DOW
U. S. A.
Consolidated Audit Program

GLYCOL I PLANT OPERATIONS

Date of Report: 12/19/96

Superintendent: Charles Jackson, Bldg., 2901 LAD

cc: Buck Bailey, Bldg. 3301W, LAD
Chris Messelt, Bldg. 3502W, LAD
Leigh Hill, Bldg. 2901, LAD
Julie Broome. Bldg. 6650, LAD

Enclosed are the recommendations from the various audits for your response. According to the Dow U.S. Area Consolidated Audit Program Guidelines and the OSHA Process Safety Management (PSM) standard 1910.119, you must develop an implementation plan as a response to the recommendations. **The plan must include the name(s) of the employee(s) assigned to each action item along with an expected and actual completion date for each item.**

Please note that efforts have been made by the Functional Audit Teams to help prioritize each recommendation. They will be identified as: M = Must Do, (based on compliance issues, government regulations, Dow policies or S&LP) and HR = Highly Recommended, (necessary to mitigate an anticipated or potential hazard).

It is the responsibility of the plant/department supervision to communicate the results of the consolidated audit to all employees. Communication must include the results of the Process Hazard Analysis. PHA's include the Reactive Chemicals, Chemical Exposure Index (CEI), Process Safety and Loss Prevention/Fire/Burner Management audit and the Employee Survey Results. This must be completed within 90 days after the audit report date and documented.

Please send your approved implementation plans to Connie Kalencki, Bldg. 3502W by February 14, 1997. We will forward a copy to members of the Core Audit Team and the appropriate section to the Functional Team Leaders.

Enclosed Audit Recommendations:

1. Process Hazard Analysis
2. Occupational Health Audit
3. Laboratory Audit
4. Electrical Reliability Audit
5. Reactive Chemical Audit
6. Security Audit
7. Loss Prevention/Fire Audit
8. Safety Audit
9. Hazardous Materials Transportation Review

Howard Wilkinson, Administrator
LAD Consolidated Audit Program

DO A 045430
CONFIDENTIAL

LAD PROCESS HAZARD ANALYSIS (PHA's)

Recommendations:

M 1. Communicate results of the Consolidated Audit to plant personnel within 90 days after the audit report date and document.

Guidelines For Communicating Process Hazard Analysis (PHA's) To Employees

The OSHA Process Safety Management (PSM) Standard (29CFR 1910.119) requires that facilities covered by this standard perform a formal process hazard analysis, communicate the results of this analysis to plant employees whose work assignments are in the process and who may be affected by the recommendations or actions.

Currently the LAD Consolidated Audit Process include PHA's (reactive chemical reviews, hazardous materials transportation reviews, chemical exposure index audits, fire & explosive index reviews).

The following guidelines can be used to communicate the Process Hazard Analysis (PHA's) to plant employees. Communication to employees may be done in a regular scheduled safety meeting or during a safety training day and documented.

REACTIVE CHEMICAL REVIEW:

A. Review all worst case scenarios identified by the plant and LAD Reactive Chemicals Committee. Make sure that plant personnel have a thorough knowledge of the reactive chemicals potential. Discuss the safe operating limits and consequences of deviation. Discuss the reactive chemical control systems including hardware, software and procedures. Discuss all other safeguards or action plans that are aimed at avoiding and mitigating the consequences of each scenario.

B. Review the recommendations from the LAD Reactive Chemicals Committee and the plant action plans to correct the recommendations.

C. Review the results of the employee interviews which are done by the LAD Reactive Chemicals Committee during the Consolidated Audit and the plant follow-up actions to address any deficiencies.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

CHEMICAL EXPOSURE INDEX REVIEW:

The Chemical Exposure Index (CEI) provides a simple method of rating the relative acute health hazard potential to people in neighboring plants or communities from possible chemical release incidents. Absolute measures of risk are very difficult to determine, but the CEI system will provide a method of ranking one hazard relative to another.

A. Review the list of plant hazardous chemicals that were evaluated by the plant.

B. Review the worst case scenarios and calculated CEI value. This shall include dispersion data and charts that were developed from the plant CEI review.

C. Review all actions required to prevent the worst case. It may be a simple case of reviewing employee job responsibilities from an existing plant emergency drill. Any preventive maintenance, thickness checks, Technology Center recommendations, visual inspections and recommendations from the consolidated audit team should be reviewed also.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

FIRE & EXPLOSION INDEX:

The Fire & Explosion Risk Analysis System is a step-by-step objective evaluation of the realistic fire, explosion and reactivity potential of process equipment and its contents. The purpose of the F&EI system is to: 1) Quantify the expected damage of potential fire, explosion and reactivity incidents in realistic terms. 2) Identify equipment that would be likely to contribute to the creation or escalation of an incident. and 3) Communicate the F&EI risk potential to management.

A. Review the plant F&EI process units and classified hazard levels ("heavy", "moderate" etc.). See Table 6, pg. 38 - F&EI Guide, 7th edition.

B. Review the list of process units in your plant that were reviewed.

C. Review the evaluation of realistic fire, explosion and reactivity potential of the process unit and its contents. (Depending on the level of hazard, certain process equipment spacing, process equipment/piping standards and loss prevention principles are applied to the process to minimize the hazard level).

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

OCCUPATIONAL HEALTH AUDIT
(Date: Tuesday, December 2, 1996)

AUDIT TEAM: Harvey Cavalier, Bruce Heinze, Dan Jones

PLANTCONTACT: Harvey Cavalier

ATTENDING: Harvey Cavalier, Bruce Heinze, Dan Jones, Howard Wilkinson, Charles Jackson

WRITER: Bruce Heinze

GENERAL INDUSTRIAL HYGIENE/MEDICAL

OSHA Form #2203, "Job Safety and Health Protection", and the Safety Department's bulletin board posting "Employee Rights Under The VPP and OSHA" which explain the rights of workers protected by these programs were posted.

Recommendations:
M 1. The Chemical & Physical Agent Inventory(CPAI) needs to be reviewed and updated for 1996.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HAZCOM PROGRAM
The written program and MSDSheets were current. The results of monitoring are being communicated to the individuals involved in a timely manner.

Recommendations:
M 1. The equipment and contents cross reference file in the Plant IH Manual needs to be reviewed and updated for 1996.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 2. The monitoring results for CLR employees needs to be sent to their employer.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 3. Portable containers (e.g., 55 gallon drums, 5 gallon pails, etc.) in the process area need to be labeled in accordance with Dow labeling requirements.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HEARING CONSERVATION

The written program was current. Hearing protectors were readily available. The noise regulation was posted.

Recommendations:
None at this time.

RESPIRATORY PROTECTION

The written program was current. Air taps were labeled in the control room. Respirator cleaning stations were clearly identified and had cleaning supplies readily available.

Recommendations:
M 1. Storage of respirator face pieces attached to auxiliary air supplies for breathing air bottles needs to be upgraded for units located in control room area.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 2. The semi-annual evaluation of the plants respiratory program needs to be completed for 1996.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 3. Dust mask should be worn when operating sandblasting unit in Maintenance Shop until leaks in the system are repaired.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

PERSONAL PROTECTIVE EQUIPMENT

The written Personal Protective Equipment program was current.

Recommendations:

None at this time.

ERGONOMICS

Plant personnel attended the Save-A-Back presentation.

Recommendations:

None at this time.

THERMAL STRESS

Recommendations:

None at this time.

VENTILATION

Hood surveys were current.

Recommendations:

M 1. Leak(s) in sandblasting cabinet system need to be repaired to prevent blasting media escaping to atmosphere.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 2. Housekeeping around sandblasting cabinet needs to be addressed.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

WELDING

Health hazard and welding rod hazard signs were posted.

Recommendations:
M 1. Welding curtains should be shortened to provide an opening of two feet at floor level.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

ASBESTOS

The written Asbestos program was current.

Recommendations:
M 1. Deficiencies on the Annual Inspection form need to be corrected and so documented.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

RADIATION

Not applicable.

LABORATORY AUDIT
(Wednesday - December 20, 1996.)

AUDIT TEAM: Howard Wilkinson, Sidney Hood

PLANT CONTACT: Sidney Hood

WRITER: Howard Wilkinson, Al Ribes

All action items from the December 14, 1993 lab audit was completed. The Glycol I lab was found to be in excellent condition. Housekeeping was excellent. Equipment manuals are available to employees. Storage area was found to be in excellent condition (storage space is available, samples are separated, old samples have been discarded).

RECOMMENDATIONS:

M 1. If you continue to use Mercury filled thermometers, a procedure needs to be developed and communicated to cover clean-up if one is broken.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

ELECTRICAL RELIABILITY AUDIT SUMMARY
(October 8, 1996)

AUDIT TEAM: Billy Stears, Phil Bruder

PLANT CONTACT: Ray Johnson

WRITER: Bill Stears, Phil Bruder

INTRODUCTION:

The electrical reliability audit for Glycol I and Tank Farm was conducted in October 8, 1996 as per the Five Point Electrical Reliability Program. The overall condition of the electrical assets of Glycol I are good and the overall condition of Tank Farm are fair.

Those items identified with an index of 4 or higher in the Electrical Reliability report need some attention and require a response. Please refer to the report.

Glycol I

Recommendations:

M 1. Update and post Safety Electrical One Line Diagram. L14 and L83 is not shown feeding TR-15. MCC 6-A not shown on SEOLD.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M 2. Proper labeling of motors per S&LP S-214.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

DO A 045437
CONFIDENTIAL

M 3. Electrical Room Door: Install warning and exit signs or lights per OSHA 1910.38 (Q) B-1512 and MCC 6A.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

M 4. Check MP 5C - running very hot.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

HR 5. Paint the following equipment:

LBS 12	MPD 2B
LBS 83	MPD 102A
MCC 6A	

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

HR 6. Install Lockable Switches on all control stations.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

HR 7. Field junction boxes not installed in accordance with LGE-0370-00. (i.e.)

IJB 1403	IJB 1200
IJB 1401	R-4
IJB 1900	

Recommended that all junction boxes be checked for compliance with LGE -0370-00.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

DO A 045438
CONFIDENTIAL

HR 8. Cable trays are overfilled and broken.
Repair as needed:

A. Cable tray above B 1505 is overloaded.
B. Cable tray by AH7 is broken.
C. Cables out of tray by DV 1205 A.
D. Cables not tied to cable tray by E 300 A.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 9. Replace missing conduit covers by:

FJB 6102
IJB 1403
AD- 10 A
AD - 10 B

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 10. Seal opening in building 1511 and MCC 6A.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 11. Repair hole in MCC 12 section H5.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 12. Ground switch handle on L 14 and L 83.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

DO A 045439
CONFIDENTIAL

Tank Farm

Recommendations:

M 1. Post a current Safety Electrical One Line Diagram in all MCC building's.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M 2. Ground motors in accordance with G7C 0104 - 00, P 111 A&B.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M 3. Electrical Room Doors: Install warning and exit signs or lights per OSHA 1910.38 (Q).

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M 4. Install emergency lights and smoke detectors in all MCC's.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 5. Paint and repair the following MCC buildings:

MCC-D MCC-C MCC-A
MCC-6 MCC-F MCC-E

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

DO A 045440
CONFIDENTIAL

HR 6. Paint the following equipment:

XFMR-C	MCC-6
XFMR-F	Switch Gear for P 111 A&B

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 7. Add Nitrogen Pad to XFMR-F.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 8. Remove abandoned cable in North piperack.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 9. Tie cable to cable tray B MCC-D.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 10. Replace missing conduit covers by PP-I.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

HR 11. Repair or replace corroded cable trays.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

REACTIVE CHEMICALS AUDIT
(Tuesday - December 3, 1996)

AUDIT TEAM: Buck Bailey, Joe Schell, Gerald Wagener

ATTENDING: Howard Wilkinson, Joe Schell, Charles Jackson, Leigh Hill, Buck Bailey, Julie Broome, S. M. Hood, Kenny Chemin, Roger Thompson, Gerald Wagener

PLANT CONTACT:

WRITER: Gerald Wagener

During the "walk-through" inspection, a spot check of the procedures and IPT modules was done. The results were excellent--Pertinent reactive chemical hazards and lines of defense are clearly listed. Also, random interviews of the operations personnel was done to check the deployment of reactive chemical knowledge (SOS's scored 75% and the OS's scored 90%).

Recommendations:
M 1. Bring/document closure to the following recommendations from the 1994 New Superintendent Review:

A) Document procedures and safeguards in place to avoid reactivity of methocel pilot plant vent with Glycol 1 vent to TOX.
B) Improve reliability of vent Cl2 analyzer flow switches.
C) Resolve proper location of PO pump temperature thermocouples.
D) Develop a chemical compatibility chart for Glycol 1 (perhaps this should be a global effort for the Technology Center.
E) Develop lines of defense for runaway reaction in PO Absorbers.

Action Taken/To Be Taken:

Responsibility	***Expected Completion Date***	***Actual Completion Date***

M 2 Develop a reactive chemical manual for Glycol 1 and centralize all of the reactive chemicals files for the plant (this includes concerns and follow-up from previous review, all the worse case scenarios and lines of defense, chemical compatibility chart, and pertinent reactive chemical data.

Action Taken/To Be Taken:

Responsibility	***Expected Completion Date***	***Actual Completion Date***

DO A 045442
CONFIDENTIAL

M 3 Perform positive ID testing on PO absorber bed material before placing in service to insure that it is diatomaceous earth and not something else.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 4 Concerning the hydrogen source for TPG hydrogenation: Currently, the plant is depending on COA for proper ID. Ask the Tech Center if there are any known contaminants (perhaps acetylene) that could cause a runaway reaction. If so, analysis should be done.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 5 Concerning the results of the random interviews of operations personnel: Determine if the sampling was representative and, if so, consider re-emphasizing reactive chemicals training.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

SECURITY AUDIT SUMMARY
(Tuesday - December 3, 1996))

AUDIT TEAM: Joe Goodwin

PLANT
CONTACT:

WRITER: Howard Wilkinson, Joe Goodwin

Employees challenge strangers in their work areas. A sign-in/out log is available for visitors to the plant in the Control Room. Emergency communications and alert systems are in place and working well.

Keep up the good work.

<u>Recommendations:</u>
None at this time

DO A 045443
CONFIDENTIAL

LOSS PREVENTION/FIRE/BURNER MGMT./CEI REVIEW
(Date: Tuesday, December 3, 1996)

AUDIT TEAM: Buck Bailey, Bill Franklin, Leigh Hill, Steve Janda

PLANT TEAM: Leigh Hill

ATTENDING:

PLANT CONTACT: Leigh Hill

WRITER: Buck Bailey

INTRODUCTION:

Following is a list of recommendations from the recent Consolidated Audit at the Glycol 1 plant. These were developed from a standard Loss Prevention questionnaire, plant inspection, and discussion with the staff and the Technology Center.

OPERATING DISCIPLINE

Recommendations:

1. This topic was reviewed and there are no recommendations for further action.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

CHEMICAL EXPOSURE

Recommendations:

M 1. Complete the CEI plot plan documentation to show the extent of the exposure area for the spill scenario. Set up a permanent PHA / CEI file to comply with the OSHA documentation practices.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

DO A 045444
CONFIDENTIAL

PROCESS HAZARD ANALYSIS/HAZOP

Recommendations:

M 1. Complete the F&EI plot plan documentation to show the potential damage areas for the calculated cases. Contact Engineering to get a permanent drawing made of the plot plan showing the circles of involvement for the calculated cases. Set up a permanent PHA/F&EI file to comply with the OSHA documentation practices.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M 2. Review the two HAZOP studies that have been conducted at Glycol 1 to be sure all recommendations have been acted upon. File in a permanent PHA file for OSHA documentation.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

FIRE PROTECTION SYSTEMS

Recommendations:

HR 1. Update the Fire Protection Plat Plan as a part of the T-300 area sprinkler project.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

CRITICAL INSTRUMENT SYSTEMS

Recommendations:

M 1. The Critical Instrument L.P.P. 15.4 has recently been updated and the Louisiana Division Instrument Department has taken a lead role in reviewing the various plant's programs. Contact them to have someone from the plant technical staff as a primary contact for reviewing and updating the critical instruments list and test procedures.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

DO A 045445
CONFIDENTIAL

PRESSURE VESSELS

Recommendations:

None at this time.

INSURANCE PACKAGE

Recommendations:

M 1. Complete the compilation and review of the various documents of the Insurance Package for communication with the Corporate Loss Prevention and Insurance departments.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

BURNER MANAGEMENT:

Recommendations:

M 1. Schedule a review meeting with Loss Prevention and the Mod5 burner management control engineer to discuss the THROX burner program controls. Complete the Mod5 burner management audit questionnaire prior to the meeting.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M 2. Update the THROX burner management documentation package to comply with the current Loss Prevention Principle 13.1.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

DO A 045446
CONFIDENTIAL

FACILITY SITING

Recommendations:
M 1. An area of special emphasis by OSHA is the inclusion of control room / office siting considerations as part of the plant PHA's. Summarize in the audit questionnaire features of the building locations and other safety systems that contribute to personnel protection. (Ex. Separation from PO, gas monitors, fire protection systems, smoke detectors, etc.)

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

MISCELLANEOUS:

Recommendations:
M 1. Update the questionnaire to reflect the few changes made during the pre-audit. Keep the updated copy on file as the original Consolidated Audit / PHA document for OSHA record keeping purposes.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

SAFETY AUDIT
(Tuesday, December 3, 1996)

AUDIT TEAM: Don Jones, Howard Wilkinson, Julie Broome, Eddie Supple, Brian Pope, Wayne Turner and Pam Usie

PLANT TEAM: Don Denova

ATTENDING: Charles Jackson, Don Jones, Julie Broome, Roger Thompson, Howard Wilkinson, Don Denova

PLANT CONTACT: Don Denova

WRITERS: Don Jones, Howard Wilkinson,

SAFETY QUESTIONNAIRE

A. **Program Structure and Planning**
No Recommendations

B. **Employee Participation**
No Recommendations

C. **Contractor Safety**
No Recommendations

D. **Accident/Incident Investigation and Reporting**
No Recommendations

E. **Audits**
No Recommendations

F. **Safe Work Practices**
No Recommendations

G. **Emergency Planning and Means of Egress**
No Recommendations

H. **Employee Training**
No Recommendations

I. **Safe Operation of Motor Vehicles and Motorized Handling Equipment**
No Recommendations

J. **Off-The-Job Safety**
No Recommendations

EMPLOYEE SURVEY

HR 1. Review Pre-Audit Safety Survey results and take appropriate action.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

DO A 045448
CONFIDENTIAL

DOCUMENTATION REVIEW AND FIELD AUDIT

AUDIT TEAM: Julie Broome, Roddey Peebles, Pam Usie, Eddie Supple, Mike Wetsel

M 1. Consolidated audit needs to be circulated and follow-up items need to be reviewed with personnel. Opportunity should be given for employee comments. Documentation should be kept showing review and follow-up on any comments. (OSHA 1910.119)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 2. Document review of FEI and CEI with plant personnel. Cover worst case scenario and show plot plan with radius of exposure circles. (OSHA 1910.119)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 3. Label HAZCOM Book for MSDS sheets. (OSHA 1210.1200)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 4. Ensure refresher training of employees is complete and documented. (OSHA 1910.119)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 5. Consult with employees on frequency of refresher training. Document survey of employees on refresher training frequency. (OSAH 1910.119)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 6. Review PSM piping registration program and inspection results with employees.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 7. Review and reinforce location of MSDS manual with contract employees. (OSHA 1910.1200)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 8. Ensure operators are aware of critical operating procedures and their location on the computer. (OSHA 1910.119)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 9. Supporting documentation for '93 audit—CEI, FEI, Reactive chemicals—was not found during documentation audit. Information should be easily accessible. CEI, FEI, reactive chemicals sections must be retained for life of equipment. (OSHA 1910.119)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 10. Post plant safety policy with plant superintendent signature. (OSHA VPP)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 11. Update division safety policy in control room on bulletin board. (OSHA VPP)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 12. Need sandblast manometer installed to do flow checks. (OSHA 1910.94 (4) (a) & (b))

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 13. Update fall protection inspection checklist used on C9 inspection. (Need to have engineering data to perform inspection of any permanently installed fall protection.) (S&LP S-328 III. d)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 14. Document completion or include work orders on C9 inspection items to allow for tracking of follow-ups to deficiencies. Recommend routing inspections through the safety coordinator to ensure documentation is complete prior to filing. S&LP S-330

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 15. Plant orientation needs to be updated—several inaccurate scenes (use of mouthbit respirator for work). OSHA 1910.1200

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 16. Any block indoctrination tests which indicate a score of less than 100% or show items are missed must also show review of correct information with the individual. OSHA 1910.119

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 17. Need to update and post list of jobs not requiring permits or onsite (removing/ running conduit, pulling wire are too general to be listed). (USA-4 & LAD-4 II. A& B)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 18. PSM piping files need to be completed with owner signature and inspector signature. Work orders should also be cross referenced to specific deficiencies/items found. OSHA 1910.119 & S&LP S-334

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 19. Repair intercom by DV-4001 (load station).

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 20. Harnesses/lanyards not tagged and improperly stored (load rack, Building 1505, I&E shop, maintenance shop, mezzanine area in shop). Audit areas for non-compliance and remove any untagged or improperly stored equipment. (S&LP S-328 III. d)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 21. Evaluate fall prevention on tanks in tank storage area. (S&LP S-328 Attachment 1)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 22. Install or repair handrail on structure south of DV-1203. (S&LP S-328)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 23. Oxygen reading is 25% on AH-10 (Horn is off on many of them). AH-6 oxygen meter horn is on but need appears stuck at 20.9% Audit analyzer houses for proper functioning of oxygen instrumentation and alarms. (USA-5, LAD-5 IV A&B Enclosure entry)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 24. Place analyzer house #11 bottle on grating to prevent corrosion. S&LP S-209 Attachment 1 D.

DO A 045452
CONFIDENTIAL

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 25. Post entrance requirements on door to AH-2. LAD-5 E

Action Taken/To Be Taken
Responsibility *Expected Completion Date* *Actual Completion Date*

M 26. The wire securing cylinder behind AH-2 is only acceptable for short term installations. Permanent cylinders should be stored using a chain or metal strap. (S&LP S-209 Attachment 1) S&LP S-209 Attachment 1 A.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 27. Evaluate replacing R-4 decking. It is badly corroded.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 28. Monogoggle sign laying on ground by E-256A should be posted.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 29. One of the Five minute air pack cabinets by C-2C is empty. Restock or remove.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 30. Evaluate modifying or removing unsupported 2" line above P37.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 31. Repair chain monoggogle signs around T-200.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 32. Ladder south of D-62 needs gate. (OSHA 1910.23 (a) (2))

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 33. Repair eye wash on safety shower in diked area of DH-1202B. (S&LP E-5)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 34. Evaluate support on utility air station #3.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 35. Repair intercom by E256C.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 36. Re-hang monogoggle sign (laying on deck) in D2 area.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 37. Replace or repair railing by AH-11. Top rail is missing (2 foot section) by AH-11 2nd deck. S&LP S-328

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 38. Evaluate steps on ladders by DV-1261. First and last step is too large. Consider adding concrete platform or additional step.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 39. Label start/stop position on P-300C/D. Start/stop positions unreadable P-300 C/D.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 40. Evaluate replacing grating south side of E-310. Grating is corroded.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 41. Pipe south of E-152A is labeled hot, but is painted orange like nitrogen. Consider using alternate color to orange if the line is not a nitrogen line.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 42. Repair holes in grating just south of AH-2 (trip hazard). Also, evaluate securing the grating as some grating is more flex than others. (OSHA 1910.22 (a) (3))

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 43. Evaluate placement of hazard/warning signs on deck around/above D-102. Caution sign is turned so visible coming down steps. Signs says to notify CR. No signs on ladders.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 44. Replace jack stands by E-130 and with line off of E-108B. They appear to be homemade with no readable capacity or anti slip rings. Evaluate permanent methods of support if these stands are not for temporary use. (S&LP S-217)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 45. Evaluate cage on ladder (east of E-710 to deck to safeties). Ladder is close to unprotected handrail where fall could result to ground.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 46. Large step from platform to ladder on top of T700. Consider extending cage to handrail behind ladder.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 47. Evaluate modifying steps to piperack by roadway west side of plant—tread depth appears to be too short.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 48. Empty and full escape packs are stored together in I&E shop. These should be separated and clearly labeled.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 49. TDC room needs to be inspected for housekeeping–doors open, covers off, ladder guard not used. Aisle on mezzanine level of TDC room was cluttered and also has some unprotected floor openings (south wall).

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 50. Storage shelf is about to fall down and needs repair on 2nd level of I&E shop.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 51. 2nd level of I&E shop must have capacity posting.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 52. Wooden box outside of pipe threader lean-to (maintenance shop) is busted. Nails exposed. (Contains alignment clamps.) Box should be repaired or destroyed.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 53. Railing on mezzanine level in maintenance shop is too low to be guardrail for fall prevention (S&LP S-328).

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 54. Safety equipment required for grinder in maintenance shop has some handwritten requirements which may be ignored. Proper permanent sign should be installed. S&LP S-217 II A.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 55. Capacity of lifting device in shop should be posted. S-217 III. D.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 56. Nylon chokers in millwright area hard/impossible to read labels. Chokers should be removed from service or returned to tool room. S&LP S-216 IV C.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 57. Rehang Do Not Enter sign by DV-1262. Sign down.

DO A 045457
CONFIDENTIAL

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 58. Post and mark exits in maintenance shop.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 59. Evaluate changing orientation of handle on safety shower by DV-3. Handle to shower is vertical instead of horizontal—could be hard to activate.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 60. Beware of Obstructions sign in tank farm needs to be repaired.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 61. Emergency phone #'s are incorrect in tank farm (DV-3 and DV-4). Correct signs.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HAZARDOUS MATERIALS TRANSPORTATION REVIEW (HMTR) AND DISTRIBUTION FACILITIES ASSESSMENT (DFA)
(Date of Review and Assessment: 12/12/96)

AUDIT TEAM: Dean Smith, L.C.(Skipper) Hughes

PLANT TEAM: Sidney Hood

PLANT CONTACT: Glenda Townsend, Pat Lars

LOGISTICS CONTACT: Sue Grissom

WRITER: Dean Smith

Areas Reviewed: Rail Car Loading / Unloading
Cargo Tank Loading / Unloading
D.O.T. Compliance

		Transportation Mode(s)		
Chemicals Reviewed	DRI #	Rail	Hwy	(All incoming)
Propylene Oxide	4	yes	yes	
Propylene Dichloride	3	yes	Intermodal	
Carbon Tetrachloride and Crude stream	4	yes	no	
Perchloroethylene and Crude stream	4	yes	no	
Allyl Chloride PDC	4	yes		Incoming

All areas of the HMTR were satisfactory.

Items from the previous Consolidated Audit:

Recommendations: All items from the previous audit have been addressed satisfactorily.

DISTRIBUTION FACILITY ASSESSMENT - DFA

Compliance related items:

M

1. Loading / Unloading Check lists for Rail Cars and Cargo Tanks Check lists are being used for a pre-inspection and post inspection of loading and off-loading of tank cars and cargo tanks (inclusive of tank trucks and intermodal containers). However, some items that need to be documented (which may be included in the training/procedures) are not included.

DO A 045459
CONFIDENTIAL

Recommendation:
Please refer to the latest edition of the N.A. Hazardous Materials Distribution D.O.T. compliance check sheet. Procedures and check sheets may be located on the following server: \\LASIM2 PCCOMMON \ DOT \ Dottrng > Rcl&ulck = Rail car load and unload check sheet > Tcldunld = DOT procedures for T/C load/unload > Ttldunld = DOT procedures for T/T load/unload. You may want to wait for the new edition of the S&LP's to come out that may include other requirements in this area.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M

2. Check lists Legibly Signed: Some check lists reviewed did not have a legible signature. Review with loaders to ensure a legible signature is used - this could include one or two initials and the last name.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M

3. Connected Transfer Lines: D.O.T. requires that transfer lines be disconnected immediately after the transfer process has taken place and for any other reason which may cause a halt to the transfer process. There has been no exact definition of what "immediately" means - other than interpretations rendered by our local FRA inspector. "Immediately" to him is no longer than it takes to shut the system down and secure the car from spills, leaks or drips. This does not include enough time to pull and analyze a sample. Recommend following as closely as possible to the above interpretation.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

Tank Truck Area - Safety:

HR

1. Transfer hoses at the P.O. loading station - recommend removing unnecessary hoses that have not been used in a while. One hose flange was noted as being fairly well rusted on the gasket face.

Action Taken/To Be Taken:

Responsibility ***Expected Completion Date*** ***Actual Completion Date***

M

2. How does the loader know whether or not the loading hose is within testing time frame. A tag is affixed to the hose when it is first tested and registered in the pressure vessel program - but after that, who or what system keeps up with testing. (See additional comments in Rail area)

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

Tank Truck Area - Loss Prevention

HR

1. Why is there no foam fire suppression system at the P.O loading rack - has S&LP and Fire Protection reviewed this area?

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

Rail Car Area - Safety:

M

1. Setting Brakes: At the time of inspection, two t/c's did not have brakes set as per D.O.T. Railroad may or may not set brakes on the t/c's that they "spot" at the loading rack. All cars in the process of being loaded or unloaded must have the brakes set well.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR

2. Product load arms:

   Recommend as part of the plant/loading facility C-9 check list, regular inspection and/or servicing of the swivel joints of each loading arm.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

DO A 045461
CONFIDENTIAL

M

3. Regular Testing Of Load/Off-load Tubes and Hoses: As of this review, most transfer hoses are initially tested and logged with the divisions pressure vessel program. With the next issue of the S&LP's, this process will be transferred to the plant and/or appropriate logistics area. Also, testing requirements and frequency will change. Recommend putting in place a system to acuurately track the status of all loading/off-loading tubes and hoses.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

Rail Area - Environmental:

HR

1. The rail car - central loading rack - has drip pans for small leaks, however has no contain - ment for a major spill. This was noted in the Environmental Supt. Audit. Recommend reviewing need for containment and/or diversion.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

Additional comments: The Glycol I plant is essentially not responsible for the Central Load Rack; this responsibility now lies with the Site Logistics group.

Thanks to Skipper Hughes for all his efforts in helping to complete this review and assessment; the Glycol I plant and the Central Load rack have done a great job in improving this operation over the past several years - keep up the good work !

DO A 045462
CONFIDENTIAL