on Dock from timber repairs. Hydraulic oil leak on hoist. General appearance of Dock was good, static lines and emergency shutdown equipment were connected properly, shower and eye wash operated properly. The Dockman did not have time to talk, due to loading. Control of outsiders in the Dock areas is bad.

Plant and Field Service Fab Shop South of #1 Dock:

Plant and service people smoking around fuel tanks and Welding Shop, only designated Smoking Area is 50 yards northwest. Hot Work Permit issued properly, but not posted. It was laying on table under steel.

Housekeeping around knock-out drums for new flare system is poor. Condensation and heavy slop oil on concrete around pumps and connections. Repair work on flare line not completed, safety bolts over dresser coupling not replaced and lines not tied down. These systems are checked every 4 hours with a check list and turned in to supervisor each day by blenders.

In-Line Blender Building:

Traffic congestion in this area and other areas of Refinery is heavy. Private vehicles should have designated area to park.

Work areas were clean, housekeeping was good inside of building, safety equipment and fire extinguishers maintenance is maintained by Safety Department. Hot Work

CLARK 000058



CLARK 000059



INTER-OFFICE CORRESPONDENCE

TO: Chester Strunk

OFFICE: Enid Refinery

FROM: J. E. Bolliger

DATE: 16 November 1979

SUBJECT: 1979 Loss Control Audit-Corpus Christi Refinery

Attached is Operations Team Audit of the Corpus Christi Refinery conducted on 13, 14 and 15 November 1979. Recommendations are summarized as follows:

- 1) Management needs to take a more active, supportive role in the Safety Program.
- 2) Departmental Safety Meetings need to be implemented in the Technical Services Department. Technical Services Engineers work closely with contractors and need to be updated regularly on the safety rules and practices.
- 3) Management needs to work to improve the employees attitude/morale and improve the coordination between Operations and Maintenance.
- 4) Smoking areas need to be posted and supplied with butt barrels.
- 5) A program of continuing operator training needs to be established.
- 6) A means for controlling contractor vehicle movement and parking needs to be established.
- 7) Work permits are not being done per the published Champlin Hot Work Permit Procedure. Operators and maintenance needs to be rebriefed on the proper posting and filing procedures.

We appreciated the cooperation and hospitality extended to our Audit Team by the personnel of the Corpus Christi Refinery.

J. E. Bolliger

JEB/lac

cc: Guy Whipple - Corpus Christi Refinery

CLARK 000060

OPERATIONS - SURVEY SUMMARY

- 1) Describe the responsibility for maintaining safety equipment in the Refinery.

The Safety Department is responsible for maintaining air pacs, fire extinguishers, safety supplies, etc.

Operators routinely survey areas and write safety work orders as required to ensure equipment is properly maintained.

- 2) Describe the procedures for Hot Work Permits.

Work order or work permit is presented to Operator by the Maintenance man. Signatures by the Operator, Maintenance Foreman (Engineer), and Area Supervisor (Shift Foreman) are required before work can begin. There is no general procedure followed for posting and filing of the hot work permits.

- 3) Describe the extent of routine maintenance by Operators.

In the Old Plant the Operators oil pumps, grease valves, tighten packing on pumps and valves, etc. In the New Plant work orders are written for routine maintenance.

- 4) Describe methods to ensure maintenance of fire and safety equipment and PSV's .

In the Old Plant tag boards are used for PSV removal and installation. It is the Operators responsibility to see the PSV's are installed correctly. In the New Plant Maintenance has the responsibility for correct PSV installation.

- 5) Describe the control of outsiders during after hours and weekends.

Non-Champlin personnel contact the guard who, in turn, contacts the shift foreman, who escorts the personnel into the plant.

- 6) Control of smoking in unauthorized areas.

There is poor control of smoking in unauthorized areas. Authorized areas are not clearly marked. There is also confusion over whether certain areas are or are not approved for smoking.

- 7) Describe extent of emergency operation training.

Written emergency procedures are in the operating manuals of each unit. There is no emergency training program.

Many operators have completed the 4 year apprentice program. There is no refresher training program. Several operators stressed the need for a continuing training program.

8) Field Inspection

Housekeeping ranged from average to poor throughout the plant. Noted numerous steam leaks and oil leaks around hot flanges.

9) Obvious safety hazards

- A) Alkylation Unit - Warning signs should be posted at unit boundary indicating HF may be present and protective clothing shall be worn
- B) Crude Unit - Furnace controls need to be revised to prevent future tube failures (12 pass furnace without flow control, 3 tube failures because of flow loss in a path)
- C) Smoking Areas - Better control of unauthorized smoking

CLARK 000063



WORK ORDER NO.	AREA	Safety W.O.'s DESCRIPTION OF WORK Month Of: October	DATE	DATE
			SCHEDULED	COMPLETED
02556	03160	Repair open sewer and manway on Pt. sewer line.	10/2	10/2
04151	03021	Reset alarm on 60 Block safety shower.	9/12	9 /13
05404	03151	Install non-skid material on tank ladders.	9/19	10/2
05874	03153	Empty barrels of trash and remove loose material.	10/19	10/26
05875	03153	Sweep under stairs and remove excess materials.	10/19	10/30
05876	03153	Remove excess material off of Welding shop roof.	10/19	10/19
05881	03153	Secure fire extinguisher on East wall of Welding Shop.	10/19	10/29
05887	03153	Install fire extinguisher on North wall of Machine shop.	10/19	10/29
06317	03033	Repair fire hose nozzle .	10/30	10/31
13126	03101	Make new top for sewer drain.	10/29	10/29
14160	03132	Repair eyewash station by Nitrogen tank.	10/27	10/29
30276	03152	Need self closing valve on wash gas line.	10/24	10/25
65661	03179	Repair safety showers north of old vacuum unit.	10/23	10/24

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CLARK 000064

Permits are signed by area supervisor and/or operator on duty but not returned as per rules procedure.

Blender's check rotary units in area every 8 hours. Results are recorded on a printed check list and turned in to shift supervisor. Oiling and greasing is done by personnel on duty. Valves are greased and tightened as needed. Any repairs to valve and pumps are done by maintenance with work orders and set by priority of jobs. There is no control of smoking in area. Operator called away and did not get back to area. General attitude of employee was good with work and safety program.

Area Outside Of Blender Building:

Housekeeping was poor. Cans, bottles, rags, paper and cups were under piping and around parking area. Rags stored in mop buckets, test equipment tank cover left open. Old unleaded tank building used for storage and junk room. Lead tank car unchoked and signs thrown to side in grass. Shower and eye wash worked good. No personnel in area.

#1 Pump House:

No plant personnel in area. Conduit hangers, blinds and valve handles left on walkways. Gaskets on floor in building to south. Meter B leaking (dripping) gasoline. Reinforcing wire and lumber left in area from concrete work. Welder working west of manifold using non-explosive plug-in for grinder at mobil meter skid. Permit was in pocket.

#7 Pump:

Shipping crate, sling, timbers, gaskets and other trash left on site after new pump was installed.

Truck Terminal:

No personnel in area. Housekeeping looked good.

Tank Farm 90:

Appearance of tanks, fire walls and yard was good. Warning signs posted in farm.

Fire pumps and Electric Building were in good shape. Some weeds and grass need to be cut around tanks and fire pumps. Office and restroom of electrical building needs paper picked up and swept. No trash and smoking containers. Contract personnel working in launcher area without hard hats, glasses and were smoking. Pump manifold housekeeping was bad, seals appear to be leaking when running, pumps were covered with oil, area north and west of manifold had 2 or 3 barrels of oil standing. Needs to have signs posted stating (CAUTION THIS UNIT STARTS AUTOMATICALLY). Tank 5003 leaking, 10 to 20 barrels of oil standing north and west of tank.

Tank Farm #91:

Appearance of tanks, firewalls and yard was good. Fire pumps are clean and free of weeds. Control Room is in good shape. Manifold and pump area clean, firewall to west needs to be rebuilt and retainer wall is needed. Dike washing down around pumps and manifold. Some grass and weeds need to be cut around tanks and launcher manifold. Fire Extinguisher A-91 is not charged. Needs sign posted (CAUTION - THIS UNIT STARTS AUTOMATICALLY) at pumps.

Shop Area:

Welder working outside of new welding shop. Permit posted properly with signature of engineer only. Permit called for extinguisher on site; none in area.

Dock #3:

Work area in good shape, connections stored out of walkways, shower operates good, eyewash broken, work order turned in. Fire pump starts good, operator on duty did not know where water came from. Did not get to talk, as he was loading and had two maintenance crews working on Dock. Preventive maintenance looked good.

As you will note there were no personnel present in these areas; they were busy and did not have time to talk or visit.

On the way back to Refinery we stopped by Safety Department to see how records were kept on fire extinguishers, they have all extinguishers numbered and location. They record time of yearly check but do not keep a record of monthly checks. I would recommend not only location and number system but recording of the serial number and monthly check.

Fire pumps are started weekly and records are kept in Truck Maintenance Building. We did not have time to check these. These records should be kept at the Refinery Office or Safety Building.

Checked with Hill on maintenance schedule of vents and flame arresters. They do not have a regular maintenance program. Records show 1 to 4 years between checks and maintenance. A maintenance program should be set up and followed on a yearly basis. The amount of oil in and out of some of these tanks could result in collapse of tanks if these items are not working properly.

Refinery Property:

Pipe, connections and other metals stored in tank dikes and around shops. Personnel have to walk over or around to get to blend and charge pumps.

Tank 622:

Leaks 3 to 5 barrels of oil around tank, pump and manifold area.

Hot work and work orders are issued in proper order requiring three signatures, but are not posted, picked up or turned into operators/supervisor as required by safety rules. Work orders are taken to operator for completion signature, he signs without looking at project. Hot Work Permits are either left on site or thrown away.

These permits should be submitted, posted and supervisor and/or operator check and see that the area and work is completed before signing that the job is complete. Then file for a set period of time.

At this time, I teamed with Jim Bolliger and Guy Whipple for inspection through the Refinery Area Operating Department, Jim made notes.

Throughout the Refinery and Terminal areas the housekeeping was bad. No area was cleaned up after jobs were completed, noted valves and steam hose and connection

leaking. There were air hoses and masks left on site of pits east of new Control Building, people smoking throughout the Refinery in no smoking areas. Personnel in Truck Shop using cutting torch without goggles and gloves, old batteries setting around trash container. Welder working at new shop, the Hot Work Permit called for fire extinguisher available, there were none in area. There was one signature only on the Hot Work Permit, area supervisor and the Safety would not sign.

The attitude of employees in blending and old part of Refinery towards safety and work conditions seemed very good.

In the new section of plant we talked with 4 or 5 people, the morale is very low, they feel the Safety Program is for management and not people in the plant. Everyone is working excessive overtime and people are leaning on them. They say that management does not have their safety in mind.

I feel that with the past safety record in mind, the people are tired from overtime due to turnaround and other problems they are having, and they need someone to kick and holler at.

Max A. Waggoner

CLARK 000067

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INTER-OFFICE CORRESPONDENCE

TO: C. L. Strunk

OFFICE: Wilmington Refinery

FROM: Jim Fletcher

DATE: Nov. 15, 1979

SUBJECT: Corpus Christi Refinery Safety and Loss Control Audit, November, 1979

1. HOT WORK PERMITS: Operations and Maintenance Supervisors authorize these permits and I find no objection to this procedure. Personally I think this is the area where the responsibility lies.
2. FIRE EXTINGUISHER CHECKS: According to Jim Kucera these extinguishers are checked each month. I found some extinguishers with date tags missing which was explained by high winds blowing off tags, etc. One station had no extinguisher. Control room in new area. . .two Halon extinguishers missing due to thievery.
3. FIRE PUMPS: There seems to be some discrepancy as to the responsibility of pump maintenance regarding RPMS and run out on pumps. Each pump should be run and checked each week.
4. CONTROL ROOM SAFETY EQUIPMENT: Seems adequate as to first aid supplies, Hydrogen Sulfide alarms, breathing equipment etc.
5. SAFETY SHOWERS: Water pressure on some showers are weak. One shower in #1 Crude Unit was blocked in at water supply apparently due to leaking packing on supply valve. Take up on packing gland could correct this leak.
6. CONTRACTOR SAFETY RULE PROCEDURE: Contractors are given safety orientations but policing and follow-up are areas that need improvement. I personally observed four (4) men hanging on the back of a front end loader traveling down the street near the Safety office. According to a safety representative rules prevent this activity. Policing and follow-up is necessary.

Recent accident where four (4) contractor's employees were killed, Safety department was not consulted as to safety precautions necessary to make the job safe. In my opinion, all jobs regarding turn-a-round repairs and/or overhauls should be cleared by the Safety department.

7. CONCLUSION: Recognizing that recent turn-a-rounds make housekeeping chores more difficult, in my opinion, this area needs some management push in the operations department namely area supervisors. In the new plant there are drains that are completely plugged with styrofoam cups and metal soft drink cans. To me this is inexcusable. Supervisors and operators were congregated in the control building when necessary housekeeping was apparently being ignored. Housekeeping and safety cannot be separated.

In reviewing the general overall training of new employees I would say the program is excellent. As to the Nursing recommendations Kathryn Gieptner would rate eleven (11) on a scale of one (1) to ten (10).

8. FIRE TRAINING EXCELLENCE: Jim Kucera deserves a pat on the back for the expertise demonstrated in the recent control of the fire in the Alky Unit.
9. Recognizing that loose ends do pop up in any program, I would say that, overall, Brack Routh demonstrates, to me, the expertise and professionalism that makes a good safety program productive. A good leader.

J. W. Fletcher, Safety Supervisor
Champlin Petroleum Company
Wilmington, California



CLARK 000071



INTER-OFFICE CORRESPONDENCE

TO: C. L. Strunk OFFICE: Corpus Christi Field
FROM: J. E. Akers DATE: Nov. 15, 1979
SUBJECT: Corpus Christi Refinery Safety and Loss Control Audit, November, 1979
Inspection of Interlock Bypasses in Corpus Christi Refinery -
High Sulfur Crude Facilities

Attached is a list of the high sulfur crude facility shut-downs which were found to be bypassed in an inspection of the area by Jerry E. Akers and Bill Holder on 11/14/79.

In summary, the boilers are functioning with most shut-downs in service. On process furnaces, most shut-downs that have bypasses are bypassed.

Jerry E. Akers

CLARK 000072

10 BLOCK

The crude and vacuum unit were shut-down at time of inspection but dust on bypass keys indicate the following shut-downs have been bypassed for a long time. In most cases the bypasses were probably turned on to eliminate false trips.

CRUDE FURNACE 11 H-1

11-HS-023	Fuel Gas Low Pressure
11-HS-033	Fuel Oil Low Pressure
11-HS-025	Steam/Fuel Oil Diff.
11-HS-045	Flame Scanner
11-HS-048	Process Lo Flow
11-HS-054	Process Hi Temp.
11-HS-050	Stk. Gas Hi Temp.
11-HS-057	Fire Box Hi Press/Stack Damper
11-HS-052	ID Low Flow
11-HS-053	ID High Temp.
11-HS-059	Fire Box Hi/Low Press. - Fans

VACUMN FURNACE 11 H-2

11-HS-024	Fuel Gas Lo Press.
11-HS-034	Fuel Oil Lo Press.
11-HS-026	Steam/FO Diff. Press.
11-HS-046	Flame Scanner
11-HS-049	Process Lo Flow
11-HS-047	Process Hi Temp.
11-HS-051	Stk. Gas Hi Temp.
11-HS-058	Fire Box Hi Press/Stack Damper

20 BLOCK

The unibon unit was operating at time of inspection. The following items were bypassed probably to eliminate false trips.

UNIBON FURNACE A 21 H-1A

21-HS-060	ID FD Low Flow
21-HS-025	Fuel Gas Lo Press.
21-HS-026	Process Low Flow
21-HS-024	Flame Scanner

UNIBON FURNACE B 21 H-1B

21-HS-069	ID OD Low Flow
21-HS-028	Fuel Gas Low Press.
21-HS-027	Process Low Flow
21-HS-013	Stack Hi Temp.
21-HS-082	Fire Box Hi Press.
21-HS-029	Flame Scanner

30 BLOCK

FCC was operating with no bypasses.

40 BLOCK

The saturated gas unit was operating at time of inspection. The following items were bypassed probably to eliminate false trips.

SATURATED GAS ABSORBER FURNACE 41 H-1

41-HS-010	Fuel Gas Low Press.
41-HS-011	Fuel Oil Low Press.
41-HS-012	Steam/Fuel Oil Diff. Press.
41-HS-034	Flame Scanner
41-HS-032	Plenum Low Press.
41-HS-046	Process Low Flow
41-HS-031	Fire Box Hi Press.
41-HS-009	ID FD Lo Flow
41-HS-030	ID Hi Temp.
41-HS-051	Fire Box Low Pressure
41-HS-049	Fire Box High Pressure/Damp.

SATURATED GAS DEBUTANIZER FURNACE 41-H-2

41-HS-020	Fuel Gas Low Press.
41-HS-041	Flame Scanner
41-HS-039	Plenum Lo Press.
41-HS-048	Process Lo Flow
41-HS-038	Fire Box Hi Press.

50 BLOCK

SULFUR TRAIN A

Train was shut-down. All shut-downs were in service.

SULFUR TRAIN B

Train was operating. Six shut-downs were bypassed.

60 BLOCK

BOILER A

Boiler was shut-down. Behind panel one circuit was jumpered terminal #33 to #34. Instrument shop is checking on the function of the jumper.

CLARK 000075

CLARK 000075

CHAMPLIN PETROLEUM COMPANY

SAFETY AUDIT

Date 11-13-79

Plant Name: Champlin Petroleum Company

Location: Corpus Christi, Texas

Number of Employees: 474

Senior Management Official: Leon P. Shelton

Nature of Business: Production of solvents, fuel oils and asphalt within an integrated refinery

- Principal Problem Areas:
- (1) Operation's training emphasis on individual's safety functions.
 - (2) Supervisory acceptance of safety accountability within the sphere of accident control.
 - (3) Maintaining safety at the same level as production

Accident Experience:

This Year to Date

Total Reported Injuries ^(Oct.) 88 OSHA Recorded Med. Cases 8 including L. T. I's 4

Man-hours ^(Sept.) to date 817,041 Freq. Rate 4.9 Sev. Rate 114.9 SII 0.97

Property Damage None Down Time None

Last Year '78

Total Reported Injuries 95 OSHA Recorded Med. Cases 8 including L. T. I's 1

Man-hours to date ^{1,019,151} 1,019,151 Freq. Rate 0.98 Sev. Rate 5.88 SII 0.19

Property Damage None Down Time None

Previous Year '77

Total Reported Injuries 76 OSHA Recorded Med. Cases 9 including L. T. I's 3

Man-hours to date 966,078 Freq. Rate 3.10 Sev. Rate 18.63 SII 0.62

Property Damage None Down Time None

Fire & Explosion Experience:

This Year to Date

Total Reported 3 Injuries 0 Est. Property Damage \$275,000

Business Interruption Loss Not quantified

CLARK 000076

Fire & Explosion (Continued)

Last Year

Total Reported _____ Injuries _____ Property Damage _____

Business Interruption Loss None

Previous Year

Total Reported 1 Injuries 0 Property Damage \$159,228

Business Interruption Loss None

Principal Causes of Fires (1) System malfunctions

(2) Operating problems

(3) Mechanical failure

A. ADMINISTRATIVE

1. Safety Policy and Attitude

a. Is there a written accident prevention policy? Procedure #5

b. Is it oriented toward injury prevention only? No

c. Is it oriented toward accident prevention? No

d. Is it oriented toward total loss control? Yes

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 _____

Nominal support X Lip Service _____ Indifference _____

h. General Attitude toward safety

Workers Secondary to production

Supervisors Agressiveness sporadic

Management Progressive & ambitious

i. Do senior management meetings include safety? In passing, yes

j. What are the safety objectives? Safe production

Current Year Total commitment without accidents

Five Year Plan -

A. ADMINISTRATIVE (Continued)

k. Is success in accident prevention recognized?

Promotions No

Appraisals No

Other No

l. Is responsibility for safety defined in writing? Yes

Do those responsible understand? Assume yes

Do all levels understand their responsibilities? Assume yes

m. Is safety included in job descriptions? Not to safety department's knowledge

n. Are accidents and their costs charged against the department? Yes

o. Are first line supervisors required to submit periodic safety reports

to management? Not to safety department's knowledge

(Monthly inspections)

2. Safety Organization

a. Is there a safety director designated for the operation? Yes

Time spent on safety 100 %

b. Other members of his staff Two Safety Engineers, One R.N.

c. Safety Committees

Senior management? Central Safety Committee

Supervisory? None

Other Union Safety Committee

d. How often do they meet? Monthly

Report to? Refinery Manager

Chairmen? Leon Shelton - Safety Manager

Agenda prepared? Yes

Are serious accidents and near miss accidents reviewed by this
committee? Yes

How effective are they? Unknown

A. ADMINISTRATIVE (Continued)

3. Safety Education and Training

- a. Is there a formal safety orientation program for newly hired employees? Yes
- b. Are job methods prepared for each job? No
- c. Are JSA's prepared for each job? No Are they used in training programs? Unknown
- d. What other job training programs are there? H. F. Acid, H₂S gas, Caustic Soda, explosive meters
- e. Is there a planned safety training program? Yes
Who conducts the training? Supervisors (not in all areas)
What is the nature of these programs? Safety Action Monitor (copy attached)
- f. Is there a training program for industrial power trucks? Yes
Who attends? All in refinery truck operators
- g. How is safety publicized within the plant?
Bulletin Boards Yes Post near misses No
Post serious accidents? No Newsletters? No Other? Safety Meetings
- h. Have there been any special educational programs conducted within the last 12 months? Yes, CPR, First Aid, DuPont STOP Course to salaried & Hourly, Defensive Driving to employees & families after hours
- i. To what extent are the preventive and predictive aspects of safety emphasized in these programs? Hazard recognition, the defense and action to take.
- j. Safety award programs? Yes
No, available in the control rooms. Also,
- k. Are safety rules posted? booklet issued each employee
- l. Is there a safety handbook? Yes - Safety Manual

B. INSPECTION AND ENFORCEMENT

1. Are regular inspections made of plant areas, facilities, building, machinery, equipment, tools and work methods for accident hazards? Yes
By whom? Management How frequently? Monthly and weekly
Work orders issued for
How extensively? All areas How processed? correction
2. Is a check list used in making inspections? Available but not at all times
3. Are recommendations for correction of accident hazards acted upon promptly? Work orders issued are processed according to priority
4. Do supervisors report hazards and advise management of unsafe conditions beyond their control? Yes, engineering work orders
5. Is there a safety suggestion program? Informal How is it processed?
Safety suggestions are offered in safety meetings
6. Are local safety rules and regulations including those pertaining to the use of personal protective equipment administered in accordance with the plant's current instructions? Yes
7. Is disciplinary action taken towards supervisors who tolerate unsafe conditions or practices? Safety Department not involved
8. Is disciplinary action taken toward employees who refuse to conform with the plant safety rules and regulations? Yes For failure to use protective equipment? Yes
9. Do good housekeeping conditions prevail? Generally
10. What special permits are enforced:
Hot Work? Yes Vessel Entry? Yes Lock out? Procedure
followed (no Permit)
Other? None

C. STATISTICS, REPORTING AND ACCIDENT INVESTIGATIONS

- a. Are injury statistics being kept and posted in accordance with OSHA requirements? Yes

C. STATISTICS (Continued)

- b. Is a record made of all injuries? Yes
- c. Is the cost of property damage, material loss and business interruption recorded? Yes, safety department not totally involved
- d. What use is made of these statistics? Unknown
Broken down into types and causes? N/A
Analyzed and reviewed periodically? N/A
Other? N/A
- e. Is there a standardized system for reporting accidents and emergencies?
Yes
- f. Is there an emergency plan? Yes What does it cover?
Fire, Storms, Blackouts, Bomb Threats, Evacuation, Other? None
- g. Who investigates fires and accidents? Supervision reporting to Central Safety Committee
- h. Do supervisors prepare accident reports? Yes

D. MEDICAL PROGRAM

- a. Pre-employment physical? Yes Other examinations? Yes
- b. Are medical and hospital services readily available? Yes
- c. Are dispensary facilities available on premises? Yes
- d. Is it open on every shift? No (Night supervision has access)
- e. Is there a plant doctor or nurse on duty? Nurse Company Doctor? No
- f. Are there trained First Aid people on every shift? Yes
- g. Are environmental health hazards being monitored? Yes
Fumes? Turnarounds Dust? No Noise? Yes

E. PERSONAL PROTECTIVE EQUIPMENT

- a. What protective equipment is available to employees?

Eye glasses? YesSafety footwear? YesGoggles and face shields? YesSelf-contained breathing apparatus? YesAirline respirators? YesGas masks? No Respirators? YesEar muffs and plugs? YesOther? Protective equipment as needed is provided

- b. What instruments are available to check environmental conditions?

Yes Combustible Gas Analyzer?Yes Toxic gas analyzer?Yes Oxygen meter?Yes Noise meter?

- c. Who is responsible for equipment, inspection and maintenance?
-

Safety Department

- d. Are there maintenance sterilization facilities?
- Yes (respirators)

F. ENGINEERING CONTROLS

- a. Is the safety department notified upon requisition and installation of new equipment regarding safety in design and/or alteration of plant facilities, building and layout of machinery or facilities?
- Not in all cases

- b. Are there special committees to evaluate the impact of changes in environmental conditions that might be brought about by plant alterations and/or expansions?
- Unknown

- c. What equipment and materials are purchased under the direction of the safety department?
- Safety, medical and fire suppression

F. ENGINEERING CONTROLS (Continued)

- d. Is the fault tree or any other system safety technique used for the purpose of presenting a graphic presentation of parallel or sequential events of the principal hazards? Not to safety department's knowledge
- e. What other special accident predictive techniques are employed? None
- f. Is there an industrial engineering section (job evaluation, methods of improvement, work simplification, quality control, etc.?) No
- g. Is there a planned maintenance program in effect? Somewhat
Are priorities set for safety items? Somewhat

G. UNSAFE CONDITIONS

- a. Major structural deficiencies, exits, fire doors, etc.? No
- b. Adequate control of fumes, dust, gases, heat and noise? Yes
- c. Safety valves - 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? Somewhat
- d. Are ANSI Codes employed as a guide to providing safety devices and machine guards for hazardous operations? Yes, where applicable
- e. Color Coding? Yes, somewhat
- f. Specific problems noted:
1. Vehicular traffic congestion
 2. New refinery fire alarm system needs debugging
 3. Eroding of tank fire walls (dikes)
 4. Old transite lines need to be replaced

H. UNSAFE WORK METHODS

A. Specific

1. Sulfur plant, standing on top of 40' structure with no platform
to rod out sulfur pits.
(E.W.O. issued)
2. West Gate pedestrian entrance, the absence of sidewalks prompt
pedestrians to walk on road creating exposure to vehicle traffic
(E.W.O. issued)
3. Emergency fire water supply marginal to the extent additional pumps
are essential. (E.W.O. issued)
4. _____

5. _____

6. _____

7. _____

60 BLOCK (continued)

BOILER B

Boiler was operating. Behind panel one circuit was jumpered terminal #51 to #52. The instrument shop is checking on the function of the jumper.

BOILER C

Operating - no bypasses.

CLARK 000086

ADMINISTRATION

I. General Care (Maintenance)

- A. Paint - Good. Refinery has program in progress to paint all areas in need of same.
- B. Warehouse Storage - Adequate
- C. Pump Leaks - Refer to team write-ups.
- D. Stabilized Surfaces - Gravel - Grass - Weeds - Very Good
- E. Plant Drainage - Good
- F. Fire Equipment - Fire equipment appears to be adequate. Maintenance of this equipment needs substantial improvement.

II. Cleanliness (Housekeeping)

- A. Process Areas - Very Poor (New)
Deteriorated since last year's inspection.
Fair - Good (Old)
- B. Control Rooms - Needs much improvement. Lack of employee discipline evident. (New)
Fair (Old)
- C. Shops - Needs much improvement in all shop areas.
- D. Warehouses - Good - orderly
- E. Fire Equipment Stations - Needs definite improvement.

III. Supervision (General Attitude)

Need motivation by all levels of management.

- A. Cooperation of Employees - Very Good. Need motivation and possible discipline to achieve desired results.
- B. Cooperation of Safety Personnel - Very Good
- C. Cooperation of Management at Closing Meeting - Excellent

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

- A. Fire training conducted annually for employees.
- B. Each area checked by inspection team at least 4 times a year. This program is not sufficient nor has it been effective.

- C. Definite signs of deteriorating cooperation between Maintenance/Operations and Operations/Terminaling.
- D. Responsiveness to safety programs poor. Need emphasis from top management through line-level supervisor to each hourly employee.

GENERAL PLANT INFORMATION

I. Type of Plant.

Fully integrated petroleum refinery.

II. Feedstock or Charge Stock.

Various domestic sweet crudes
Various foreign sweet and sour

A. Source - Varies

B. Characteristics - Physical Properties

26 to 45 gravity API
H₂S up to 500 ppm
0.1 to 2.0 wt. % Sulfur

C. Shipping and Receiving Methods

Vessel and pipeline, Barges, Trucks

D. Throughput (Barrels per day) - Use per Day

Average 150,000 BPD

III. List major production units

160 M BPD Crude Units (2 units)
60 M BPD Vacuum Units
15 M BPD Demex
50 M BPD Unibon
25 M BPD Platformer (Motor)
6.2 M BPD Platformer (Motor)
45 M BPD FCCU
12 M BPD FCCU
15 M BPD Alkylation
Sulfur Recovery Unit 150 tons
Steam 350 MPPH
40 M BPD Cumene Unit
1.5 M BPD Hydrar

IV. Plant layout (General comments)

Office should be outside to eliminate traffic and unauthorized personnel and for safety of office personnel.

A. Spacing

New plant and Alkylate Units excellent
Old units fair

Old C.U. poor

Office location very poor. Control room location old CU & FCCU, BTX are poor locations.

B. Utilities unexposed?

No, all types electrical and process water overhead.

Firewater unexposed and main unexposed.

C. Flood Exposure

No heavy rain exposure. No flood exposure except docks and portion of waste treatment (Hurricane)

D. Outside exposure or adjacent plant exposure

Border with Southwestern Refinery

E. Access under emergency conditions

(a) Two gates East side; (b) One South side; (c) 4 gates from Lawrence and (d) Four side access and water access (fireboat available).

F. Security (fencing, lighting, guards, etc.)

Probably OK in normal times; should be improved if radical encounters increase.

V. Fireproofing

A. Process vessels - Yes

B. Pipeway supports - Some

VI. Flammable liquid pumps

A. Protection - New - Yes. Old - No.

B. Exposure - Inherent

VII. Cooling Towers

A. Protection - Some (where needed)

B. Exposure - No, except old FCCU borderline

VIII. Water Pollution

A. Location of Plant with reference to waterways, marshlands, natural or manmade drainage facilities: Exposed to ship channel

B. If exposed to water pollution, comment on:

1. Distance from plant to waterway - Immediately adjacent

2. Dike capacity - Adequate
3. Spill Prevention/Containment Plan - Yes, but need annual update

C. Valving

1. Pipelines pass beneath waterway - 6" crude line across ship channel, valved both sides
2. Fill and Unloading Lines - None

IX. Principal Products Produced

Gasoline 3 grades
Jet A Fuel
#2 Fuel
#6 Fuel
Asphalt
Sulfur
Cyclohexane
Toluene
Xylenes, mixed
Propane
Cumene (1980)

- A. How shipped from plant - Vessel, barge, pipeline, truck and rail
- B. Shipping Containers - No drums

X. Business Interruption Potential

A. Feedstock and Source

Vulnerable foreign and all tankers. Crude only. P.L. not vulnerable but low volume 28 M BPD.

- B. Single Train Operation - No
- C. Critical Process Equipment (Identify bottlenecks)

New CU 1 wk. furnaces
New FCCU 1 wk. blower-spare
Alky 3 days
#3 Platformer 1 wk. Recycle-spare

- D. Interdependency with other company operations
Nothing critical

XI. Manpower

- A. Peak - 2:00 A.M.
- B. On call or call system - Radio - Phone

XII. Storage Facilities

- A. Spacing
- B. Diking (capacity adequate to contain contents of largest tank?)
- C. Drainage - Poor, in some diked areas
- D. Weed Control - Yes
- E. Exposure - Depending on wind conditions
- F. Pollution Exposure - (make specific comments on exposure to waterways, marshlands, natural or man-made drainage facilities, etc.)

The only potential exposure would involve flooding by bay waters via the ship channel. Elevation of most storage facilities is sufficient to preclude flooding except under excessive storm conditions. The ballast tank, sulfur barge-loading tank, oil sludge holding pits are most vulnerable.

- G. Visual Inspection conducted on all tanks annually?

Yes - All are visually inspected quarterly by inspection team.

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

Inspected at least once every 6 months to 1 year depending on the service.

PLANT MAINTENANCE PRACTICES

General Observations

- I. Are dikes and drains well maintained? Grass on dikes has been mowed down - in fair shape. Some ruts and holes are a hazard.
 - A. Are dike drains normally kept closed? Yes
 - B. Is there a regular inspection program? No, not as such. Leaks, repairs, etc. are on work order system and go through Planning Department.
- II. Plant practice on hydrocarbon valve lubrication
 - A. Is there a set program? (Emphasis to be made on remote, little used, valves.)

Work order system by Operators or Gaugers.
 - B. Responsibility for the above - Planning Department - Work order received.
- III. Fireproofing
 - A. General Condition - Older units have some stanchions that need attention.
 - B. Responsibility - Work order system -- General Contractor.
- IV. Plant drainage system - New Lift Stations installed to keep from draining out into road. . . goes through reclaimer.
 - A. Does it appear effective - Where new cement ditches have been installed no problem. Some areas look as if they could have problems.
 - B. Indications of back-up or stoppages. - Effluent ponds not large enough to handle heavy rains.

CONTROL HOUSES

- I. Basic design -
Window size (relative) and type of glass - or - Block house no window type -
Regular glass in every shop we looked at, as well as the Refinery Office.
- II. Location (with regard to exposures) - Some control rooms out of exposures;
but some, as well as shops, are in exposure areas.
- III. Is control house pressurized - or - are all ignition sources properly protected
(explosion-proof electrical service, etc). If control house is pressurized, does
air come from safe source?
3 -- old ones completed
1 -- in process
New one's okay.
- IV. Are pneumatic or electric signals used in control rooms? (Flammable or toxic
fluids or vapors must not be piped into control rooms for instrumentation.) -
When HF Acid released, signaled by steam whistle.
- V. Are instrument tubing bundles, instrument ducts and conduit equipped with
vapor seals and vents to prevent process vapors from entering control rooms
and instrument cases? Unknown.
- VI. Is Electronic Data Process control used in connection with any plant
processes? If so how is data process control equipment protected?
Yes, in centralized control room.
Closes room, all air conditioned.
- VII. Do instrument audible alarms in critical instrument loops sound loud enough
and long enough to insure being heard? (Examples listed below). Instant
alarms give beeping signal.
 - A. Low pressure in instrument air, cooling water, or fuel gas systems. Yes
 - B. High liquid levels - in fuel gas, compressor suction, relief valve, or blow-
down knockout drums. Yes
 - C. Failure of control room ventilation in pressurized control rooms. No
 - D. Other system failures affecting safe and continuous operation. Horns,
stand-by steam pumps, etc.

INSTRUMENT INSPECTION PROCEDURES

- I. Plant inspection and repair facilities - Instrument shop has facilities to handle their work orders.
- II. Inspection program - Work order system and preventive maintenance program.
- III. Inspection frequency of pressure vessel gauges (how tested) - Pressure gauges are repaired on work order system when malfunction found, as well as all instruments.
- IV. Program records - Only on meters.
- V. Program responsibility - Maintenance & Operation
- VI. Management supervision - Supervisor of Instrument Shop.
- VII. Does instrument failure cause controlled equipment to automatically remain in position - open, close, start, stop, or do whatever has been predetermined as necessary to assure fail-safe unit operation. Whatever has been predetermined by design.

METALS INSPECTION PROGRAM

- I. Scope of Program
 - A. Inspect tanks when out of service.
 - 1. Work with inspection when unit down.
 - 2. Son-O-Ray lines and vessels
 - 3. Check vents, grounding cables, ladders, etc.
- II. Tanks, pipe, and vessels inspected -
 - A. Son-O-Ray System
 - B. X-Ray
- III. Instruments used
 - A. Son-O-Ray
 - B. X-Ray
 - C. Optical Pyrometer
- IV. Inspection frequency - 5 years or less?
 - A. 18 months to 3 years -- complete inspection
 - B. Not so often on tanks.
- V. Deficiency correction procedures
 - A. Inspection reports and work order system.
 - B. Recommendations are made to Maintenance Department as to what corrections should be made.
- VI. Plant records
 - A. Inspection Department keeps records, dated to last action.
 - B. All Tank Farm records in Planning Office
 - C. Inspection Department also kept records since forming 4 years ago.
- VII. Management supervision - Chief Inspector Sam Owens
- VIII. On stream inspections made by Inspection section
 - A. Before unit shutdown for T/A
 - B. Peep holes cut in insulation if necessary to get thickness readings on pipe, vessels, etc.
 - C. Keep records on corrosion probes readings.
- IX. Vessels, pipe and tanks - instrument inspected - separate record of each.
 - A. Keep records of last problem, any change in thickness, etc.

- X. Use of pilot or telltale holes - Yes -- Prior to shutdown for Son-O-Ray purpose.
- XI. Retirement Thickness Determination
- A. Minimum thickness calculated, metal strength, temp being reached, product, etc.
 - B. Inspection Department makes recommendation, may take out of service.
 - 1. Action taken - Inspection Department makes recommendation. May recommend to remove from service.
- XII. Welder Qualification Procedure & Use of Qualified Welders
- A. Tested on all metals, high pressure vessel welding, etc.
 - B. Send to qualified lab or test here and keep records on each man.
- XIII. Use of outside services for welding inspection & quality control
- A. On new construction -- Use X-Ray
 - B. Not used on normal basis.
 - C. Coupons may be sent out.
 - D. Perform hardness test.
 - E. Use U.O.P. inspectors and others.

RELIEF VALVE INSPECTION PROGRAM

- I. Inspection infrequency - Maximum internal 5 years
 - A. No.
 - B. If unit shutdown -- all relief valves sent out for repairs, and record kept.
- II. Type of tests conducted
 - A. POP Test
 - B. Check springs, etc.
- III. Are block valves installed below relief valves - No
 - A. Are they normally sealed in an open position? Yes
 - B. Seals checked every 3 months - No
 - C. Block valves below relief valves sealed with car seal chain and padlock - Yes
- IV. Use of rupture disks under relief valves - No
- V. Program records - Planner's Office
- VI. Deficiency correction procedures
 - A. Rebuilt or whatever necessary.
 - B. Pointed out by Operation.
- VII. Implementation responsibility
 - A. All valves tagged by Operation.
 - B. Removed for repairs and re-setting
 - C. Install State Tag.

PLANT PROCESS EQUIPMENT INSPECTION RECORDS

- I. What records are maintained - (Those relating to property loss control not already covered under Instrument, Metals, and Relief Valves)
 - A. Heat records on any condemned boiler
 - B. Records on cause of fire, extent of damage
 - C. Boilers Inspection Report
 - D. Compressor Records
 - E. Pump Records
- II. Availability to plant personnel - Available at anytime
- III. Record distribution
 - A. Refinery Manager
 - B. All Department Heads
 - C. Process Engineers
- IV. Record protection
 - A. Not in fireproof cabinet
 - B. Metal cabinet in hallway
- V. Deficiency correction
 - A. Infra-red survey people to come in and point out heat loss or hot spots.
- VI. Emergency shutdown logic

(Did not get this area covered)

PLANT PROCESS EQUIPMENT INSPECTION RECORDS

- I. What records are maintained (Those relating to property loss control not already covered under Instrument, Metals, and Relief Valves)
 - A. Mechanical Engineering files on equipment
 - B. Machinery History records
 - C. Vibration Readings and Signatures for major rotating machinery
 - D. Inspection:
 - 1. Certification of Welders
 - 2. Corrosion Probe Readings
 - 3. Hydrogen Probe Readings
 - 4. Exchanger Fouling Data
- II. Availability to plant personnel - Yes
- III. Record Distribution
 - A. Maintenance
 - B. Engineering
 - C. Operations
 - D. Inspection
- IV. Record Protection
 - A. Maintenance files are in Maintenance Shop Offices
 - B. Engineering drawings, Equipment files and Microfilms of construction drawings are in two fireproof vaults in the Main Office.
- V. Deficiency correction
 - A. Planned maintenance on rotating equipment
 - B. Working with chemical supplier and Operations to reduce corrosion.
- VI. Emergency Shutdown Logic
 - A. Testing Frequency - Shutdowns
 - B. Records - In the Instrument, Electrical & Machine Shops

PLANT OVERHAUL OR TURNAROUND PRACTICE

(General)

I. Frequency Determination - Established based on:

- A. Equipment condition
- B. Process condition
- C. Lead time for major equipment and catalyst
- D. Scheduling to avoid peak contractor demand with others
- E. Marketing requirements
- F. Material supply and distribution with resulting storage
- G. Financial position. Ultrasonic inspection is used for basis for unplanned shutdowns.

II. Is contractor labor used? If so, how employed?

Almost all T/A work is performed on contract. Contract labor is used also as swing maintenance crew. Contractor is responsible to Operations for conduct. Shift foreman will spot heavy equipment. If an emergency situation occurs, each area has own alarm horn, contractor is instructed to leave the immediate area. T/A planning and scheduling establishes work requirements, job scope, and schedule.

III. Is plant safety engineer active in planning?

Only to a limited extent. Job lists are prepared by operations, maintenance, inspection and technical service. The scope of work depends upon the critical path. Safety reviews the finished job scope and work lists, then will make written comments where necessary. Hazards are listed with handling recommendations. The safety engineer does participate in the daily T/A meeting.

IV. Are operating procedures relating to shutdown and start-up reviewed before taking unit off stream?

Procedures are reviewed before each T/A blinding and equipment entry procedures are established. New installation tie-in points are identified. Operating logs are maintained for both start-ups and shutdowns and are critiqued prior to the next scheduled T/A.

V. Records and reports on overhaul or turnaround findings

Planning and Inspection prepare separate turnaround reports within two weeks after turnaround completion.

VI. Distribution of records and reports

Plant Manager, Operating Manager, Maintenance Manager, Operating Area Superintendent, Technical Service Manager, Process Engineer, Inspection.

PLANT CONTROL OF CONTRACTOR PERSONNEL

- I. Type of pre-entry briefing given contractor (Written, oral or both).
 - A. Written - Copy of Safety Procedure #1, "Safety Rules for Contractor", are given to and reviewed with the contractor. Copy sometimes included in bid package. NOTE: Most contract work is done through resident contractors who generally have two year terms in the plant.
 - B. Oral - Safety Rules were reviewed with contract supervisor, safety engineer and project engineer before job starts.
- II. Plant safety supervision of contractor personnel
 - A. Maintenance foreman, project engineer have safety supervision of contract personnel.
- III. Plant hazard orientation given contractor personnel
 - A. Yes, before job starts and on routine basis. Contract personnel are also involved in routine safety training.
- IV. Program records

Copy of contractors safety rules in bid package, Safety Procedure #1
- V. Direct~~ly~~ responsibility for program
 - A. Champlin management delegated as required to control foremen, contract engineers, contract technicians.
 - B. Operating supervisor and chief operators have ultimate responsibility
- VI. Management supervision

Champlin Petroleum Company

STARTUP AND SHUTDOWN PROCEDURES

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

Formal procedures exist for each process unit. Procedures are adjusted for the situation at hand, i.e., whether a section is to remain pressurized, in service. Procedures are reviewed for corrections formally after each shutdown.

II. Does Plant employ critical path (arrow diagram) method for startup/shutdown, supplemented by detailed check lists?

Detailed check lists are prepared with estimated times. Critical path charts are not used.

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

There are verbal communications between each hourly employee and his relief both daily routine and startup/shutdowns. Written logs of foremen instructions are maintained. There is normally no supervision overlap.

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

Detailed in the written unit start-up and shutdown procedure.

V. Are practice or simulated startups performed before actual startup?

No, but procedures are reviewed before implementation.

VI. Does startup procedure include the following phases?

- A. Preliminary preparations - Yes
- B. Preparation of auxiliary equipment and services - Yes
- C. Elimination of Air - Yes
- D. Tightness testing - Yes
- E. Introduction of fuel gas - Yes, after steaming or purging
- F. Elimination of water - Yes, but not detailed potential problems, i.e., influx lines etc.
- G. Bringing unit on stream - Yes

VII. Shutdown procedures should include the following phases

- A. Cooling and depressuring - Yes
- B. Pumping out - Yes
- C. Removal of residual hydrocarbons - Yes
- D. Removal of poisonous or corrosive material - Yes
- E. Disposal of water - Yes
- F. Blinding and opening - Yes. Operation turns in blind list for each vessel or piece and unit isolation blinds. Blinds are tagged both in field and permanent record board in unit. Operations has final responsibility for

blinds in and out. It was not determined whether each of the maintenance and operations installers sign the blind sheets. Location of blind points are not painted at the flanges in the field.

G. Removal of pyrophoric iron sulfide - Not determined

H. Inspection for entering - Safety performs gas checks. Permits are signed by the operator, maintenance foreman, and safety engineer.

VIII. What records are maintained of these activities?

Operations log, blind sheet, T/A punch list

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

Radios, telephone, and shift change status reports.

X. Operator Training Program

A. Initial Training - Employee is generally hired into plant pool. The Safety Department conducts an orientation program on the initial work day. They are tested at 3, 6, 9, and 12 week intervals to determine satisfactory progress. After successfully completing the initial training the employee is allowed to bid into either the Maintenance or Operation Training Pool. Employee is assigned to area and works through entire area. There is an established 4 year apprentice training program, where ICS correspondence courses and API Pilot courses are completed.

B. Refresher training, frequency - Presently there is not a formal refresher training program, however a classroom training program is under development.

C. Training Program Records - Records are kept on the apprentice program.

D. Are procedures posted at unit - Available in book form. Emergency condition procedures are included with the operating startup/shutdown manuals. Fire call-out procedures are posted.

E. Pool People tested at 3, 6, 9, and 12-week intervals to justify their effectiveness on the following.

1. First Stage:

- (a) Control Valve
- (b) Level Indicator
- (c) Pump Operation

2. Second Stage:

- (a) Furnace Operation
- (b) Chemistry

3. Third Stage:

- (a) Unit Operation

UTILITIES RELIABILITY

I. Electrical Power

A. Public Utility:

The Corpus Christi Refinery is served from Central Power and Light Company's 69KV and 138KV Substations.

The Refinery purchases 100% of its power.

1. Number of Feeds:

- (a) The old plant section is served from two overhead and one underground 12,470 Volt radial feeders from the 69KV substation. The system is primary selective through motor operated air switches and oil circuit breakers.
- (b) The new plant substation is fed by two overhead 138KV transmission lines through two Champlin owned transformers and circuit switchers. Each incoming 138KV feeder is protected by an oil circuit breaker with a normally closed bus tie OCB to tie the circuits together. This provides great reliability and prevents complete loss of power to the Refinery upon a 138KV line failure. Increased reliability is provided at the 12,470 Volt distribution level. In the event of a loss of power on either transformer, the remaining transformer will continue to serve the entire substation load through a normally closed bus tie breaker.

2. Pole Construction:

- (a) The poles for the 12,470 Volt overhead system which feeds the old plant are single wood pole with wood crossarm type construction.
- (b) The 138KV transmission line poles are single steel poles set in concrete with steel arms.

NOTE: The new plant section uses cable trays for power distribution.

3. Exposure to transmission lines and transformers:

- (a) Exposure to overhead 12,470 Volt lines exist in areas where lines cross or parallel pipe racks and/or cross sections of operational units and tank farms.
- (b) Transformers with exposed live terminals are fenced inside substation area.

4. Reliability History:

(a) Old plant overhead line problems have been minimal. Major problems has been utility's 69KV substation. Utility has had transformer and breaker failures.

(b) New plant reliability has been good.

B. Plant Electrical Generation

1. Capacity:

No generation for normal plant usage. There are five small units for emergency lighting and control board power in the old plant section.

The new plant has a 500KW standby generator to provide emergency lighting power to critical loads and power to EDPM system.

2. Power Source: Diesel driven

3. Protection:

In the old plant, units are outdoors with no overhead weather protection.

The 500KW unit in the new plant is semi-enclosed in a metal building.

All units are run and checked weekly.

4. Exposure: No electrical exposure.

C. Plant Transformers

1. Protection from physical damage:

Most transformers are inside fenced-in substation. There are some totally-enclosed unit substation transformers on firewalls which have no physical protection.

2. Exposure: Minimal

II. Steam Generation

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

1. New Area:

(a) 3 Boilers (600 PSI)

(1) Operating demand 250 M pounds per hour*

(2) Operating capacity 360 M pounds per hour**

(3) Name plat capacity 475 M pounds per hour

*NOTE: We are permitted only on "B" & "C" boilers at this time.

**NOTE: We are permitted for 438 MM B.T.U./Hour maximum from the 60 Block (Approx. 320 M pounds per hour.

2. Old Area:

(a) 6 Boilers at #1 Boiler Plant & Co Boiler (250 PSI)

- (1) Operating demand 315 M pounds per hour
- (2) Operating capacity 390 M pounds per hour
- (3) Name plate capacity 500 M pounds per hour

(b) 3 Boilers #9, #10 & #11 normally idle (250 PSI)

- (1) Operating demand 0 M pounds per hour
- (2) Operating capacity 80 M pounds per hour
- (3) Name plate capacity 107.5 M pounds per hour

3. Boiler permits are posted and updated in the appropriate control rooms.

B. Fuel (Alternate Fuel):

1. New Area:

(a) Refinery fuel gas and fuel oil

2. Old Area:

(a) Refinery fuel gas and fuel oil

C. Fuel supply on hand - Source of replacement:

- 1. Refinery fuel gas is produced in plant except about 11% is purchased -- no storage is available.
- 2. Fuel oil is produced in plant -- ample storage is available.

D. Number of Generators:

1. New Area:

(a) 31-E13 Flue gas cooler (600 PSI)

- (1) Operating demand 45 M pounds per hour*
- (2) Name plate capacity 52 M pounds per hour

(b) 2 waste heat generators (100 PSI)

- (1) Operating demand 160 M pounds per hour*
- (2) Name plate capacity 128 M pounds per hour

2. Old Area:

(a) Slurry steam generator at FCCU (250 PSI)

- (1) Operating demand 6 M pounds per hour*
- (2) Name plate capacity 8 M pounds per hour

*NOTE: Steam production varies with the charge rate to the unit.

WATER AND AIR ENTRAPMENT

- I. Spot check plant practice for location drains at low points and vents at high points for process lines, vessels and equipment.
 - A. High point vents and low point drains (3/4") are installed on all new piping.
 - B. Fail open control valves have 3/4" drain on one side.
 - C. Fail closed control valves have 3/4" drains on both sides.
 - D. Vents and drains are plugged per start-up procedures.
- II. Check plant program for draining water from bottom of vessels, low points of lines and exchangers during steaming and startup.
 - A. Lines are walked and bled per start-up check list.
 - B. One man assigned to draining lines during start-up.
 - C. All vents are cracked open during steamouts.
 - D. Some areas used O₂ analyzers for double check during steamout.
- III. Plant practice for draining water from feed tanks.
 - A. Water gauges are taken once a month and reported on the gauge sheet. Intermittent gauges are taken as deemed necessary by operations.
 - B. Water drawing of tanks is the responsibility of the pumping and gauging department and is done as scheduled by the dispatcher. There is no set frequency for water drawing tanks.
 - C. Slop tanks are water gauged and water drained before being pumped.

ELECTRONIC DATA PROCESSING MACHINE (EDPM) INFORMATION

I. Location of EDPM:

- A. Boiler Feed Water Demineralizer Control -- 60 Block
- B. High Sulfur Crude Facilities -- Control Room - Foxboro
- C. High Sulfur Crude Facilities -- Control Room - AAI
- D. Cumene Unit -- Control Room -- Honeywell
- E. Laboratory -- Hewlett Packard

II. Building Construction:

- A. Metal
- B. Concrete -- Blast resistant
- C. Concrete -- Blast resistant
- D. Concrete -- Blast resistant
- E. Metal

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

- A. No - Located in 60-Block Comfort Station
- B. Yes
- C. Yes
- D. Yes
- E. No - In Chemist Office (5 remote terminals)

IV. Protection for EDP room, Media storage and adjoining occupancies:

- A. Automatic protection:
 - (a) Type (sprinklers, CO₂, Halon 1301) -- None
 - (b) Coverage (total flooding, cabinets, under floor)
- B. Smoke detection (type & location of units)
 - (a) None
 - (b) Yes - Floor and ceiling
 - (c) Yes - Floor and ceiling
 - (d) Yes - Floor and ceiling
 - (e) Yes - Halon System
- C. Automatic Alarm:
 - (a) None
 - (b) Yes
 - (c) Yes
 - (d) Yes
 - (e) Yes
- D. First Aid fire appliances:
 - (a) CO₂ Extinguisher
 - (b) CO₂ Extinguisher
 - (c) CO₂ Extinguisher
 - (d) Under construction

(e) CO₂ Extinguisher

V. Occupancy:

A. Hardware/Type used:

1. Texas Instruments - TI 960B
2. Foxboro - Fox-1
3. Interdata - 916
4. Honeywell - 4500
5. Hewlett Packard - HP-3354

B. Function being performed:

1. Process Control
2. Process Control
3. Process Control
4. Process Control
5. Lab Automation System

C. Owned or leased: All are owned by Champlin

D. Back-up facilities: None

E. EDP room is attended on a Hr., basis:

1. 24 Hours, 7 Day
2. 24 Hours, 7 Day
3. 24 Hours, 7 Day
4. 24 Hours, 7 Day
5. 24 Hours, 7 Day

F. Estimated hardware replacement time:

1. Four months
2. Twelve Months
3. Six Months
4. Five Months
5. Five Months

G. Software:

1. Are duplicate programs maintained: Yes Multiple back-ups.
2. Where stored:
 - (a) One copy on site/Two copies off site
 - (b) 3 copies on site/1 copy off site
 - (c) 2 copies on site/1 copy off site
 - (d) 1 copy on site/1 copy off site
 - (e) 1 copy on site/0 copies off site (Sun Oil)
3. How frequently are duplicates updated:
 - (a) Fixed program - Never
 - (b) Once per week
 - (c) Every 3 months
 - (d) Once per week
 - (e) Fixed program

4. Estimated replacement time of programs:

- (a) One year
- (b) 6 months
- (c) 3 weeks
- (d) 2 months
- (e) One day

VI. Business Interruption:

- A. Boiler Feed Water Demineralizer System is required for operation. Loss of Feed Water causes severe problem for Utilities Area.
- B. Foxboro loss results in poor operation at lower profit
- C. Foxboro loss results in poor operation at lower profit
- D. Foxboro loss results in poor operation at lower profit
- E. None - manually operated

VII. Emergency Power:

- A. No - Rest of Unit is down
- B. Yes
- C. Yes
- D. Yes
- E. Yes

Emergency power is provided from an 30 KVA uninterruptable power supply (UPS) system. The UPS system consists of the following equipment: Rectifier/battery charger, batteries and rack, inverter and static switch. The UPS batteries have been sized to provide 30 minutes of power to a full load.

The main system is located in the Electrical Equipment Room of the Main Control Room, Computer Building.

The UPS system is fed from the two sources via an auto-transfer switch, normal refinery power or the 500 KW standby generator.

- 1. Cable routes: Armored cable in overhead cable trays
- 2. Fireproofing: None

VIII. Portable appliances (employee convenience items) should not be permitted.

- A. Coffee pots - not permitted near affected equipment
- B. Water heaters - not permitted near affected equipment
- C. Hot plates - not permitted near affected equipment
- D. Sandwich warmers - not permitted near affected equipment

IX. Air Conditioning:

- A. Heating/Air Conditioning -- All five areas have dual air conditioning systems.

X. Security Measures:

Process operators are near equipment 24 hours a day, 7 days per week.

IN-HOUSE INSPECTION PROGRAM

I. Plant Level Safety Program:

- A. Safety men on full time basis? Yes Number? Three, Safety Manager, Industrial Nurse and Two Safety Engineers
- B. Method of Safety Personnel Selection - Employment agency or personal reference and knowledge.
- C. Is there a written scheduled inspection program? Yes. 4-man Safety Audit done weekly, including the Supervisor of the area to be audited.
- D. Are written reports prepared? Yes Distribution? Plant Manager and Department Managers.
- E. Plant Management supervision and follow-up - Work orders written by recorder and priorities assigned. (Recorder-member of Audit team.)
- F. To whom does chief Safety Engineer report? - Refinery Manager
- G. Liaison with Corporate Director of Safety & Loss Control - Yes, via phone, personal visits and annual audits.
- H. Major Areas of Responsibility other than:
 - 1. Fire Protection
 - 2. Safety
 - 3. Safety and Fire Equipment Inspection
 - 4. Medical Program, Industrial Health/Hygiene Program and Workman's Compensation.

PLANT EMERGENCY PROCEDURES

I. Is written manual available? No. Drafted two years ago but never approved for distribution.

A. Date of last review: Currently being reviewed. Deadline for review - November 27, 1979.

B. Does it include:*

1. Public Relations Plan With-

a. Assigned P.R. Representative - Representatives are not specified, but are understood to be E. L. Sample and Marty Hansen.

b. Facilities for News Media - Not specified

c. Legal Support - Not specified, but understood to be Ft. Worth Legal

d. Plan for Distributing News Releases - Not specified, but understood that the Refinery Manager releases all information.

*NOTE: Written manual should be revised to include Items a., b., c., & d.

II. Mutual Aid

A. Plant participate in a mutual aid plan? No (Terminal Fire Company) Contract Fire Brigade for several industries in the area. Fire Brigade calls City Fire Dept. if they deem necessary.

B. Is inventory of equipment and supplies available and current? Ye.

C. Call-Out Procedure established? Yes - but needs to be updated.

FIRE BRIGADE

- I. Number of paid full time members: (Background and years experience)
NONE
- II. Number of employee members - 42 on part time basis
- III. Coverage on each shift and weekends - 5 each shift
- IV. Liaison with:
 - A. Public fire department - Fair
 - B. Industrial fire brigades - Primary source (direct with Safety Manager)
- V. Training Program (drills - frequency - records - outside help) (Drills at least annually)
1 per year
- VI. Supervision - 3 safety men and Terminal Fire Company
- VII. Pipe, Equipment, and Adapters for public fire department - None (use same size and thread) (1-1/2" and 2-1/2" NST)
- VIII. Plans for additional fire fighting support (additional men, foam, fire trucks, hose, etc.) Small chemical fire truck is to be replaced in the near future. Formal training for potential fire brigade members and fire field exercises for all refinery personnel.

PLANT EMPLOYEE FIRE PROTECTION TRAINING PROGRAM

- I. Which employee Groups receive training - All
- II. Frequency of training - (live fire training at least every 2 yrs.) - Each year
- III. Scope of training - Pumper fire truck operaton, dry chemical, fire hose (1-1/2" & 2-1/2")
- IV. Training facilities - Description. Terminal Fire Company training facilities and equipment. Simulated refinery fires - extinguishment techniques.
- V. Records of employee training - Yes
- VI. Employee Groups not receiving training - Why? Office workers at Anchor Building
- VII. Who is responsible for training program - Safety Manager
- VIII. Are professional schools on fire protection being utilized - University Extension Service Industrial Fire Suppression Courses attended on campus.

FIRE LOSS INVESTIGATION AND RELATED RECORDS

- I. Describe plant fire loss investigation program -
Safety engineers coupled with maintenance, terminal, operations and other personnel who are involved.
- II. Check fire/loss reports - Recorded
- III. Investigation responsibility - Safety Department
- IV. Loss report distribution - Corporate, refinery manager, insurance and other designated people
- V. Action taken on Information gained from Investigation - Immediately as feasible
- VI. Plant management supervision - Excellent

FIRE PROTECTION

I. Private Outside Protection

A. Water Supply:

1. Source - City Water Main 16" on east and west side
2. Distribution System (Including sectional control) - Loop system throughout refinery
3. Sectional Valves checked at least weekly - No
4. Hydrants - (type and spacing) - Mueller, American Darling and custom made
5. Monitor Nozzles - Stationary with adjustable nozzles
6. Fire Hose - Fire boxes at strategic locations
7. Tested annually - Annual test conducted at 200 psi for 5 minutes. Changed every four years or sooner, if needed.

II. FIRE PUMPS:

A. Model or Type	Driven by	Rated Capacity	Rated Discharge-psi	Rated Speed	Manual or Automatic
4-Gardner Denver	Diesel	1500 gpm	150 psi	1750	Manual
2-Detroit V-71	Diesel	2000 gpm	150 psi	1900	Auto & Manual

- B. Pump started (at least weekly) using automatic or remote means - Yes, pump mechanics are responsible for this.

III. PUBLIC PROTECTION

A. Public Water Supply - City Main

1. Source - 16 in. line on east and west sides
2. Volume - 40-50 psig

B. Distribution System and Hydrants - None

C. Public Fire Department -

1. Paid or Volunteer - None

IV. Automatic Sprinklers

- A. Water Supply - Fire lines
- B. Alarms - None
- C. Dry or Wet Systems - Wet

- D. Portions Not Sprinklered - Yes
- E. Age of AS Heads - 3 years
- V. Water Spray
 - A. Manual - Yes
- VI. First Aid Fire Appliances
 - A. Extinguishers - 514
 - B. Standpipe and Hose - 20 - 1-1/2"
- VII. Motorized Equipment
 - A. Trucks, Trailers, etc. - 2 fire trucks; 300 gal. of water, 100 gal. of AFFF, 2 - 150 lb. dry chemical chambers, 2 foam trailers - each, 300 gallons of XL-3 foam
- VIII. Special Hazard Protection
 - A. Deluge System - Yes
 - B. Monitor Nozzles - Yes
 - C. Carbon Dioxide - Yes
 - D. Foam - Yes
 - E. Dry Chemical - Yes
 - F. Halon 1301 - Yes, Computer Building
- X. Watchman and/or Security Guards
 - A. Number - 17
 - B. Own Employees or Outside Agency - Advance Industrial Security
 - C. Area Covered - Entire Champlin property
 - D. Patrol Frequency - 24 hour surveillance
 - E. Patrols Recorded - 2 radio equipped patrols
 - F. Radio Equipped - 5
- XI. Private Fire Brigade - See Separate Report

WATER TEST DATA SHEETS

Fire Pump Tests are recorded on the Water Test Data Sheets which are part of the inspection report.

Each fire pump is tested flowing close to rated discharge, preferably at the test header or from the hydrant used in previous tests.

The most recent five (5) test results are retained on the report. When a sizable change from previous tests is observed, the appropriate corrective recommendation should be made.

Where multiple fire pumps are involved, capacity flow tests should be made, concentrating on areas of high value and/or greatest fire water demand.

UNIT EMERGENCY SHUTDOWN PROCEDURE

- I. Does each unit have a pre-planned emergency shutdown procedure?
Written emergency procedures are in the operating manuals of each unit.
- II. How are emergency shutdown procedures posted? None observed
- III. Are emergency shutdown procedures rehearsed? There is no emergency training program.
- IV. Are units equipped with Blowdown facilities? Yes
- V. What facilities are provided for Blowdown discharge?
 - A. Flare System? Yes
 - B. Blowdown Tank? Yes
- VI. Depressuring Systems (A vapor-depressuring system designed to reduce vessel pressures to one-half the relief valve set pressures in 10 to 15 minutes should eliminate most vessel failure hazards during a fire).
 - A. Is system provided with remote control valves? In new plant