DOW NORTH AMERICA
~~CONSOLIDATED AUDIT PROGRAM~~ **Dow U.S.A.**

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

Methanes Plant

Date of Report: 6/4/95

Superintendent: Don Taylor, Bldg. 4601

cc: Roddey Peebles, Bldg. 1601, LAD
Maurice Oubre, Bldg. 6650, LAD
Chris Messelt, Bldg. 3502W, LAD
John Murphy, Bldg. 101, Freeport, TX
Buck Bailey, Bldg. 3301W, LAD
Vick McMurry, Bldg. 4601, LAD
Terry Leigh, Bldg. 1601, LAD

Enclosed are the recommendations from the various audits for your response. According to the Dow North American 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 completion date for each item. Your plan must be reviewed and approved by the area Major Manager by July 7, 1995.

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 and documented.

Please send your approved implementation plans to Connie Kalencki, Bldg. 3502W by July 15, 1995. 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. LAD Process Hazard Analysis
2. Laboratory Audit
3. Electrical Reliability Audit
4. Reactive Chemical Audit
5. Security Audit
6. Hazardous Materials Trans. Audit
7. Loss Prevention/Fire Audit
8. Safety Audit

The Occupational Health Audit recommendations will follow in a separate audit report.

Howard Wilkinson

Howard Wilkinson, Administrator
LAD Consolidated Audit Program

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DO A 032378
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LAD PROCESS HAZARD ANALYSIS

Recommendations:

M 1. Communicate results of the Consolidated Audit to plant personnel within 90 days after the audit report date. The communication must include a brief summary of the Reactive Chemical Review, Employee Survey results, Chemical Exposure Index results, Safety & Loss Prevention/Fire/Burner Management Audit results.

Action Taken/To Be Taken:

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

OCCUPATIONAL HEALTH AUDIT
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AUDIT TEAM: Dave Albert, Jackie Paul

PLANT IH CONTACT: Mike Young

WRITER: Maralee Marchant

LABORATORY AUDIT

(April 5, 1995 - 10:30 a.m. - 12:00 p.m.)

AUDIT TEAM: Howard Wilkinson, David Smith, Al Ribes

PLANT CONTACT: Terry Vavassuer

WRITER: Howard Wilkinson, Al Ribes

The Methanes Plant laboratory seems to be running well since the last audit. All action items from previous audit have been completed and closed out. Cabinets are labeled and emergency shut-offs are in place for GC's.

Recommendations:

M 1. Remove all re-agents that are not needed in the process (calcium carbide). ✓

Action Taken/To Be Taken:

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

HR 2. Clean out all spray paint cans. ✓

Action Taken/To Be Taken:

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

M 3. Install sign on refrigerator door "Not Explosive Proof". ✓

Action Taken/To Be Taken:

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

ELECTRICAL RELIABILITY AUDIT SUMMARY

(February 1995)

AUDIT TEAM: Mike Gee

PLANT CONTACT:

WRITER: Mike Gee

The electrical reliability audit for Chlorinated Methanes was conducted in February, 1995 as per the Five Point Electrical Reliability Program.

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.

Condition of electrical assets of Methanes show a commitment to continuous improvement. The audit team finds that CMP has an overall good condition.

<u>Recommendations:</u>

HR 1. Ten - fifteen percent of motors have grounds loose or not grounded to frame. Ground Motors per L7C-0101-00 par 5.4. Train block electrical personnel in proper grounding practices. CE

Action Taken/To Be Taken:

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

HR 2. Ninety percent of cables in field junction box have the overall shield ungrounded. Connect overall shields to ground. Train block Instrument and Electrical personnel in proper grounding practices. CE

Action Taken/To Be Taken:

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

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M 3. Safety Electrical One Line diagram is not current or correct. Correct SEOLD. ✓

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 4. Bus system not identified by SEOLD I.D. Label all switchgear bus with SEOLD I.D. ✓

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

REACTIVE CHEMICALS AUDIT

Thursday, November 10, 1994 (8:30 a.m. to 11:00 a.m.)

AUDIT TEAM: Gerald Wagener, Don Jones, John Monroe, Joe Schell, Buck Bailey, Scott Hanrahan, Mark Mitchell, Seb Corbino

PLANT CONTACT: Kevin Kelley

ATTENDING: Don Taylor, Julie Clebert, Joe Schell, Gary Rizzo, Buck Bailey, Vic McMurray, Jim Haney, Gerald Wagener, Barry Young, Kevin Kelley, Howard Wilkinson

WRITER: Gerald Wagener

RECOMMENDATIONS FROM REACTIVE PRE-CONSOLIDATED AUDIT REVIEW (served as new superintendent review)
Thursday, November 10, 1994 (8:30 a.m. to 11:00 a.m.)

M 1. Concerning the inadvertent use of titanium parts in dry chlorine:

a. Add a statement to the block safety indoctrination package on the reactive chemical hazards of using titanium parts in dry chlorine service. ✓

b. Consider adding a checksheet that addresses this hazard to maintenance procedures for equipment used in chlorine service. ✓

Action Taken/To Be Taken:

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

HR 2. Concerning the reactive chemicals review slides for the Thermal Chlorinator: Add "Evacuation of personnel from reactor area during start-up" to the lines of defense for avoiding injuries due to a possible deflagration/detonation ✓

Action Taken/To Be Taken:

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

M 3. Consider the following scenario and make sure appropriate safeguards are in place to avoid a runaway decomposition: D-1 Tar pot is blocked in and 235# steam flow does not shut off. If the decomposition temperature is not known ARC data should be generated.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

HR 4. Review the materials of construction in the sulfuric acid demister and make sure that they are compatible over the range of temperature and % sulfuric acid that will be encountered in normal and upset conditions.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

RECOMMENDATIONS FROM CONSOLIDATED AUDIT FINAL WRAP-UP MEETING
Monday, April 18, 1995(10:30 a.m. to 11:30 a.m.)

HR 1. There is no reactive chemicals contact person for the Methanes plant. This responsibility should be assigned to someone.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

HR 2. Consider developing a reactive chemicals IPT module and include all the major worst case scenarios and lines of defense.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

HR 3. Summaries of reactive chemicals reviews including the worst case scenarios and lines of defense should be reviewed with the outside operators and boardmen. ✓

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 4. Review job procedures and if there is a reactive chemical hazard associated with the job being performed consider adding a paragraph listing the hazard. ✓

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 5. Train operators on the reactive hazard of inadvertently using a titanium part in dry chlorine service. Most did not know when interviewed. ✓

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 6. Plant communications book could be an excellent means for communicating current reactive chemical issues. We only found one entry pertaining to reactive chemicals (Sealants database information from Kevin Kelley). Information on the incident involving methyl chloride in a tank car with aluminum baffles could not be located. ✓

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 7. Worst case scenarios for the various sections of the plant are not included with the procedures. Consider either including them with the procedures or include them in the new Dynamic Data Display system. ✓

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 8. R-250 procedures for dumping spent catalyst: The specific hazard of spontaneous ignition of organic material on the spent alumina is not listed. The comment in the procedures is "because catalyst is so dry, we need to spray water mist on the catalyst as it is being sucked from the reactor to comply with landfill regulations." ?

Action Taken/To Be Taken:

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

HR 9. PSA carbon change out procedures need to be reviewed and the flammability hazard of dry carbon in air need to be included. ✓

Action Taken/To Be Taken:

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

HR 10. A listing and summary of reactive chemicals data was not available for the Methanes plant. This needs to be done and we recommend that the Tech Center assists. ?

Action Taken/To Be Taken:

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

SECURITY AUDIT SUMMARY
(April 18, 1995)

AUDIT TEAM: Al Lott

PLANT CONTACT: Bruce Miles

WRITER: Howard Wilkinson/Al Lott

Employees challenge strangers in their work areas. A sign-in/out log is available for visitors to the plant in the office area.

Emergency communications and alert systems are in place and working well.

Keep up the good work.

Recommendations:

No Recommendations at this time.

HAZARDOUS MATERIALS TRANSPORTATION REVIEW (HMTR) AND DISTRIBUTION FACILITIES ASSESSMENT (DFA)

AUDIT TEAM: Dean Smith

PLANT CONTACT: Julie Clebert

WRITER: Dean Smith

On April 13, 1995 an HMTR/DFA was conducted at the CMP as part of the Louisiana Division Consolidated Audit Program.

Chemicals of concern:	DRI #	TRANSPORTATION MODE: Rail	Hwy	Marine	PRODUCT (P) FEED (F)
Amylene (1-Pentene)	3	Pkg			F
Carbon Tetrachloride	4				
Chloroform	3	R	TT	Y	P
Cyclohexane	3		TT		F
Methanol	3			Y	F
Methyl Chloride	4	R/ISO/TT			P
Methylene Chloride	3	R	TT	Y	P
Sulfuric Acid		R			F

HMTR QUESTIONNAIRE: All areas reviewed are in excellent shape ! Continue development of information resources for the KPC "notebook". Resources should include MSDS, ER/TED, T.I.M.E. info., Temperature vs Pressure curves, clean-up or neutralizing techniques reactivity info and/or source(s).

DISTRIBUTION FACILITIES ASSESSMENT
D.O.T./Dow Compliance Area:

M 1. At the time of the plant walk-through, the training coordinator was out of town for several days; please send a copy of one of your loaders and E/R team members training records for the 1994 and YTD training.

HR 2. Please contact me either by phone or E-mail whenever you have an incoming shipment (residue or load) of hazmats that has a securement problem - especially if it happens to be shipped from another Dow facility.

All other areas are in great shape. Thanks to Julie Clebert for all of her efforts to make this a very thorough and efficient review.

LOSS PREVENTION/FIRE/BURNER MGMT./CEI REVIEW

(Tuesday, April 18, 1995)

AUDIT TEAM: Kevin Alexcee, Bill Franklin, Roddey Peebles

PLANT CONTACT: Jim Haney, Kevin Kelley, Steve Ledoux

ATTENDING: Don Taylor, Julie Clebert, Kevin Alexcee, Gary Rizzo, Buck Bailey, Vick McMurray, Jim Haney, Stephen Ledoux, Kevin Kelley, Howard Wilkinson, Barry Young

WRITER: Buck Bailey, Kevin Alexcee

Following is a list of comments and recommendations resulting from the Consolidated Audit / Loss Prevention audit:

The plant is generally in good condition with respect to Loss Prevention design, due in part to the recent plant capital expansion. Many of the current Loss Prevention design considerations were incorporated into that project.

FLAMMABLE MIXTURES

HR 1. Review the low pressure flammables storage tanks to assure that the controls and monitoring is adequate to prevent oxygen contamination.

Action Taken/To Be Taken:

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

FACILITY SITING - DRAINAGE

HR 1. When the sprinkler system is next tested, verify that the surface drainage is adequate to avoid area flooding.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

EQUIPMENT / BUILDING LOCATION AND FIRE RISK

HR 1. Review cable tray passage ways to be sure they are properly sealed to comply with good electrical installation guidelines.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 2. Review the possibility of installing a combustible gas monitor in the fresh air intake to office and control room.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

CHEMICAL EXPOSURE INDEX (CEI)

HR 1. Review the layout of chlorine area monitors to reconsider the need for additional installations, specifically in the NW quadrant of the plant.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 2. Some of the chlorine instrumentation valving is showing signs of corrosion. Also, some indications of gasket deterioration has been observed.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 3. Wrap up the documentation of the CEI calculations package.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 4. The Dow "Process Risk Management Guideline" requires a HAZOP study for any scenarios areas where the CEI exceeds 200. Since Dow has reviewed this company guideline with OSHA, it is also an OSHA 1910.119 requirement. Review with Loss Prevention to determine the scope and timing of the HAZOP study activity.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HAZOP

See recommendation in the CEI section.

ELECTRICAL SYSTEMS

HR 1. Any recommendations from the Electrical Maintenance Dept. 5-Point Audit should be included here.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

FIRE PROTECTION SYSTEMS

HR 1. Review and update the plant Fire Protection Plot Plan to comply with recent changes made in the area coverage. Contact Loss Prevention to initiate the activity.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 2. Review the smoke detector needs for B-4610 with the Fire Protection Dept.

Action Taken/To Be Taken:

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

HR 3. Review the CGD coverage in the new area of the plant.

Action Taken/To Be Taken:

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

HR 4. Combustible gas detectors should be included on the critical instruments program.

Action Taken/To Be Taken:

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

CRITICAL INSTRUMENT SYSTEMS

HR 1. Review instruments test procedures. Several are listed as "Missing" or "Wrong name".

Action Taken/To Be Taken:

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

HR 2. Some procedures do not indicate the exact process condition the instrument is intended to respond to. Trip or alarm set points should be noted exactly in the procedure to assure proper calibration checks.

Action Taken/To Be Taken:

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

HR 3. Several of the procedures are redundant. Review these to be sure they provide adequate instruction for the instrument technician.

Action Taken/To Be Taken:

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

EMERGENCY BLOCK VALVES

HR 1. Review vessels with >5,000 gal. capacity to see if they comply with the current Tech Center and L.P.P. guidelines.

Action Taken/To Be Taken:

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

HR 2. Consider identification of EBV's per L.P.P. 1.5.5.

Action Taken/To Be Taken:

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

PRESSURE VESSELS/PRESSURE RELIEF

HR 1. A division plan is in progress to identify and document PSV's that must comply with requirements outlined in the OSHA 1910.119 Regulation. Coordinate this activity with the Process Engineering Dept. to develop a plan of action and schedule. Your area Safety Superintendent is also assigned to be involved in this effort.

Action Taken/To Be Taken:

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

CRITICAL EQUIPMENT

HR 1. Review the critical equipment list for anything not spared that would extend a plant outage due to lack of a replacement. (Ex. Thermal Chlorinator start up-rectifier, major compressor parts, etc.) Red Fire Bricks

Action Taken/To Be Taken:

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

EMERGENCY PLAN

M 1. Parts of the "Emergency Plan" questionnaire were incomplete. Review to be sure these are adequately included in the plant procedures.

Action Taken/To Be Taken:

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

INSURANCE PACKAGE

M 1. Follow up with Loss Prevention to complete and review the insurance material that must be sent to the Corporate Loss Prevention office.

Action Taken/To Be Taken:

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

OSHA PROCESS SAFETY MANAGEMENT

M 1. Review the "Process Hazard Analysis" (F&EI, CEI, Reactive Chemicals) with the plant staff and operations and provide training on the process.

Action Taken/To Be Taken:

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

M 2. Conduct a PHA training meeting with the plant technical and supervisor staff. Schedule with Loss Prevention to present the training and provide material for further presentation to the operations employees. This will include F&EI and CEI.

Action Taken/To Be Taken:

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

The preparation and cooperation of the technical staff is appreciated very much. They started early and were well prepared for the pre-audit activity meetings.

Loss Prevention and the Fire Protection Department are available as necessary to be involved in any follow up activity.

SAFETY AUDIT

(April 18, 1995 -- 12:15 p.m. to 12:45 p.m.)

AUDIT TEAM: Don Jones, Howard Wilkinson, Pam Usie, Roddey Peebles, Eddie Supple

PLANT CONTACT: Brian Donnallo

ATTENDING: Kevin Kelley, Larry Young, Jim Haney, Roddey Peebles, Brian Donatto, Vic McMurray, Don Jones, Gary Rizzo, Julie Clebert, Don Taylor, Howard Wilkinson

WRITER: Don Jones, Howard Wilkinson, Roddey Peebles

Listed as follows is the Final CMP "Safety" Consolidated Audit Report. If you have any questions or comments, please contact Howard Wilkinson on the Questionnaire, me on the Documentation Review and Roddey Peebles on the Employee Survey/Field Inspections.

Thanks for the help!

EMPLOYEE SURVEY

Recommendations:

M 1. Based on the Safety Employee Survey results and review with the CMP staff, action plans should be developed and implemented to address the following areas:

a. Management Support: Questions 5,6,10
b. Employee Participation: Questions 12,13,14,15,16
c. Individual Responsibility for Safety: Questions 17,18, 19,20,22,24,26
d. Miscellaneous: Questions 27,28,29,30,31

Action Taken/To Be Taken:

Responsibility	Expected Completion Date	Actual Completion Date

SAFETY QUESTIONNAIRE

A. Program Structure and Planning

The Methanes plant recently re-organized its safety organization to better serve its employees. The new organization include a safety committee, six safety teams and a safety leadership team. Each team has its own safety responsibilities defined.

The plant superintendent actively participate in all plant safety programs and communicate through safety/tailgate meetings and letters. Safety expectation, objectives, goals and plans are defined and communicated. The Behavior Based safety program is presently being use to address employee behavior and reduce accidents/incidents.

Recommendations:

HR 1. Define/communicate and document a specified time for response to safety suggestions and unsafe conditions. ok

Action Taken/To Be Taken:

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

B. Employee Participation

No Recommendation

C. Contractor Safety

No Recommendation

D. Accident/Incident Investigation and Reporting

Each employee has the responsibility to report all incidents to their immediate supervisor. Incidents are investigated promptly and communicated. Root cause analysis is use to determine cause.

Recommendations:

M 1. Develop a plan to track corrective actions to closure on accident/incident reports. Done

Action Taken/To Be Taken:

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

E. Audits

No Recommendations.

F. Safe Work Practices

Recommendations:

1. Conduct annual performance audits of safe work permits, confined space entry and lockout/tagout. Also, deviations must be track to completion.

Action Taken/To Be Taken:

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

M 2. Define who can authorize a confined space entry permit. Done

Action Taken/To Be Taken:

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

G. Emergency Planning and Means of Egress

No Recommendations.

H. Employee Training

Recommendations:

M 1. Documentation of training superintendent and technical employees new to the process must be maintained on file.

Action Taken/To Be Taken:

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

I. Safe Operation of Motor Vehicles and Motorized Handling Equipment

No Recommendations.

J. Off-The-Job Safety

No Recommendation

DOCUMENTATION REVIEW

A. Audits

No recommendations.

B. Basic Safety

M 1. Revise Plant Safety Policy per New Superintendent. Done

Action Taken/To Be Taken:

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

C. Unit Emergency Plans

M 1. Emergency drill documentation looks good. However, include name of each individual participating in drill instead of shift name.

Action Taken/To Be Taken:

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

D. Job Safety Analysis

M 1. The Communiqué Book is used for communicating changes in procedures, etc. However, all applicable employees are not signing and dating.

Action Taken/To Be Taken:

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

E. Accident/Incident Investigations

M 1. Several corrective actions are well beyond the expected completion dates. Emphasis should be placed on completing these actions in a reasonable amount of time. However, in cases where the expected completion date cannot be met, a new expected completion date should be established. In addition, an explanation should be included as to why the original date was not met.

Action Taken/To Be Taken:

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

F. Safety and Health Suggestions

M 1. Several corrective actions on Unsafe Condition Reports are beyond the expected completion date. Response time needs improvement. Emphasis should be placed on responding in a reasonable amount of time. However, in cases where the expected completion date cannot be met, a new expected completion date should be established. In addition, an explanation should be included as to why the original date was not met.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

G. Safety Equipment Inspections & Checks

HR 1. Post C-9 checklist in control room.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

M 2. Perform checks on C-9 checklist and sign off on master on or before the due dates. All scheduled dates, next due date, last date, etc. blocks need to be completed.

Action Taken/To Be Taken:

Responsibility	*Expected Completion Date*	*Actual Completion Date*

M 3. Deficiencies identified during the C-9 inspections must be documented and corrective actions tracked to completion. Documentation must show:

* What corrective action was
* Who completed corrective action
* When corrective action was completed

Champs System is being utilized in some cases but not all. There needs to be a more consistent approach. In addition there needs to be some follow-up to assure that items listed in the Champs System have been completed.

Action Taken/To Be Taken:

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

H. Hazard Identification Inspections

M 1. Deficiencies identified during inspections must be documented and corrective actions tracked to completion. Documentation must show:

* What corrective action was
* Who completed corrective action
* When corrective action was completed

Action Taken/To Be Taken:

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

I. Predictive Preventive Maintenance

No recommendations.

J. Variances

No recommendations.

K. Contractors/Vendor/Visitor Orientation

M 1. Update plant orientation. Include test as part of the orientation. Done

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

L. Safety and Operations Training

M 1. Some formal training on Mod V not being documented, Documentation must include the subject, instructor, date and signature of employees that attended.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 2. Maintain technical employee training documentation on file and make sure accessible in a reasonable amount of time.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 3. Training in areas that is not applicable for a particular employee should be noted as "not applicable" on the documentation.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 4. Documentation should include signature of employee participating in the training.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M. Safety Committee Activities

No recommendations.

N. Safe Work Practices

No recommendations.

FIELD INSPECTION #1

A. Lockout/Tagout System

1. Red tagged equipment over ninety days - masters 6522, 6807, 6821, 6844, 6643, 6703, 7081. Some of these masters have been signed off but not cleared while others were never accepted.

M Recommendation: Need to clear up all masters over ninety days by either retagging or permanent isolation.

Action Taken/To Be Taken:

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

2. On field check of master 7375 the air was not tagged as indicated on the master.

M Recommendation: Train/retrain people on proper isolation and lockout/tagout procedures.

Action Taken/To Be Taken:

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

3. On field inspection of master 7345 the nitrogen purge check valve assembly was not as per S&LP 313.

M Recommendation: Train employee on S&LP 313 check valve assembly.

Action Taken/To Be Taken:

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

B. <u>Safe Work Permit</u>

The safe work permit audit was conducted on 3/1/95. The results of the audit are attached.

M <u>Recommendation</u>: Follow-up to correct all deficiencies noted in the audit.

Action Taken/To Be Taken:

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

C. <u>Control Board Area</u>

1. Step ladder located inside Emergency Response Room blocking door.

M <u>Recommendation</u>: Remove ladder and store properly.

Action Taken/To Be Taken:

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

2. An out of date plant "Critical Safety Procedures" book was found in the control room.

M <u>Recommendation</u>: Remove

Action Taken/To Be Taken:

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

3. Uncovered garbage can in designated eating area.

M <u>Recommendation</u>: Cover Can

Action Taken/To Be Taken:

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

D. Office Area

1. Project trailer

HR a. Needs general housekeeping. Lots of things cluttering floors of empty offices.

b. Lighted exit sign not lit.

M Recommendation: Repair

Action Taken/To Be Taken:

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

2. Maintenance Building

a. Janitors closet cluttered with broken chair and junk.

HR Recommendation: Perform housekeeping.

Action Taken/To Be Taken:

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

b. Fire extinguisher sitting on floor in hall.

HR Recommendation: Secure

Action Taken/To Be Taken:

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

3. Main Office Building

a. Uncovered garbage can in lunch room.

M Recommendation: Cover can

Action Taken/To Be Taken:

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

b. Unsecured fire extinguishers throughout building.

HR Recommendation: Secure all fire extinguishers

Action Taken/To Be Taken:

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

c. Old Computer Room in need of a lot of housekeeping. Lots of junk and trash.

HR Recommendation: Perform housekeeping

Action Taken/To Be Taken:

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

d. Fire extinguishers in old computer room with mounting bracket pulled loose from the wall.

HR Recommendation: Repair

Action Taken/To Be Taken:

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

HR e. Area behind old control board needs housekeeping attention.

Action Taken/To Be Taken:

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

f. Five gallon container with no label behind old control board.

M Recommendation: Relabel or properly discard.

Action Taken/To Be Taken:

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

E. Lab Facilities

See lab audit portion of consolidated audit

F. Motor Control Centers

See Loss Prevention and Electrical portions of consolidated audit.

G. Maintenance Shop and I&E Areas

1. Pedestal grinder

a. Tool rest not at or above centerline of the wheel.

M Recommendation: Position tool rest to be at or above centerline of wheel.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

b. Wheel is not square

M Recommendation: Dress wheel to remove groove in center of wheel

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

c. No warning/instructions signs posted

M Recommendation: Install instruction/warning signs

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

2. Pipe threading machine

a. No warning/instruction signs posted

M Recommendation: Install signs

Action Taken/To Be Taken:

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

3. Drill Press

a. No warning/instruction signs posted

M Recommendation: Install signs

Action Taken/To Be Taken:

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

4. Horizontal band saw

N/A

5. Welding and cutting area

a. No welding shield around area where welding occurs

M Recommendation: Install curtain or welding shield.

Action Taken/To Be Taken:

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

6. Other equipment

   a. Jaws on bench vise badly warn

M Recommendation: Replace jaws

Action Taken/To Be Taken:

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

7. Hand held power tools

M a. Drill with locking trigger - remove drill until trigger lock removed.

Action Taken/To Be Taken:

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

M b. Jig saw with paddle trigger and no safety - Remove jig saw

Action Taken/To Be Taken:

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

8. Hand tools

   No Recommendations

9. Lifting tools

   No Recommendations

10. Safety Equipment

   No Recommendations

11. Housekeeping

    a. Corners and side walls not cleared of excess material

HR Recommendations: Perform general housekeeping

Action Taken/To Be Taken:

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

H. Warehouses

No Recommendations.

I. Spare Parts Storage

No Recommendations

J. Motorized Vehicles

No Recommendations

FIELD INSPECTION #2

A. Loading Rack

M 1. Compressed gas cylinder outside AH #12 tied with nylon strap. Replace nylon strap with chain.

Action Taken/To Be Taken:

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

HR 2. The tank truck loading shack appears to be an air tight building, i.e. rubber gaskets on doors and windows. Check to make certain that with the air conditioner off that the building is not depleted of oxygen if occupied.

Action Taken/To Be Taken:

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

M 3. Quick opening valve not plugged on tank truck waste pot. Plug all quick opening valves in hazardous service.

Action Taken/To Be Taken:

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

HR 4. Hoses causing tripping hazard on tank truck loading deck. Perform housekeeping.

Action Taken/To Be Taken:

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

M 5. Unlabeled container in tool cabinet. Label or properly dispose contents of container.

Action Taken/To Be Taken:

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

M 6. Chainfall on loading filter deck held by rusty choker. Also there is no weight limit on beam holding choker and chainfall. Need to support chainfall with beam with marked capacity equal to or greater than chainfall. Discard rusty choker.

Action Taken/To Be Taken:

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

HR 7. Hoses causing tripping hazard on loading filter deck. Perform housekeeping.

Action Taken/To Be Taken:

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

HR 8. Hoses causing tripping hazard on south end of tank car loading rack. Perform housekeeping.

Action Taken/To Be Taken:

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

HR 9. There is only one safety shower/eyewash station on north upper deck of tank car loading rack. Evaluate the need for a second shower/eyewash.

Action Taken/To Be Taken:

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

M 10. Hazardous waste drums in non-designated storage area near tank car loading rack. Remove drums to designated storage area and properly dispose.

Action Taken/To Be Taken:

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

HR 11. The waste pots are all purged with N2 through the use of N2 hoses. Hard pipe nitrogen to these waste pots instead of using hoses.

B. Sulfuric Acid Area (C-650)

M 1. Nitrogen fittings used to hook to process line without proper block and bleed arrangement. Install nitrogen ties with proper block and bleeds.

Action Taken/To Be Taken:

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

HR 2. Numerous safety showers without eyewash nozzle covers. Emphasize to all employees, Dow and Contract, that these nozzles need to be covered when not in use.

Action Taken/To Be Taken:

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

C. Acid Area (C-610)

HR 1. Area chains down on the south side. Reinstall chains.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 2. A line at the top of first stairs is supported with #9 wire. Install correct support.

HR 3. D-610 deck needs housekeeping attention.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

D. General Area

M 1. Hoist in field not properly marked with rated capacity. Beams supporting hoists not marked with rated load capacity. Label both hoists and beams with rated capacity.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 2. Coupling guard on BL-500 doesn't completely cover rotating parts. Install guard to protect against rotating parts.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 3. No entry instructions on the east door of AH #10. The instructions posted on the west door to the analyzer house calls for two green lights to be on before entering. There are no lights. Install proper/correct entry instructions and install green lights or change instructions.

Action Taken/To Be Taken:

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

HR 4. AH #7 has no door handle and only one green entry light for O2 content. Install door handle and check to see if second green light for entry is required.

Action Taken/To Be Taken:

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

HR 5. Chainfall and rope used to support a line in the pipe rack north of T-8. Install proper support.

Action Taken/To Be Taken:

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

M 6. The instrument shop is using Hansen fittings on plant air. OSHA requires that a dedicated fitting be used for breathing air. Hansen fittings are Dow's choice for breathing air in LAD.

Recommendation: Remove Hansen fittings in shop and make all employees aware of this requirement.

Action Taken/To Be Taken:

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

M 7. The compressed gas cylinder rack north of instrument shop has some unlabeled bottles. Label cylinders or properly discard.

Action Taken/To Be Taken:

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

HR 8. The maintenance shop needs housekeeping attention.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

DISTILLATION, CONDENSING & THERMAL CHORINATION AREA

M 1. Quick opening valves unplugged coming off of D-1300, D1302, P-1320A, dry vent east of P-1320A, D-100 and P-1555B. Plug all quick opening valves in hazardous service.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 2. The valves and piping coming off of dry vent are about hip high and could cause a problem to people trying to get to the intercom. Look at relocating the intercom.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 3. Install rack for fire hose north end of new train.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 4. Install hose racks by nitrogen stations.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 5. Unmounted fire extinguisher between T-155A and T-1830. Mount fire extinguisher

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 6. Safety Shower/Eye Wash station 2/PB-38402/CD1-450C next to T-1555B is too close to the platform located behind the shower, potentially causing hazard to person in shower during a chemical exposure. Rotate shower ninety degrees to remove away from platform.

Action Taken/To Be Taken:

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

HR 7. Housekeeping Items

a. Bolts/hoses, etc. by P-1320's
b. Channel locks by T-1555B and P-1750
c. Valve handle on platform by T-1555A
d. Nuts, bolts, etc. on top of building next to R-1300
e. Trash on platform in between fans EC 1540
f. Sling and tarp on platform by fans EC-1510
g. Hoses lying on deck above E1500
h. Roll of cable left on deck next to R-1300
I. Trash inside vessel skirts D1150, 1140, 1110, C1260
j. Unlabeled container by cooling tower pump 1020B

Action Taken/To Be Taken:

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

HR 8. Landing platform for transition ladder on T-1830 seems too small. Consult Engineering to see if platform meets all OSHA and Engineering requirements.

Action Taken/To Be Taken:

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

HR 9. Entrance to ladder to the upper deck by V-170B in partially blocked by piping from K-1750 to E1750. Rotate ladder ninety degrees to allow for unrestricted access.

Action Taken/To Be Taken:

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

M 10. No inspection date on fire extinguisher #98, only hydro test date marked. Have fire department inspect extinguisher and date.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 11. Old decontamination tags still on valves by fin fan coolers #2978, 2979, 2981, 2984 and 2987. Remove old tags.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 12. Labeling coming off of nitrogen station under fin fan. Relabel station.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 13. Scaffold #15576 on south side of E-1430 has access ladder right next to handrail causing to little clearance for climbing. Move access ladder to east side.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 14. Steam outlet on top deck by E1302 with no label. Label all utility steamlines.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 15. Scaffold bracing on walking platform above E1302 causing tripping hazard. Remove hazard or use warning device to alert people to the hazard.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 16. No ladder gate on the short ladder down to deck M1 lines to R-1300. Install ladder gate.

Action Taken/To Be Taken:

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

M 17. Grating clips not bolted down on third deck, R-1300, north side. Secure clips.

Action Taken/To Be Taken:

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

M 18. Utility station not labeled upper R1300 deck, north side. Label all utility stations.

Action Taken/To Be Taken:

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

M 19. Cylinders by AH-15 sitting on ground instead on grating to prevent bottom corrosion. Install grating for cylinder to sit on.

Action Taken/To Be Taken:

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

M 20. Fire extinguisher on AH #14 & 15 not labeled/numbered.

Action Taken/To Be Taken:

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

HR 21. Actuator hanging by rope by T-1500. Install permanent support.

Action Taken/To Be Taken:

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

M 22. Nitrogen station not labeled on the deck by fire extinguisher #109. Label as per S&LP standard 313.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 23. Safety shower and eye wash #31, south side of cooling tower, second deck has a tripping hazard to anyone using the shower. Recommend rotating the shower ninety degrees to remove tripping hazard.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 24. The first step to the ladder to T-251 appears to be too high. Consult with Engineering to see if the distances are in compliance with OSHA and Engineering standards.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 25. The hand/off/auto switch to P-255B cannot be read. Relabel switch positions.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 26. Cylinder by AH #13 not on grating. Install grating under cylinder to prevent bottom corrosion.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 27. Quick opening valve between P1500 A & B, T-1500 to tank car not plugged. Plug all quick opening valves in hazardous service.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

HR 28. The alarm button on safety shower/eye wash station #28 is labeled "pinch point". Recommend mounting alarm button a few inches higher to remove as a pinch point.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 29. Several quick opening, unplugged, valves on vent line next to P1450C. Plug valves

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 30. Grating not completely secured around P1030 A&B deck, T-1500 deck, decking by V-1265. Recommend that all grating in plant be audited for proper securement since unsecured grating found in several locations.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

M 31. The nitrogen stations in the block have no painted backboards as required by S&LP 313. Install painted backboards.

Action Taken/To Be Taken:

Responsibility *Expected Completion Date* *Actual Completion Date*

SAFE WORK PERMIT AUDIT

DATE: 3/1/95

AUDITED BY: Brian Donatto, Roddey Peebles

PERMIT AUDITED: Pull fuses and disconnect electrically P-513B 3/1/95

Audit notes:

- In Section I-#4, "NONE" was checked under special hazards to protect against. Although "NONE" was checked, there were four special hazards checked.
- In Section I-#5, the special equipment to address the special hazards did not address all of the special hazards checked.
- Section II, Line and Equipment Openings was filled out. This did not fit the permitted job.
- Red tag master was not in the Permit Office.

PERMIT AUDITED: Dismantle scaffolding throughout the block - 3/1/95

Audit notes:

- In Section I-#5 of two different permits for dismantling scaffolding, the special equipment to address the special hazards did not address all of the special hazards checked.
- One permit was written to dismantle scaffolding throughout the block. This is too general. Permits needs to be more specific and additional permits written if necessary to cover different areas of the plant.

PERMIT AUDITED: Replace R-250 a tail line - 2/27/95

Audit notes:

- In Section I-#5 the special equipment to address the special hazards did not address all of the special hazards checked.
- In Section II-#3 was checked "N.A". This should have been checked "No". This job required supplied air which was addressed in the special equipment and special instructions. To do this work without breathing air would have required cleaning and purging.

PERMIT AUDITED: Run piping from oil cooler to seal on P-470 A - 2/27/95

Audit notes:

- Section I-#5 did not list special equipment to protect against thermal burns and skin contact checked in Section I-#4.

PERMIT AUDITED: Insulate RE-1540 A and R-250 a tail line - 2/27/95

Audit notes:

- Two different jobs in two different areas of the plant put on one permit. Should have written two permits.

PERMITS AUDITED: Insulation jobs on R-250 B

Audit notes:

- Worker list unacceptable. Workers should be listed on the permit or a crew roster should be used and attached to the permit. If a crew roster exists for red tagging on a job, then "See Roster" is acceptable.

PERMIT AUDITED: Pull P-201 B - 2/25/95

Audit notes:

- Section IV-Permit Close out not complete. Everything was checked off but permit worker closeout not signed.

PERMIT AUDITED: Install AOV to DR-101 - 3/1/95

Audit notes:

- Section I-#5 did not address all the special hazards checked in Section I-#4.

- Field audit conducted.

- Fitter was aware of hazards associated with the job.

- Permit had been reviewed with the fitter prior to beginning work.

- Fitter complimented the permit writer highly on the issuing of the permit and the detail of the on-site inspection.