

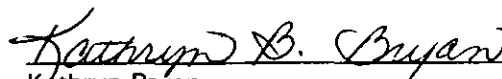
**PROCESS SAFETY MANAGEMENT AUDIT PROGRAM:
COMPLIANCE AUDIT GUIDELINES**

**VISTA CHEMICAL COMPANY
900 THREADNEEDLE
HOUSTON, TEXAS 77079-2990**

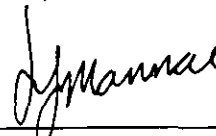
November 18, 1994



Wai Shan Lee
Environmental Specialist
Process Safety and Risk Assessment



Kathryn Bryan
Project Manager
Process Safety and Risk Assessment



Sam Mannan, PhD, PE, CSP
Division Director
Process Safety and Risk Assessment

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

**PROCESS SAFETY MANAGEMENT AUDIT PROGRAM:
COMPLIANCE AUDIT GUIDELINES**

The information contained herein is proprietary and provided with the understanding that it will not, without the expressed written permission of RMT/Jones and Neuse, Inc. be disclosed to any person who is not an employee of Vista Chemical Company. It is sincerely hoped that the information provided in this document will lead to an even more impressive safety record for the Vista Chemical Company. However, neither RMT/Jones and Neuse, Inc., its consultants, officers, directors, or employees warrant or represent, expressly or by implication, the correctness or accuracy of information presented in this document. The users of this document accept any legal liability or responsibility whatsoever for the consequences of use or misuse. For any conflicts between the information presented in this page and the contract governing this project, the terms in the contract will supersede the information presented in this page.

TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
1.0	INTRODUCTION	1
1.1	Regulatory Background	1
1.1.1	The PSM Rule	1
1.1.1.1	Application §1910.119(a)	1
1.1.1.2	Employee Participation §1910.119(c)	2
1.1.1.3	Process Safety Information §1910.119(d)	2
1.1.1.4	Process Hazards Analysis §1910.119(e)	3
1.1.1.5	Operating Procedures §1910.119(f)	3
1.1.1.6	Training §1910.119(g)	4
1.1.1.7	Contractors §1910.119(h)	4
1.1.1.8	Pre-Startup Safety Review §1910.119(i)	4
1.1.1.9	Mechanical Integrity §1910.119(j)	4
1.1.1.10	Hot Work Permit §1910.119(k)	5
1.1.1.11	Management of Change §1910.119(l)	5
1.1.1.12	Incident Investigation §1910.119(m)	5
1.1.1.13	Emergency Planning and Response §1910.119(n)	6
1.1.1.14	Compliance Audits §1910.119(o)	6
1.1.1.15	Trade Secrets §1910.119(p)	6
1.1.1.16	Appendices to the PSM rule	6
1.1.2	PSM Compliance Audit	6
1.2	Objectives of Vista's PSM Compliance Audit Program	7
1.3	Summary	7
2.0	PSM AUDIT POLICIES	8
2.1	Scope of the Audit Program	8
2.2	Frequency of Audits	8
2.3	Staffing for Audits	9
2.4	Pre-audit Activities	10
2.5	Conducting the Audit	10
2.6	Audit Reporting	11
2.7	Follow-Up	12
2.8	Audit Training	12
3.0	PSM COMPLIANCE AUDIT PREPARATION	13
3.1	Pre-audit Activities	13
3.2	Audit	15
3.3	Post Audit	16
3.4	Audit Facility and Equipment Requirements	16
4.0	PSM COMPLIANCE AUDIT GUIDELINES	27
4.1	Application § 29 CFR 1910.119(a)	29
4.2	Employee Participation § 29 CFR 1910.119(c)	30
4.3	Process Safety Information § 29 CFR 1910.119(d)	32
4.4	Process Hazards Analysis § 29 CFR 1910.119(e)	41
4.5	Operating Procedures § 29 CFR 1910.119(f)	46
4.6	Training § 29 CFR 1910.119(g)	51
4.7	Contractors § 29 CFR 1910.119(h)	54

TABLE OF CONTENTS
(Continued)

<u>SECTION</u>	<u>PAGE</u>
4.8 Pre-startup Safety Review § 29 CFR 1910.119(i)	60
4.9 Mechanical Integrity § 29 CFR 1910.119(j)	62
4.10 Hot Work Permit § 29 CFR 1910.119(k)	67
4.11 Management of Change § 29 CFR 1910.119(l)	70
4.12 Incident Investigation § 29 CFR 1910.119(m)	74
4.13 Emergency Planning and Response § 29 CFR 1910.119(n)	78
4.14 Compliance Audits § 29 CFR 1910.119(o)	81
4.15 Trade Secrets § 29 CFR 1910.119(p)	83

LIST OF TABLES

1-1 PROCESS SAFETY INFORMATION	2
3-1 LIST OF DOCUMENTATION REQUIREMENTS FOR PSM COMPLIANCE AUDIT	17
3-2 AUDIT SCHEDULE GUIDELINE	23
3-3 INTERVIEW GROUPS	24

APPENDICES**A REFERENCE DOCUMENTS**

1.0

SECTION 1.0 INTRODUCTION

The Process Safety Management (PSM) *Compliance Audit Guidelines* presented in this report were prepared by RMT/Jones and Neuse, Inc. (RMT/JN) to assist Vista Chemical Company (Vista) with their PSM audit program. PSM compliance audits are required under the OSHA PSM rule: 29 CFR 1910.119.

1.1 Regulatory Background

1.1.1 The PSM Rule

The PSM rule was published in the *Federal Register* on February 24, 1992. The objective of the rule is to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. The rule requires a comprehensive management program consisting of 14 elements: a holistic approach that integrates technologies, procedures, and management practices. A brief summary of the rule is provided here as background for the Vista PSM auditing program.

1.1.1.1 Application §1910.119(a)

- Applies to processes which involve chemicals at or above threshold quantities (specified in Appendix A) and processes which involve flammable liquids or gases on-site in one location, in quantities of 10,000 pounds or more (subject to few exceptions). Hydrocarbons fuels, which may be excluded if used solely as a fuel, are included if the fuel is part of a process covered by this rule.
- Does not apply to retail facilities, oil or gas well drilling or servicing operations, or normally unoccupied remote facilities.
- Although not part of this rule, 29 CFR 1910.109 (Explosives and blasting agents) has been revised to indicate that manufacturers of explosives and pyrotechnics must meet the requirements contained in 29 CFR 1910.119.

1-1

1.1.1.2 Employee Participation §1910.119(c)

This element of the rule requires developing a written plan of action regarding employee participation; consulting with employees and their representatives on the conduct and development of other elements of process safety management required under the rule; providing to employees and their representatives access to process hazard analyses and to all other information required to be developed under this rule.

1.1.1.3 Process Safety Information §1910.119(d)

This element of the PSM rule requires employers to develop and maintain important information about the different processes involved. This information is intended to provide a foundation for identifying and understanding potential hazards involved in the process.

The Process Safety Information covers three different areas, i.e., chemicals, technology and equipment. A complete listing of the process safety information that must be compiled in these three areas is shown in Table 1-1.

TABLE 1-1
PROCESS SAFETY INFORMATION

Chemicals	Technology	Equipment
Toxicity	Block Flow Diagram	Design Codes Employed
Permissible Exposure Limit	Process Chemistry	Materials of Construction
Physical Data	Maximum Intended Inventory	Piping and Instrumentation Diagrams
Reactivity Data	Safe Limits for Process Parameters	Electrical Classification
Thermal and Chemical Stability Data	Consequence of Deviations	Ventilation System Design
Effects of Mixing		Material and Energy Balances
		Safety Systems
		Relief System Design and Design Basis

1.1.1.4 Process Hazards Analysis §1910.119(e)

This element of the PSM rule requires facilities to perform a process hazards analysis (PHA). The PHA must address the hazards of the process, previous hazardous incidents, engineering and administrative controls, the consequences of the failure of engineering and administrative controls, human factors, and an evaluation of effects of failure of controls on employees. This element requires that the PHA be performed by one or more of the following methods or any other equivalent method:

- What-if
- Checklist
- What-if/Checklist
- Hazard and Operability (HAZOP) studies
- Failure Modes and Effects Analysis (FMEA)
- Fault Tree Analysis

The rule suggests a performance oriented requirement with respect to the PHA so that the facility will have the flexibility to choose the type of analysis that will best address a particular process. The initial PHAs must be completed according to the following schedule:

At least 25% must be completed by May 26, 1994.

At least 50% must be completed by May 26, 1995.

At least 75% must be completed by May 26, 1996.

100% must be completed by May 26, 1997.

1.1.1.5 Operating Procedures §1910.119(f)

The operating procedures must be in writing and provide clear instructions for safely operating processes; must include steps for each operating phase, operating limits, safety and health considerations and safety systems. Procedures must be readily accessible to employees, must be reviewed as often as necessary to assure they are up to date and must cover special circumstances such as lockout/tagout and confined space entry.

1.1.1.6 Training §1910.119(g)

The rule requires that facilities certify that employees responsible for operating the facility have successfully completed the required training. The training must cover specific safety and health hazards, emergency operations and safe work practices. Initial training must occur before assignment or employers may certify that employees involved in the process as of May 1992, have the required knowledge, skills and abilities to safely perform duties and responsibilities specified in the operating procedures. Refresher training must be provided at least every three years.

1.1.1.7 Contractors §1910.119(h)

The rule identifies responsibilities of the employer regarding contractors involved in maintenance, repair, turnaround, major renovation or specialty work, on or near covered processes. *The rule requires the employer to: consider safety records in selecting contractors; inform contractors of potential process hazards; explain the facility's emergency action plan; develop safe work practices for contractors in process areas; evaluate contractor safety performance; and maintain an injury/illness log for contractors working in process areas.* The rule also requires the contractor to train their employees in safe work practices and document that training, assure that employees know about potential process hazards and the employer's emergency action plan, assure that employees follow safety rules of facility, advise employer of hazards contract work itself poses or hazards identified by contract employees.

1.1.1.8 Pre-Startup Safety Review §1910.119(i)

This element of the PSM rule requires a pre-startup safety review of all new and modified facilities to confirm integrity of equipment; to assure that appropriate safety, operating, maintenance and emergency procedures are in place; and to verify that a process hazard analysis has been performed. Modified facilities for this purpose are defined as those for which the modification required a change in the process safety information.

1.1.1.9 Mechanical Integrity §1910.119(j)

This element of the PSM rule mandates written procedures, training for process maintenance employees and inspection and testing for process equipment including pressure vessels and

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

storage tanks; piping systems; relief and vent systems and devices; emergency shutdown systems; pumps; and controls such as monitoring devices, sensors, alarms and interlocks. PSM calls for correction of equipment deficiencies and assurance that new equipment and maintenance materials and spare parts are suitable for the process and properly installed.

1.1.1.10 Hot Work Permit §1910.119(k)

This element of the PSM rule mandates a permit system for hot work operations conducted on or near a covered process. The purpose of this element of the rule is to assure that the employer is aware of the hot work being performed, and that appropriate safety precautions have been taken prior to beginning the work. Since welding shops authorized by the employer are locations specifically designated and suited for hot work operations, the rule does not require a permit for hot work in these locations. Additionally, hot work permits are not required in cases where the employer or an individual to whom the employer has assigned the authority to grant hot work permits is present while the hot work is performed.

1.1.1.11 Management of Change §1910.119(l)

This element of the rule specifies a written program to manage changes in chemicals, technology, equipment and procedures which addresses the technical basis for the change, impact of the change on safety and health, modification to operating procedures, time period necessary for the change, and authorization requirements for the change. The rule requires employers to notify and train affected employees and update process safety information and operating procedures as necessary.

1.1.1.12 Incident Investigation §1910.119(m)

This element of the rule requires employer to investigate as soon as possible (but no later than 48 hours) incidents which did result or could have resulted in catastrophic releases of covered chemicals. The rule calls for an investigation team, including at least one person knowledgeable in the process (a contractor employee, if appropriate), to develop a written report of the incident. Employers must address and document their response to report findings and recommendations and review findings with affected employees and contractor employees. Reports must be retained for five years.

1.1.1.13 Emergency Planning and Response §1910.119(n)

This element requires employers to develop and implement an emergency action plan according to the requirements of 29 CFR 1910.38(a).

1.1.1.14 Compliance Audits §1910.119(o)

This element of the rule requires employers to certify that they have evaluated compliance with process safety requirements every three years and specifies retention of the audit report findings and the employer's response. Employer must retain the two most recent audits.

1.1.1.15 Trade Secrets §1910.119(p)

Similar to the trade secret provisions of the hazard communication rule, the PSM rule also requires information to be available to employees from the process hazard analyses and other documents required by the rule. The rule permits employers to enter into confidentiality agreements to prevent disclosure of trade secrets.

1.1.1.16 Appendices to the PSM rule

Appendix A: List of Highly Hazardous Chemicals (Mandatory). Contains a list of 137 toxic and reactive chemicals which present a potential for a catastrophic event at or above the threshold quantity. Provides a Threshold Quantity (TQ) for each chemical listed.

Appendix B: Block Flow Diagram and Simplified Process Flow Diagram (Non-mandatory).

Appendix C: Compliance Guidelines and Recommendations for Process Safety Management (Non-mandatory). Contains guidelines to assist employers in complying with the requirements.

Appendix D: Sources of Further Information (Non-mandatory). Lists organizations and documents that provide further information on process safety management.

1.1.2 PSM Compliance Audit

For completeness, paragraph (o) of the PSM rule which requires covered facilities to conduct PSM compliance audits is reproduced exactly and in its entirety here:

- (1) Employers shall certify that they have evaluated compliance with the provisions of this section at least every three years to verify that the procedures and practices developed under the standard are adequate and are being followed.
- (2) The compliance audit shall be conducted by at least one person knowledgeable in the process.
- (3) A report of the findings of the audit shall be developed.
- (4) The employer shall promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected.
- (5) Employers shall retain the two (2) most recent compliance audit reports.

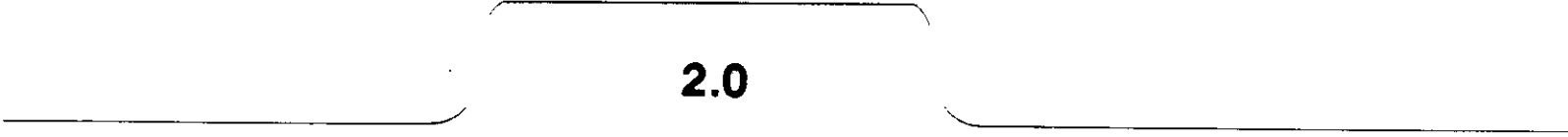
1.2 Objectives of Vista's PSM Compliance Audit Program

The objectives of Vista's PSM Compliance Audit Program include the following:

- Ensure that all Vista plants meet or exceed the minimum requirements specified by the PSM rule;
- Ensure homogeneity and coherence between PSM auditing procedures used by Vista plants;
- Ensure that deficiencies in PSM programs are identified expeditiously and procedures exist for correcting them; and
- Achieve the overall objective of a successful PSM program, i.e., reduce the frequency and consequence of catastrophic incidents.

1.3 Summary

This report is divided into three additional sections. Section 2 provides guidance on PSM auditing concepts including pre-audit activities, formation of audit team, conducting the audit, and finally ensuring follow-up and resolution of audit findings. Section 3 is a guideline for planning and organization of the audit meeting. Section 4 provides Vista's PSM audit guidelines which includes detailed descriptions on each of the audit protocol item. Explanation of regulatory requirements, guidance on evaluating plant information to assess compliance, and examples of typical PSM items of interest are also given in Section 4.



2.0

SECTION 2.0

PSM AUDIT POLICIES

Auditing of any program involves the systematic examination and review of the program using specific detailed auditing guidelines to determine whether it is being implemented in accordance with the overall guidelines established for that program. The objective of the audit is to verify that the program complies with the established guidelines. Any issues that require additional attention or special emphasis are identified as a result of the auditing exercise. The PSM compliance auditing procedures presented here are aimed at compliance with the requirements of 29 CFR 1910.119(o). PSM compliance auditing focuses primarily on the assessment and verification of those management systems, procedures, and practices that ensure that PSM programs are being implemented as required by the PSM rule.

The following subsections describe Vista Chemical Company's policies with regard to PSM compliance auditing. The policies cover the following areas:

- Scope of the audit program;
- Frequency of audits;
- Staffing for audits;
- Pre-audit activities;
- Conducting the audit;
- Audit reporting;
- Following up on the audit; and
- Audit training.

2.1 Scope of the Audit Program

The scope of a PSM compliance audit program may include a number of issues. However, for the purposes of this program, the scope is limited solely towards compliance with the PSM rule as described in 29 CFR 1910.119(o).

2.2 Frequency of Audits

Similar to the scope of the audit program, the audit frequency may also depend on a number

of factors. Of these factors, requirements of Federal and/or related state regulations generally represent the key driving force with regard to the minimum standard for the frequency for auditing of PSM programs. For the OSHA PSM rule, compliance audits are required to be conducted every three years to verify that the procedures and practices developed for the affected facility under 29 CFR 1910.119 are adequate and are being followed.

2.3 Staffing for Audits

The PSM rule requires that the PSM compliance auditing be conducted by at least one person knowledgeable in the process. The OSHA guidance document: ***OSHA 3133, 1992; Process Safety Management Guidelines for Compliance*** provides the following additional guidance:

Employers must select a trained individual or assemble a trained team to audit the process safety management system and program. A small process or plant may need only one knowledgeable person to conduct an audit. The audit includes an evaluation of the design and effectiveness of the process safety management system and a field inspection of the safety and health conditions and practices to verify that the employer's systems are effectively implemented. The audit should be conducted or led by a person knowledgeable in audit techniques who is impartial towards the facility or area being audited.

In order to follow the letter and intent of the PSM rule and the above-mentioned PSM guidance document, all PSM compliance audits will be conducted by a team constituted as follows:

1. The person conducting or leading the audit will either be a third-party contractor, or a Vista corporate employee, or a Vista employee from another plant. For plants conducting self audits, the person leading the audit must not have direct responsibility for the implementation of the PSM program.
2. Team members will be chosen for their experience, knowledge, and training and should be familiar with the processes and auditing techniques, practices, and procedures.
3. The size of the team will be determined based on the size and complexity of the plant to be audited.
4. The audit team will include personnel who are: a) familiar with the process and/or facility; b) experienced in the techniques involved in PSM; and c) experienced in the auditing process.
5. The audit team leader and team members will all have received training on audit techniques as specified in section 2.8 of this report.

Based on the above-mentioned policies, Vista plants may choose to select any one of the following options:

- Use of Vista personnel from other processes/facilities that do not have a direct involvement with the process/facility being audited;
- For plants conducting self-audits, ensure that the audit team leader is not directly responsible for the implementation of the PSM program;
- Use of a dedicated team of corporate staff auditors, or a team comprised of a single corporate staff auditor plus other Vista personnel not involved directly with the audited process/facility;
- Use of an independent audit team provided by an outside consultant familiar with PSM programs, or individual consultants which may either lead or assist teams made of other company staff or staff auditors.

2.4 Pre-audit Activities

The team leader of the audit team should develop a schedule for the PSM compliance audit and distribute it to the appropriate personnel well in advance. In consultation with the PSM coordinator, the team leader should develop a list and schedule for personnel who will be interviewed during the audit. The audit team leader should develop a list of documentation that the audit team may need to review during the audit. This document list should be conveyed to the plant PSM coordinator well in advance of the site visit. The audit team leader may also decide to start the documentation review before the actual site visit and evaluation. On the first day of the audit, a pre-audit meeting with appropriate personnel involved in the implementation of the PSM program should be held.

2.5 Conducting the Audit

The audit team will conduct the PSM compliance audit using the audit guidelines given in this report. Utilizing the audit protocol and schedule developed in the pre-audit stage, the audit team will systematically analyze compliance with the OSHA PSM rule. The audit team will review all aspects of the implementation and practice of each PSM element.

The audit guideline given in Section 3 includes specific items for interviewing plant employees. In some cases, the information supplied by the plant employees may conflict with the conclusions reached by review of documentation, procedures, and practices. For example,

during the audit, employee interviews will be conducted to verify employee involvement, employee access, and implementation of the PSM program. At the end of all scheduled interviews, the audit team will identify conflicting issues. Resolution of these conflicting issues will be accomplished by interviewing a number of additional personnel until the audit team is satisfied.

After the audit team has completed the audit, a close-out meeting will be held with the PSM coordinator and other appropriate personnel involved in the implementation of the PSM program. The audit team leader will present the preliminary findings at the meeting. The PSM coordinator and/or other appropriate plant personnel may at this time provide additional information to resolve any outstanding issues.

2.6 Audit Reporting

The final audit report should contain the follow items at a minimum:

- Identification of the process/facility being audited;
- The purpose of the audit;
- The names, titles, and affiliations of the members of the audit team;
- The date of the audit;
- The specific PSM elements and supporting documents, etc. which are the subject of the audit;
- A summary listing of findings; and
- A listing of those individuals/departments to which the audit report is distributed.

The language in the audit report should be such that it clearly communicates the findings of the audit in unequivocal terms with audit findings clearly supportable.

2.7 Follow-Up

Regardless of the effort spent in planning an audit program, the actual process of auditing, and reporting of the audit findings, all of this is meaningless unless the recommendations that come out of the auditing activity are acted upon in a timely manner. The findings of the audit can be used to develop a written action plan. Such an action plan would at a minimum include:

- 1) The recommendations for corrective actions;
- 2) A schedule agreeable to all those concerned for completion of remedial actions; and
- 3) The person(s) responsible for seeing that the remedial actions are implemented.

The action plan should be developed at the direction of the Vista plant manager. Periodic reviews (e.g., weekly, monthly meetings, etc.) should be conducted on the progress concerning correction of the various deficient elements with those individuals responsible for implementing remedial actions. A written record of the progress of the follow-up effort should be made for tracking purposes. Once it is felt that all corrective actions have been resolved, a written memorandum will be developed at the direction of the plant manager stating that all recommended corrective actions have been resolved.

2.8 Audit Training

PSM compliance audits will be conducted by personnel who are trained in the Vista audit procedures. The audit training will consist of training which will cover the following items:

- An overview of the company's general guidelines concerning the audit process which details how the audits are to be conducted;
- A detailed audit protocol which lists/specifies the major PSM program elements and what is needed for compliance with the specific performance standard to which the program is being compared; and
- Methodologies and formats for development of audit reports to document findings.

3.0

SECTION 3.0**PSM COMPLIANCE AUDIT PREPARATION****3.1 Pre-audit Activities**

The audit team leader should identify audit team members several weeks prior to the audit. The audit team should at a minimum include the following team members:

- Audit Team Leader;
- Facility Audit Coordinator (from the plant being audited); and
- Auditors (1-4).

The role of the audit team leader is to coordinate the entire audit process and set team member assignments, while the Facility Audit Coordinator is charged with the duty of setting up interviews, coordinating plant field checks and spot checks, and locating documentation. The Facility Audit Coordinator should not be assigned any audit duties other than coordination and scheduling. Auditors will be charged with actual audit activities as specified by the Audit Team Leader.

Three weeks or more prior to the audit the following activities should be done:

1. Audit Team Leader should:

- Set audit date with plant management;
- Identify team members and confirm their availability for audit dates;
- Submit pre-audit and audit documentation list to Facility Audit Coordinator (Table 3-1); and
- Prepare a rough schedule outline for the audit and submit to the Facility Audit Coordinator (Table 3-2).

2. Facility Audit Coordinator should:

- Assemble pre-audit documentation and send to the Audit Team Leader;
- Reserve conference area for interviews and work area for audit team;

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

- Begin locating all audit documentation;
- Identify appropriate personnel for interview groups (Table 3-3); and
- Review plant safety policy and set up time for safety training for all team members, if necessary.

Two weeks prior to the audit:

1. Audit Team Leader should:

- Make audit team assignments for documentation reviews, field checks, and interviews;
- Input information/findings from the Vista H&S audit into the PSM audit protocol;
- Send a copy of the audit protocol and guideline to each team member along with an explanation of each team members duties/assignments for the audit;
- Supply each team member with a list of safety equipment that is required at the plant site;
- Inform all team members of safety training requirements and schedules for training, if appropriate; and
- Check on progress of Facility Audit Coordinator, assist as necessary.

2. Facility Audit Coordinator should:

- Schedule personnel for interviews;
- Schedule personnel to assist in field checks and tours;
- Finish locating documentation for audit;
- Submit interview schedule to Audit Team Leader;
- Submit documentation location Table to Audit Team Leader; and
- Submit meeting room locations to Audit Team Leader.

One week prior to the audit:

1. Audit Team Leader should:

- Finalize any outstanding audit details;

- Finalize audit schedule;
 - Send audit schedule to team members;
 - Obtain computers for audit team members (as necessary); and
 - Make electronic copies of all audit materials for team members.
2. Facility Audit Coordinator should:
- Finalize any outstanding audit details; and
 - Confirm that all who are scheduled for interview are still available, reschedule other personnel as necessary.
3. Auditors should:
- Review audit documentation and schedule.

The Audit Team Leader should plan to spend 16-20 hours preparing for the audit, while the Facility Audit Coordinator should be prepared to spend about 40 hours (over a three week period) for audit preparation activities.

3.2 Audit

On the first day of the audit the team members should assemble in the meeting area. At this time the Audit Team Leader and the Facility Audit Coordinator will brief team members on the details of the audit. At this meeting the schedule for the audit and specific audit assignments will be reviewed. Any team questions will be addressed. The Facility Audit Coordinator should be available for the duration of the audit to assist in location of documentation and to assure that plant personnel that are scheduled for interviews are available. The Facility Audit Coordinator should not be assigned any other audit duties (e.g. documentation audits, interviews responsibilities).

If a team member is not required to be present at an interview session, he/she should be doing documentation and field checks during that time period. Team members should record all finding and data electronically as soon as possible. Auditors are responsible for taking all notes on sections they are auditing.

Once all audit protocol items have been addressed and all conflicting information is resolved, the Audit Team Leader should ask the Facility Audit Coordinator to schedule an audit wrap-up meeting with plant personnel. At the wrap-up meeting all auditors will review (briefly) what their audit findings are. Audit team members should be sure to mention the positive findings as well as deficiencies at this meeting.

At the conclusion of the wrap-up meeting the Audit Team Leader and Facility Audit Coordinator should set a date for the issue of the final audit report. All team member should give the Audit Team Leader their notes from the audit, for incorporation into the final audit report as soon as possible.

The minimum manhours for the audit activity is estimated to be 71 hours. This estimate does not include the time spent by the Facility Audit Coordinator.

3.3 Post Audit

After the audit has been completed the Audit Team Leader should prepare a draft audit report for review by the appropriate facility personnel. After comments on the draft are addressed by the Audit Team Leader, the audit report can be finalized. The final audit report should be issued to the appropriate facility personnel and to audit team members. The Facility Audit Coordinator should assure that audit report findings are communicated to the appropriate personnel for action and resolution.

The report preparation portion of the audit is estimated to take about 32 manhours.

3.4 Audit Facility and Equipment Requirements

The following should be available for the duration of the audit:

- A work area for audit team;
- A conference room for interview sessions;
- Portable computers for all team members;
- Special safety equipment (e.g. respirators) for all team members; and
- Access to a phone and copy machine.

TABLE 3-1

LIST OF DOCUMENTATION REQUIREMENTS
FOR PSM COMPLIANCE AUDIT

TYPE OF DOCUMENTATION	LOCATION
PRE-AUDIT	
Vista Health and Safety Audit information and findings.	
PFDs for process areas.	
Process area breakdown, HAZOP breakdown or other method of defining process areas in the plant.	
ON-SITE AUDIT	
APPLICATION § 29 CFR 1910.119(a)	
Documentation of portions of process which are covered by PSM rule, and which are excluded. Technical basis for excluded portions.	
List of highly hazardous chemicals and their inventories.	
EMPLOYEE PARTICIPATION § 29 CFR 1910.119(c)	
Written plan for employee participation.	
Communication to employees about PSM program and contacts (memos, notices, etc.).	
PSM program promotion material (memos, notices, meeting minutes).	
Evidence showing employees were consulted on PSM program development (meeting minutes, memos, documentation of employee inputs).	
PROCESS SAFETY INFORMATION § 29 CFR 1910.119(d)	
Chemical Information:	
Material Safety Data Sheets (MSDSs) and other required chemical information if not on MSDSs.	
Inadvertent chemical mixtures that could occur, along with the effects of inadvertent mixing of these materials.	
Technology Information:	
Process chemistry.	
Block flow diagrams.	
Maximum intended inventories.	

TABLE 3-1

**LIST OF DOCUMENTATION REQUIREMENTS
FOR PSM COMPLIANCE AUDIT
(Continued)**

TYPE OF DOCUMENTATION	LOCATION
Documentation of methods of how inventory is controlled (level control, etc.).	
Safe upper and lower limits (temperature, pressure, flow) and consequences of deviation.	
Daily operating logs showing process parameters.	
Equipment Information:	
Materials of construction for piping, equipment and instrumentation.	
P&IDs.	
Electrical classification (plot plan indicating electrical classifications).	
Relief system design and design basis (including calculations).	
Ventilation system design.	
Heat and material balances (for processes built after 5/26/92).	
Fire system description (active and passive).	
Interlocks (loop diagrams, functional descriptions and specifications).	
Alarm systems (descriptions, alarm points, interlocks with ESD's).	
Documentation of inspection, tests and operating history for equipment designed under codes and practices no longer in use (to show equipment is fit for duty).	
Equipment data sheets and/or design files.	
Copies of design codes and standards used.	
PROCESS HAZARD ANALYSIS § 29 CFR 1910.119(e)	
HAZOP procedures and/or policy guideline.	
Plant guideline for PHA leader training.	

TABLE 3-1

**LIST OF DOCUMENTATION REQUIREMENTS
FOR PSM COMPLIANCE AUDIT
(Continued)**

TYPE OF DOCUMENTATION	LOCATION
Several completed PHAs.	
Prioritized schedule for conducting PHAs.	
Documentation of technical basis for PHA priority.	
Written or computerized procedures for PHA follow-up and resolution of findings.	
Written procedures for 5-year PHA update.	
Evidence of PHA result communication (minutes of safety meetings, logbooks, etc.).	
Management response to PHA findings (memos, etc.).	
Schedules that have been established for resolving PHA issues.	
OPERATING PROCEDURES § 29 CFR 1910.119(f)	
Several operating procedures.	
Safe work practices procedures.	
Recent permits for lockout/tagout, confined space entry, line opening.	
Logs or other records that track unassigned personnel in process area.	
TRAINING § 29 CFR 1910.119(g)	
Operating certifications (verifications) including grandfathering memos or other tests.	
Training program for operations personnel.	
Refresher training program for operations personnel.	
Evidence of employee participation in determination of frequency of refresher training.	
Description of plant's verification procedures.	
Documentation on training of each employee.	

TABLE 3-1

**LIST OF DOCUMENTATION REQUIREMENTS
FOR PSM COMPLIANCE AUDIT
(Continued)**

TYPE OF DOCUMENTATION	LOCATION
Checklists of operating tasks to be demonstrated, for those that undergo on the job training. This information should be supplied for all job descriptions that on the job training is used.	
CONTRACTORS § 29 CFR 1910.119(h)	
Written contractor program (Vista Health and Safety Audit).	
Audit reports of contractor employer activities including site inspections, incident reports, training, etc. (Vista Health and Safety Audit).	
Site injury and illness log for contractor.	
Information used in contractor selection process.	
Contractor safety manual.	
List of safe work practices the contractor is required to follow.	
Information given contractors on specific hazards in the covered process.	
Booklets, badges, logbooks, cards used to control entrance and exit of contractors into the plant and process areas.	
Completed contractor audit documentation (Vista Health and Safety Audit).	
Documentation of actions taken for contractor safety infractions.	
OSHA 200 logs for contractor.	
PRE-STARTUP SAFETY REVIEW § 29 CFR 1910.119(i)	
Procedures, forms, checklists for pre-startup safety review.	
Completed pre-startup safety reviews (several).	
MECHANICAL INTEGRITY § 29 CFR 1910.119(j)	
Documentation of an "Vista" practices for inspection and test procedures.	

3-1

TABLE 3-1

**LIST OF DOCUMENTATION REQUIREMENTS
FOR PSM COMPLIANCE AUDIT
(Continued)**

TYPE OF DOCUMENTATION	LOCATION
Written mechanical integrity program.	
Documentation of maintenance training procedures.	
Checklists of maintenance tasks of knowledge to be demonstrated by maintenance employees who undergo on the job training.	
Maintenance training records including grandfathering memos and craft certifications.	
Inspection and test records.	
Engineering, procurement and other records showing that quality assurance procedures are followed for spare parts, equipment and maintenance materials.	
Manufacturer's installation and repair manuals for covered equipment (several).	
HOT WORK PERMITS § 29 CFR 1910.119(k)	
Written procedure for permitting hot work (Vista Health and Safety Audit).	
Copies of blank hot work permit forms.	
Completed hot work permit forms.	
MANAGEMENT OF CHANGE § 29 CFR 1910.119(l)	
Written management of change program.	
Documentation of training for affected employees after a change.	
Evidence of communication to employees of the existence of the management of change program.	
Completed management of change authorization forms.	
Sample backup documents (e.g., safety and health review, process engineering review, pre-startup safety review).	
Minutes of change review meetings.	
Evidence of communication of changes to employees.	

TABLE 3-1

**LIST OF DOCUMENTATION REQUIREMENTS
FOR PSM COMPLIANCE AUDIT
(Continued)**

TYPE OF DOCUMENTATION	LOCATION
INCIDENT INVESTIGATION § 29 CFR 1910.119(m)	
Written incident investigation procedures (Vista Health and Safety Audit).	
Evidence of incident recognition and reporting awareness.	
Procedures for acting on investigation findings (Vista Health and Safety Audit).	
Completed incident investigation reports.	
Evidence of communication of the results of incident investigation.	
Documentation of resolutions of corrective actions taken as a result of incident investigations.	
EMERGENCY PLANNING AND RESPONSE § 29 CFR 1910.119(n)	
Written emergency action plan (Vista Health and Safety Audit).	
Fire prevention plan (Vista Health and Safety Audit).	
Evidence of communication of the emergency response plan.	
Records of employee training on emergency response plan.	
COMPLIANCE AUDITS § 29 CFR 1910.119(o)	
Procedures, forms and checklists used for performing compliance audits.	
Copies of audit reports.	
Procedure for resolution of audit findings.	
Evidence showing that audit findings have been resolved.	
TRADE SECRETS § 29 CFR 1910.119(p)	
Procedures for dealing with trade secrets.	
Copies of confidentiality documents.	

3-2

TABLE 3-2

AUDIT SCHEDULE GUIDELINE**Approximate time periods required for each interview group:**

- PSM Steering Team, 1.5-2 hours (50-60 questions)
- Group A, 1-1.5 hours (16 questions)
- Group B, 20 minutes (3 questions)
- Group C, 30 minutes (6 questions)
- Group D, 45 minutes (6 questions)
- Group E, 20 minutes (6 questions)
- Group F, 20 minutes (3 questions)
- Group G, 20 minutes (2 questions)
- Process Engineer and Instrumentation Engineer/Tech., 4 hours for field checks and verifications

The time required for interviews is approximate, since the level of discussion will have an influence on the total time.

Day 1

8:00 a.m. Audit team assembles in designated work area.
 8:05 - 10:00 Team members attend plant contractor orientation/training program. Members not required to attend this session will begin audit of documentation.
 10:00 - 12:00 Team Interview of plant PSM task force.
 12:30 - 1:00 Team tour of the plant.
 1:00 - 5:00 Document, field checks, interviews (as scheduled)

Day 2

8:00 - 8:30 Team meeting to discuss schedule of interviews and field checks, other issues.
 8:30 - 5:00 Audit documents, do interviews (as scheduled) and field checks.

Day 3

8:00 - 12:00 Continue audit of documents, interviews and field checks.
 1:00 - 2:00 Audit team wrap-up meeting.
 2:00 - 4:00 Resolve outstanding documentation, field check and interview issues.
 4:00 - 5:00 Transfer documentation and notes to J&N team members for final report.

Day 4

Open (If the schedule slips, wrap-up the session on this day).

This schedule can vary due to many factors (e.g., number of audit team members, size of plant being audited, etc.).

3-3

TABLE 3-3

INTERVIEW GROUPS

Group A Interview

During the group A interview, the audit team should interview a broad representation of plant personnel with the following criteria:

- 1) one employee from each of the following category:
 - hourly employee from operations department;
 - hourly employee from maintenance department;
 - at-large hourly employee;
 - salaried employee from operations department (e.g., process engineer, production engineer, etc.); and
 - salaried employee from maintenance department (e.g., maintenance engineer).
- 2) these employees should represent all groups in the facility (e.g., unions, hourly, salaried, contract) and various process areas.

PSM elements covered by interview questions:

- Employee Participation
- Process Safety Information
- Pre-Startup Safety Review
- Hot Work Permits
- Management of Change
- Incident Investigation
- Emergency Planning and Response
- Compliance Audits
- Trade Secrets

Group B Interview

During the group B interview, the audit team should interview *one process engineer and one operator* from the facility. These two personnel may be made up of sub-group of the other groups or they can be different employees.

PSM elements covered by interview questions:

- Process Safety Information

Group C Interview

During the group C interview, the audit team should interview a representative number of PHA team members with the following criteria:

- 1) these representative team members should be randomly selected from various PHAs;

TABLE 3-3

INTERVIEW GROUPS
(Continued)

- 2) these representative team members from various PHAs should include:
- one team leader (if available);
 - one hourly employee from operations department;
 - one hourly employee from maintenance department;
 - one salaried employee from operations department (e.g., process engineer, production engineer);
 - one salaried employee from maintenance department (e.g., maintenance engineer); and
 - one at-large hourly employee.
- 3) these team members from various PHAs should also represent groups of union and contract if applicable.

PSM elements covered by interview questions:

- Process Hazard Analysis

Group D Interview

During the group D interview, the audit team should interview a number of operations personnel from various process areas who represent all groups in the plant (e.g., union, hourly, salaried, and contract). Group D may be made up of sub-group of group A and other groups or they can be different employees.

PSM elements covered by interview questions:

- Operating Procedures
- Training

Group E Interview

During the group E interview, the audit team should interview a representative number of contract employers (e.g., several from frequently used contract companies and several from infrequently used contract companies).

PSM elements covered by interview questions:

- Contractors

TABLE 3-3

INTERVIEW GROUPS
(Continued)**Group F Interview**

During the group F interview, the audit team should interview a representative number of contractor employees (e.g., several from frequently used contract companies and several from infrequently used contract companies).

PSM elements covered by interview questions:

- Contractors

Group G Interview

During the group G interview, the audit team should interview a number of mechanical and maintenance personnel from various process areas who represent all groups in the plant (e.g., union, hourly, salaried, and contract). Group G may be made up of sub-group of group A and other groups or they can be different employees.

PSM elements covered by interview questions:

- Mechanical Integrity

4.0

SECTION 4.0

PSM COMPLIANCE AUDIT GUIDELINES

The first category provides the audit guideline for verification of documentation and programs required for compliance with the PSM rule. The second category provides the audit guideline for field verification and interviews. For clarity, the audit guidelines presented in this document are given in three formats: 1) **Bold** statements refer to explicit requirements of the law, 2) Underlined statements refer to explicit references in the OSHA instruction 2-2.45A, and 3) *Italicized* statements refer to requirements that may be necessary to prove general compliance.

The use of this audit guideline will ensure that the PSM programs evaluated meet the minimum requirements of the law. In many cases, plants audited will exceed the audit guideline requirements.

Throughout the audit guideline, the following two terms have been used repeatedly. In order to provide a clearer understanding, a description of these two terms is provided here:

Spot-check: The audit team is required to spot-check a number of PSM items for accuracy and completeness. For example, when spot-checks of P&IDs are required, the audit team should select one P&ID from each process unit and walk the P&ID in order to determine its accuracy and completeness. Once a serious error (e.g., missing control valve) or several minor errors (e.g., missing drain valve) are found on a P&ID the audit can conclude that the drawing is not accurate. Several P&IDs from the facility should be checked so a general conclusion on the accuracy of the P&IDs can be made by the audit team. If there is a conflicting conclusion, several more P&IDs should be checked and an average of the results should be made.

Interviews of representative number of employees: The audit team is required to conduct interviews of representative number of employees to gain information about the implementation of various aspects of the PSM program. "Representative" could be defined as one employee from each of the following category for the whole facility:

- Hourly employee from the operations department;
- Hourly employee from the maintenance department;
- At-large hourly employee;
- Salaried employee from the operations department; and
- Salaried employee from the maintenance department.

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

In cases where a broad representation of plant personnel is to be interviewed, all groups present in the facility (e.g. unions, hourly, salaried, contract) will be represented in the cross section of employees interviewed.

The demographic make-up of the group interviewed for any audit item should be based on the applicability of the audit item to that group. Groups selected for the audit interview items shall be composed of employees/contractors who the audit item is appropriate to. For some audit items the group interviewed will be a broad cross section of the plant employees, while for other items the group may consist only of operations personnel. Groups to be interviewed will be varied as is appropriate, the same group will not be used for the entire interview process.

In some cases, the information supplied by the plant employees may conflict with the conclusions reached by review of documentation, procedures, and practices. At the end of all scheduled interviews, the audit team will identify conflicting issues. Resolution of these conflicting issues will be accomplished by interviewing a number of additional personnel until the audit team is satisfied.

4.1

4.1 Application § 29 CFR 1910.119(a)**1. *Is the covered process defined clearly?***

Even though this is not a requirement of the law, it is advisable to state clearly what parts of the plant are covered by the plant's PSM program. The description should also include the reason for coverage (i.e., presence of listed chemical or flammables in excess of threshold quantity).

2a. *Is any portion of the plant excluded from the plant's PSM program.*

If any portion of the plant is excluded from inclusion in the plant's PSM program, it should be clearly stated. Examples are bulk storage of flammables at atmospheric conditions. Note that storage tanks connected to the process and storing flammables at atmospheric condition are **not to be excluded from the PSM program.**

2b. *Is there documentation of technical basis for such exclusion?*

In order to have complete documentation, if any part of the plant is excluded from the PSM program, documentation on why it was excluded should be available. For example, containers containing listed chemicals but not connected to each other and not in one location can be evaluated separately to assess coverage. If analysis indicates that a catastrophic incident involving the containers is not possible, then they may be excluded from coverage. However, the technical basis and any other considerations used in arriving at the conclusions should be documented.

3. *Is there a list of highly hazardous chemicals whose inventories exceed threshold quantities?*

This follows from item no. 1 above. If the covered process has been defined clearly, it follows that a list of highly hazardous chemicals should be available.

4.2

4.2 Employee Participation § 29 CFR 1910.119(c)

1. *Is there evidence of formal communication to all employees about the establishment of the PSM program and identification of points of contact?*

The PSM rule requires that employers consult with employees and their representatives on the conduct of the process hazard analyses and on the development of the other elements of the PSM program. As interpreted by OSHA representatives, this consultation starts with communication of the existence of the program to the employees. Vista plants may choose to accomplish this by issuing memorandums, notices, newsletters, documented meeting attendance, etc.

2. **Is there a written plan for employee participation?**

This is a specific requirement of the PSM rule. The written plan should state how employees and their representatives are consulted on the development and conduct of PSM activities. This does not mean that employees must be involved in all PSM activities. For the PSM rule, an employee is someone who works in the facility and comes in direct contact with a covered process. For the PSM rule, an employee can be hourly, salaried, contract, union, or non-union.

3. *Does the plant have some form of PSM Program awareness activity for all employees and associated documentation (e.g. postings, meetings, memos)?*

Even though PSM Program awareness activity is not a specific requirement of the PSM rule, it is necessary to promote safety awareness and educate employees sufficiently enough so that they are able to participate in the development and implementation of the PSM program elements and provide input as and when needed. The PSM Program awareness activity may consist of a pre-packaged awareness orientation similar to the format and length of hazard communication orientation.

4. *Is there evidence showing employees and their representatives were consulted about the conduct and development of the PSM program?*

While OSHA does not require any specific documentation of employee involvement

beyond that specified in the written plan, OSHA representatives have stated that the degree of employee participation should be evident in customary PSM documentation (e.g., PHA reports, minutes of safety meeting, documentation of employee inputs, etc.).

Field verification and interviews

5. **Have employees or their representatives been consulted on the development of the elements of the PSM program?**

The answer to this question should be obtained by interviews with a representative number of employees. The cross section of employees polled shall be diverse and represent all groups present at the facility (e.g. union, contract, salaried employees, hourly employees). If there is a conflict between the employee interview results and the data obtained in items 1 through 4 above, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

6. **Do employees know how and where to gain access to information required by the PSM rule?**

Use same procedure to reach conclusion as in item 5.

7. **Have employees or their representatives been denied access (including unreasonable delay) to any PSM required information?**

Use same procedure to reach conclusion as in item 5.

4,3

4.3 Process Safety Information § 29 CFR 1910.119(d)**1. Are process safety information complete and up-to-date?**

The PSM rule requires that most process safety information be completed before a PHA is conducted. However, some of this information can be completed concurrent with the PHA. The audit team should verify that: a) process safety information related to completed PHAs are complete, and b) the percentage of PHAs required to be completed (see section 1.1.1.4) and therefore the percentage of process safety information required to be completed is available. Refer to item 16 for evaluating whether the information is up-to-date.

2. Are all employees provided reasonable access to all PSM documents?

Official hard-copies or reliable electronic (e.g. with a battery back-up) copies of P&IDs and operating procedures must be readily available at all times in the control room, or at the work location for operators. Other process safety information, in hard-copy or electronic form, should be available on a reasonable basis.

3a. Is there chemical information for all covered chemicals?

For the covered chemicals, the audit team should spot-check a few chemicals to ensure that chemical information is available for covered chemicals.

3b. Does the compilation of chemicals information include all the information required by law?

The compilation of chemicals information must include:

- i) Toxicity information;
- ii) Permissible exposure limits(when available);
- iii) Physical data;
- iv) Reactivity data;
- v) Corrosivity data;
- vi) Thermal and chemical stability data; and
- vii) Hazardous effects of inadvertent mixing of different materials that could foreseeably occur.

Spot-checks for a few of the covered chemicals should be made to ensure that all information has been compiled. The above information can normally be found in material safety data sheets (MSDS), however other formats containing all of the information required by law are acceptable. If MSDSs are being used for compliance with this item, the audit team should make sure that all of the above-mentioned information is present in the MSDSs spot-checked.

4. Are updated process flow diagrams or block flow diagrams available?

First, the audit team should check for availability of all process flow diagrams or block flow diagrams. Second, spot-checks should be made to ensure that the diagrams are up-to-date and accurate. While different formats are possible for producing these diagrams, the audit team should verify that the diagrams convey the information needed. Appendix A provides several examples of such diagrams.

5. *Does the plant have documents that describe the covered process, process chemistry, maximum intended inventories, and troubleshooting information.*

First, the audit team should review the manuals, or other equivalent documents, to ensure that all necessary information is available. Second, the audit team should verify that the compiled information is up-to-date and accurate. Third, the audit team should make spot-checks to verify that the plant is operating according to the specified inventory and process chemistry or specific process steps.

6a. Does the plant have a compilation of safe upper and lower limits for process parameters?

The audit team should verify that:

- i) Safe upper and lower limits are available for all process parameters:
 - For a non-reactive process safe limits will be defined based on equipment design ratings, relief device setpoints and upstream and downstream conditions of the process and/or equipment.
 - For a reactive process safe limits will be defined based on the process chemistry information on any restricted physical conditions for the reaction as well as the criteria used for non-reactive processes.

- ii) The information is up-to-date and accurate; and
- iii) The plant is operating according to the specified safe upper and lower limits.

Appendix B provides an example compilation of safe upper and lower limits and consequences of deviation.

6b. Does the compilation of safe upper and lower limits include a description of the consequences of deviation?

The audit team should verify that:

- i) Consequences of deviation from safe upper and lower limits are available;
- ii) How these consequences of deviation were obtained and if they are valid.

7. Are updated P&IDs available?

First, the audit team should check for availability of all P&IDs. Second, spot-checks should be made to ensure that the diagrams are up-to-date and accurate. While different formats and content are possible for producing these diagrams, the audit team should verify that the diagrams convey the information needed. Appendix C provides several examples of such diagrams.

8a. Does the plant have electrical classification for different areas?

The audit team should determine if the plant has an established electrical classification for different areas of the plant.

8b. Does the electrical classification follow NFPA standard or comparable industry standard?

The plant's electrical classification should follow consensus industry standards (e.g., NFPA standard). If a less recognizable standard is used, documentation for technical basis should be available.

8c. *Is the electrical classification indicated on a plot plan?*

In order to provide an easy guide for plant personnel, the electrical classification should be available on a plot plan.

8d. Do all equipment meet established electrical classification?

The audit team should spot-check a representative number of equipment items to ensure that they meet the established electrical classification.

9a. *Is there technical basis for all relief valves?*

Technical basis should include all data, design information, and actual calculations used to develop the design of the relief valve. The design basis should follow consensus industry standards (e.g., API 520, API 521, etc.). The information should also include calculations and/or considerations made related to fire rating, downstream pressure, reactivity, and flow capacity.

9b. *Are proper materials of construction used for relief valves?*

The audit team should verify that proper materials of construction have been used for the relief valve as specified in the design and technical basis documents. For example, sour gas service requires stainless steel as the material of construction.

9c. *Are relief valves properly designed and installed?*

The audit team should spot-check a few relief valves for proper design and installation as specified in the design and technical basis documents. For example, specific items to look for may include bigger throats, relief valves not located in dead-end legs, etc. Ten relief valves will be checked to verify the accuracy of the documentation.

9d. *Is there technical basis for design of relief headers?*

If multiple relief valves are connected to a relief header system, the audit team should review the technical basis and design documents for the header system.

9e. *Are flow calculations available for relief headers?*

The technical basis and design documents for the relief header system should include flow calculations which were used to size and design the system.

10. **Is there technical basis for the design of the ventilation system for all control buildings and process buildings and enclosures?**

Technical basis should include all data, design information, and actual calculations used to develop the ventilation system design for all control buildings and process buildings and enclosures that fall within the Dow F&EI radius calculation for that process. The design basis should follow consensus industry standards (e.g., NFPA standards). If a less recognizable standard is used, documentation for technical basis should be available. Appendix D provides an example of a ventilation system design for a plant.

11. **Are material and energy balance calculations available for all covered processes built after 5/26/92?**

The PSM rule requires that material and energy balance calculations be available for processes built after 5/26/92. Appendix E provides an example of a material and energy balance (Note: Material and energy balances may also be shown in a process flow diagram). OSHA has not provided any clarification or interpretation for plants or portions of plants that go through process changes. Until OSHA issues a definitive guidance on this issue, the audit team should evaluate processes using the following approach:

- For processes designed and constructed after 5/26/92, audit team should check for availability of material and energy balance and make sure the information on it is correct and the plant is operating according to the material and energy balance;
- For processes that were in operation on or before 5/26/92, if a material and energy balance is not available, the audit team should not require the availability of one. However, if the plant has a material and energy balance, the audit team should go ahead and review the information in it similar to the review described above.

12. Are descriptions of safety systems available?

Safety systems at a specific site vary. A safety system is an engineering control used to stop, contain or mitigate a release of a highly hazardous chemical. Safety systems may include scrubbers, dikes, firewater systems, emergency generators or UPS, control systems and flares. Some of the safety systems are described in detail as follows:

a) Fire and gas detection

Description of fire and gas detection systems should include monitor locations, upper and lower monitor detection limits, detectable gases, etc. Also included in this section are location and description of horns associated with these devices. All of the above information may be available in descriptive form. The information or part of the information may be shown in plot plan drawings.

b) Active fire systems

Description of active fire systems should include fire water systems, deluge systems, dry chemical, and mobile or hand-held extinguisher, etc. This description includes the design basis for fire water systems and deluge area coverage, the quantity and location of portable equipment, hose reels, and monitors. Coverage area information is particularly important in cases where credit for firewater coverage has been taken in relief device calculations.

c) Passive fire systems

Drawing with design basis or narrative description of passive fire systems should include fire walls, dikes, fire protection insulation, etc.

d) Interlocks for process safety systems

As interpreted by OSHA representatives, this means the availability of information sufficient enough for a process hazards analysis team to verify the interlock functions and logic for control systems critical to process safety. This may be satisfied if a combination or all of the following information is available:

- A description of the interlock system;
- A listing of all failure modes for the interlock system;
- A logic diagram for the interlock system;
- Loop Diagrams; and
- Functional descriptions of shutdown systems.

e) Alarms

Description of alarms should cover the following alarms:

- Pressure control systems and associated alarms;
- Temperature control systems and associated alarms;
- Level control systems and associated alarms; and
- Flow control systems and associated alarms.

13a. Are equipment sheets and/or design files available for all equipment?

The audit team should spot-check a few pieces of each equipment type to ensure that specification sheets are on file. Examples of a number of specification sheets for different types of equipment are given in Appendix F. At least one or more of each of the following types of equipment should be covered in the spot-check:

1. Pressure vessels: U1A sheets or equivalent;
2. Pressurized storage tanks: U1A sheets or equivalent;
3. Pump specification sheet;
4. Compressor specification sheet;
5. Piping specification sheet;
6. Relief valves calculation sheet;
7. Vent systems calculation sheet;
8. Emergency shutdown systems (e.g., cause and effect diagrams or written description); and
9. Other appropriate equipment types.

13b. Do the equipment sheets or design files of equipment include appropriate references to codes and standards used?

The audit team should spot-check a few specification sheets to make sure that they contain appropriate references to codes and standards that were used in the design and fabrication of the equipment.

13c. Are copies of design codes and standards available?

The audit team should check to see that a copy of codes and standards referenced in the design specification sheets is available.

14. **Is there documentation that covered equipment complies with generally accepted good engineering practices?**

This question is a follow-up on item 13. Documentation should exist to verify that existing equipment is installed and operated in conformance with accepted practices and standards. When no such documentation exists, the audit team should verify if the plant has conducted and documented an engineering review to ensure that equipment complies with good engineering practices. Good engineering practices could include association standards, consensus standards, or corporate practices.

15. **For existing equipment designed under codes and standards no longer in use, is there documentation of tests, inspections, operating history, engineering analyses, etc. that show that the equipment is fit for duty?**

For existing equipment designed and constructed many years ago in accordance with the codes and standards available at that time and no longer in general use today, the audit team must ensure:

- 1) Documentation showing which codes and standards were used is available;
- 2) Design and construction along with testing, inspection, and operation are still suitable for the intended use.

Where the process technology requires a design that departs from the applicable codes and standards, the audit team must verify that design and construction are suitable for intended use.

Field verification and interviews

16. *Does a spot-check of a representative number of items of process safety information indicate that it is up-to-date and correct?*

Specific verification through spot-checks of process safety information items is included in many of the questions mentioned above. However, the audit team should make an overall assessment regarding updating and accuracy of all items of information.

17. Can the following be verified:

- a) Maximum intended inventories are met;
- b) Equipment is constructed with specified materials;
- c) Material and energy balances are not exceeded;
- d) Relief systems follows accepted practice;
- e) Process controls and safety systems are in place; and
- f) Drainage or diking is adequate (field check).

These should be verified by checking current operating information against data compiled under process safety information.

18. **Do interviews with a broad representation of employees indicate that they have access to the required process safety information?**

Audit team should interview a broad cross section of employees (e.g. union, salaried, hourly) to ascertain the answer to this question. Conflicts should be resolved by procedures mentioned in the beginning of this section.

19. Do interviews with representative number of employees indicate that all process safety information is kept current and communicated to all who need to know?

Audit team should interview a cross section of representative employees (e.g. union, salaried, hourly) to ascertain the answer to this question. Conflicts should be resolved by procedures mentioned in the beginning of this section.

4.4

4.4 Process Hazards Analysis § 29 CFR 1910.119(e)**1a. Has the plant established a priority order for conducting the PHAs?**

The audit team should determine if the plant has a prioritized schedule for conducting the PHAs.

1b. Is there as technical basis for the priority order which takes into account the extent of process hazards, number of potentially affected employees, age of the process, and operating history?

If a priority order for conducting the PHAs exists, the audit team should evaluate the technical basis for the priority order. The technical basis must include consideration of all the items mentioned above.

2. Have the scheduled number of PHAs been completed and does the schedule comply with the regulatory schedule?

First, the audit team should verify if the plant's established PHA schedule complies with the mandatory regulatory schedule. Second, the audit team should verify if the plant is following the established PHA schedule. If the plant is deviating from the established schedule, there should be documentation showing the reason for deviation. The audit team should be aware that completion of a PHA means that the following have been completed:

- i) PHA report has been finalized;
- ii) Management response has been issued which includes:
 - a) How each recommendation will be resolved;
 - b) Assignment of responsibility for resolution of findings; and
 - c) Schedule for resolution of findings. The schedule for resolution of PHA findings should be reasonable and adhere to cooperate guidelines. If schedules for resolution of findings is longer, documentation should be available explaining variance.
- iii) PHA findings and management response to findings has been conveyed to affected employees; and
- iv) PHA report is available for employee review.

3. **Do the PHAs reflect the complexity of process?**

This question pertains to the evaluation of the PHAs from a qualitative point of view. An exaggerated example would be a HAZOP on a catalytic cracking unit where only two nodes were considered. Therefore, the audit team should evaluate PHAs to ensure that appropriate attention to detail and complexity of the unit has been considered.

4. *Is there evidence of appropriate orientation for PHA team participants and training for PHA leader?*

First, the audit team should verify that PHA team participants have received the appropriate orientation. This can be established by: a) references in the PHA report which may state that the team participants were given an orientation before the PHA, and/or b) interviews with a few PHA team participants. Second, the audit team should verify that the PHA leader has appropriate training. This may be established by: a) documentation on the training of the team leader, and/or b) interviews with the team leader.

5. **Do the PHAs cover:**

- a) **Hazards of the process;**
- b) **Previous incidents;**
- c) **Engineering and administrative controls;**
- d) **The consequences of failure of control;**
- e) **Facility siting;**
- f) **Human factors; and**
- g) **Health and safety effects.**

The audit team should spot-check a few of the PHA reports and/or PHA worksheets and associated documentation to ensure that all of the above mentioned factors have been considered during the PHA.

6. **Does the plant have procedures for PHA follow-up and resolution of findings?**

The audit team should verify that the plant has established procedures for PHA follow-

up and resolution of findings (see related discussion in item 2 above). Positive indicators for this item is established management systems which may include computerized database systems for tracking of PHA findings.

7. Does the plant have procedures for 5-yr PHA update?

The audit team should establish how PHAs are updated every five years. Does the procedure use the old PHA and is the process technically sound. OSHA has not provided a prescriptive method for updating/revalidating PHAs. However, OSHA representatives have provided the following interpretations:

- i) Each plant should determine what is an appropriate method for updating/revalidating PHAs based on specific conditions associated with the covered processes;
- ii) The update/revalidation must be completed by a team that meets the requirements of the PHA provision;
- iii) Further, plants should carefully evaluate whether any changes or incidents that have occurred since the last PHA have caused or exposed any previously unrecognized hazards;
- iv) If the design, operating practices, and other important circumstances have not changed since the last PHA, then the PHA team may be able to invest minimal effort in updating/revalidating the PHA.

8. Do the PHA reports, at the minimum, contain the following:

- a) *Summary of the PHA team's findings;*
- b) *PHA worksheets, checklists, whatif analysis, nodes and deviation considered;*
- c) *List of all pertinent data used by PHA team and where they can be obtained;*
- d) *Team members and their qualifications;*
- e) *Team leaders qualifications (copy of training certificate or record of training);*
- f) *Meeting dates;*
- g) *Risk ranking method;*
- h) *List of nodes studied, if HAZOP was conducted;*
- i) *PHA method used and rationale for its selection; and*
- j) *Other resources (e.g. equipment or process specification).*

The audit team should spot-check a few of the PHAs to establish that they contain the necessary information for easy recordkeeping and later reference.

9a. Does the plant retain PHA reports for the life of the process?

The audit team should establish that PHA reports are retained for the life of the process.

9b. Are updates and revalidation of PHA reports also retained for the life of the process?

The audit team should establish that the 5-yr revalidations of PHA reports are retained for the life of the process.

10. Is there evidence showing that the PHA results are communicated to affected employees?

The audit team should establish that PHA results are communicated to affected employees. Examples of documentation that may be available are: a) minutes of safety meetings, b) sign-off sheets, or c) logbooks that show that the results of PHAs were communicated to employees.

11. Are there written memoranda and/or reports stating plant management's response to PHA findings?

The audit team should ensure that appropriate documentation showing evidence of management response to PHA findings (see related discussion in item 2 above) is available.

12a. For unresolved findings, is there a schedule for resolution of the findings?

The audit team should ensure that a written schedule for resolution of PHA findings (see related discussion in item 2 above) is available.

12b. Is the basis for the schedule consistent with Vista's corporate guidelines?

In clarifications and interpretations issued by OSHA, no specific standard has been established for schedules for resolution of findings. However, OSHA has made it clear that during inspections, the compliance officers will try to establish the validity of the

schedules by interviews with plant employees, Vista guidelines, and by soliciting expert opinion from retired industry personnel. Thus, the audit team should evaluate the schedule for resolution of PHA findings in depth and make that the schedules are technically sound. Exceptions to Vista's guidelines should be documented.

Field verification and interviews

13. Based on interviews with a representative number of team members:

- a) Does the PHA team conduct a field tour as part of the analysis?
- b) Are PHA results communicated to affected employees?
- c) Are affected employees provided reasonable access to PHA reports?
- d) Are findings resolved in a reasonable and timely manner?

The answer to this question should be obtained by interviews with a representative number of employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.5

4.5 Operating Procedures § 29 CFR 1910.119(f)

1. **Does the plant have complete, accurate, and up-to-date operating procedures for all covered processes?**

The audit team should establish that all operating procedures necessary are available and spot-checks show that they are complete, accurate, and up-to-date.

2. **Do the operating procedures include a step-by-step description?**

This is a specific requirement of the PSM rule. OSHA has not specified the detail and depth necessary for the operating procedures. However, the procedures must include all steps necessary to operate the process during normal operation as well as during an upset. These steps may be detailed and include description of every action necessary to complete the step. On the other hand, the steps may be concise such as "Turn on Sundyne pump". In the latter case, the plant must be able to prove that operators working in the unit have the required training to understand the step "Turn on Sundyne pump". The plant must also be able to show that training for the step "Turn on Sundyne pump" is included in the training program.

3. **Do the contents of the operating procedures include or refer to:**

- a) **Process description, PFD, P&IDs;**

Operating procedures should include brief process description. Also, the procedures should include the appropriate PFDs and P&IDs or references to them.

- b) **All operating phases;**

Step-by-step procedures must be available for all operating phases. The topical content that must be covered in these step-by-step procedures may vary from plant to plant and process to process. Appendix G provides an example topical content for each operating phase for a specific plant.

- c) **Operating limits and steps needed to correct or avoid deviation;**

These limits refer to maximum and minimum ranges for process parameters beyond which the integrity of the vessel may be compromised and/or stable operation may not be possible. The audit team should ensure that the range

of values for the process parameters and the consequences of deviation beyond the established ranges are consistent with the data in other elements of the PSM program.

d) **Safety and health issues;**

The operating procedures should include, or refer to, a summary of the pertinent data from, or a copy of, the MSDS for the highly hazardous chemicals, toxics, or reactives of the covered process. Where the MSDSs do not include the potential hazards realized in the use of hazardous materials at operating conditions, it should be developed from operational data and health/safety information and consistent with information provided elsewhere, including the findings of the PHA.

e) **Safety systems and their functions.**

Operating procedures should contain, or refer to, a table or listing of safety systems regarding process operations including:

- i) pressure control systems and alarms;
- ii) temperature control systems and alarms;
- iii) level control systems and alarms;
- iv) flow control systems and alarms;
- v) pressure relief systems, including pressure safety valves, rupture disks, and disposal of the relieved material;
- vi) process interlocks and emergency shutdown systems;
- vii) flammable and toxic gas detection systems;
- viii) inadvertent chemical mixing or uncontrolled reaction;
- ix) flares;
- x) scrubbers; and
- xi) emergency generators or UPS.

For the purpose of this item, a safety system is defined as one that is associated directly with the containment integrity of the equipment or the process, including runaway reactions and accelerated corrosivity. For example, the temperature control on the air-conditioning system is not considered a safety system, even though it may have an overall impact on plant safety.

4. *Is the format for the operating procedures understandable and uniform throughout the plant?*

OSHA has not required or endorsed any specific format or style for written operating procedures. However, OSHA cited OxyChem during a recent inspection which stated

that the plant's operating procedures consisted of different formats and thus caused confusion in understanding.

5. *Are the operating procedures accessible in the control room and/or the principle work place at all times when operations personnel are present?*

The audit team should verify that the plant is making written operating procedures accessible in the control room and/or at the principle work place at all times that the control room is staffed and the unit is operating.

6. **Does the plant have procedures in place for the annual update/revision and certification of operating procedures?**

The audit team should verify that the operating procedures are updated as often as necessary, but at least annually, to reflect the current operating practices and conditions. Positive indicators for this item are:

- i) Review and updates are certified by noting dates of review, purpose of review, significant changes, and authorization signatures; and
- ii) Operating procedures include a cover sign-off sheet showing the date the procedure was written and by whom, an expiration date, and an authorization signature by the operations manager or appropriate authority.

7. **Does the plant have safe work practices in place which cover:**

- a) **Lockout/tagout** (Vista H&S Audit, 11-93 Version, Section 7 items 1-10);
- b) **Confined space entry** (Vista H&S Audit, 11-93 Version, Section 5 items 1-56);
- c) **Opening process equipment or piping;** and
- d) **Control over entrance to cover process area by maintenance, contractor, laboratory, or other support personnel** (e.g. persons not permanently assigned to covered process area must check-in with operations personnel before entering the process area).

At the minimum, the audit team should verify that the above-mentioned safe work practices are described and available. In addition, safework practices may include other recommended industry practices from organizations such as NFPA, API,

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

International Institute of Ammonia Refrigeration, Synthetic Organic Chemical Manufacturers Association, etc.

8. Does the plant have written copies of all permit procedures available?

The presence of written permit procedures indicates an effort by plant management to ensure the implementation and practice of safework practices. The audit team should verify the existence of these written procedures (Vista H&S Audit, 11-93 Version, Section 29 items 1).

9. Does the plant have copies of all recently completed permits?

In order to prove that permit procedures are correct and that procedures are being followed, it is necessary to maintain copies of recent completed permits (Vista H&S Audit, 11-93 Version, Section 29 items 5,7).

10. Does a spot-check of operating procedures for several processes indicate that they meet the PSM requirements?

Spot-check some of the operating procedures for compliance issues described in above-mentioned items 2 and 3.

Field verification and interviews

11. Does a spot-check of operating practices indicate that operating procedures are being followed?

This may indicate that either operating procedures are not correct to begin with or drift in operating practices has resulted. A spot-check concurring that the step-by-step instructions (see item 2) in the procedures are accurate and understood by operations personnel.

12. Does a spot-check of relevant work that may be going on in the plant indicate that the following safe work practices are followed according to the plant's procedures:

- a) Lockout/tagout;
- b) Confined space entry;
- c) Opening process equipment or piping; and
- d) Control of entrance.
- e) Safety Control

The audit team should spot-check current conditions in the plant with respect to the above-mentioned safework practices. Comparison of the conditions or procedures should be made with the description and procedures given in the written safework practices established by the plant.

13. Based on interviews with a representative number of operations personnel:

- a) Are operating procedures up-to-date and is training provided for all operating procedures;
- b) Are all operating procedures understood;
- c) Is there ready access to operating procedures; and
- d) Are emergency shutdown duties understood?

The answer to this question should be obtained by interviews with a representative number of employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.6

4.6 Training § 29 CFR 1910.119(g)

1. **Has the plant completed all the grandfathering requirements with respect to training and is associated documentation available?**

Operations employees working in the plant on or prior to May 26, 1992 may be grandfathered as having the required knowledge, skills, and abilities to safely carry out the duties and responsibilities specified in the operating procedures. However, this certification must be made in written form. Also, the plant must make an effort to establish that the grandfathering has been accomplished by a rational methodology.

2. *Is a description of the initial training program available?*

Operations personnel involved with highly hazardous chemicals, must undergo an initial training program. The training of contractor employees is the responsibility of the contractor employer, the plant providing guidance and audit function only. In establishing their training programs, plants must clearly identify the employees to be trained, subjects to covered, the goals and objectives they wish to achieve, and how the training is to be verified and certified.

3. *Do the contents of the initial training program include:*

- a) *Process overview;*
- b) *Operating procedures (for operations personnel);*
- c) *Safety and health hazards;*
- d) *Emergency operations including shutdown (for those employees that this information is pertinent to their job classification); and*
- e) *Safework practices.*

The plant's initial training program should include: a) a specification of what training is needed for each employee or job description, and b) description of the training program itself. The training program may include the following:

- i) OSHA HAZCOM training;
- ii) Process overview training;
- iii) Operating procedures training;
- iv) Safe work practices training;
- v) Emergency evacuation and response training;

- vi) Safety procedures training;
- vii) Routine and non-routine work training; and
- viii) Other specialized or plant-specific training.

4. **Is a description of the refresher program for operations personnel available?**

The audit team should establish that the plant's refresher training curriculum is based on the operating procedures that are appropriate to the job descriptions. OSHA has not prescribed a minimum number of hours or frequency for refresher training. However, it is quite clear from the rule itself and interpretations and clarifications that the technical basis of the following should be defensible:

- i) Content of refresher training curriculum;
- ii) Frequency of refresher training (minimum of three years); and
- iii) Verification that employees have understood the refresher training.

5. *Does the plant have evidence showing how employees were consulted to determine the frequency of refresher training program?*

The audit team should verify that the plant has evidence showing consultation with employees for determining the frequency of refresher training program. This may consist of documentation of activities of specific employee committees, minutes of meetings where these subjects were discussed, and any other appropriate documentation.

6. *Is there a description of the plant's verification procedures available?*

First, the audit team should establish what the steps are for training verification. Second, is the plant following the established steps and procedures.

7a. **Is documentation available on the training of each employee?**

The audit team should spot-check training documentation to establish the answer to this question. For each spot-check the following documentation, as applicable, should be checked:

- i) Grandfathering;

- ii) Initial training;
- iii) Refresher training; and
- iv) Any other documentation, i.e., retraining, etc.

7b. Does the training documentation include:

- i) identity of employee trained;
- ii) the date of training; and
- iii) how the results of the training were verified.

The audit team should spot-check a few of the training records to make sure the records contain appropriate information as specified above.

8. *Are checklists of operating tasks to be demonstrated by employees (for each job description) who undergo on-the-job training available?*

OSHA has stated that hands-on training or on-the-job training is also acceptable as part of the training program. However, this type of training should also be documented to prove regulatory compliance. Thus, the audit team should evaluate the checklists of operating tasks to be demonstrated by each employee and make a determination that the checklists accomplish the objective of providing the adequate training to the employees.

Field verification and interviews

9. Based on interviews with a representative number of employees:

- a) Has the employer consulted with the employees involved in operating the process to determine the appropriate frequency of refresher training; and
- b) Are there procedures to ensure that employees receive task-specific training before a job assignment?

The answer to this question should be obtained by interviews with a representative number of operations employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion in section 4).

4.7

4.7 Contractors § 29 CFR 1910.119(h)**1a. *Does the plant have a contractor program?***

A written contractor program is not a specific requirement of the rule. However, in order to prove that the plant has established all programs necessary for compliance with the PSM rule, it is prudent to develop a written program (Vista H&S Audit, 11-93 Version, Section 6 item 1).

1b. Does the program include all contractor activities that have the potential for affecting process safety?

Contractors performing maintenance or repair, turnaround, major renovation or specialty work on or adjacent to the covered process must be included in the program.

2. Does the contractor program include:**a) Safety record evaluation;**

Evaluation of screening process used by the plant so that they hire and use only contractors who accomplish the desired job tasks without jeopardizing the safety and health of any employees at the plant (Vista H&S Audit, 11-93 Version, Section 6 items 4-6). Information on evaluation and selection criteria should be included.

b) How the contractor is informed of hazards and safe work practices;

The audit team should evaluate the information supplied to the contractors and ensure that it contains sufficient information about hazards and safe work practices (Vista H&S Audit, 11-93 Version, Section 6 items 2, 3, 7, 8, 9).

c) Applicable provisions of the emergency action plan;

The elements of the emergency response plan which concerns the contractors should be conveyed to the contractors.

d) Safe work practices related to controlling the entrance, presence, and exit of contract employers and employees from covered process areas.

The audit team should evaluate the plant procedures for these activities to make sure that there are established procedures and that the plant is following the procedures.

3a. Does the plant conduct periodic evaluation of the contractor employer?

The plant may accomplish this by periodic site inspections, reviews of contractor training programs and records, inspections of contractor incident reports, etc. The audit team should verify the answer to this question by evaluating employer audit reports of contractor employer activities (Vista H&S Audit, 11-93 Version, Section 6 items 15,16).

3b. Does the evaluation include:

- a) **The employee is trained in work practices and associated documentation;**
Contractors are responsible for training their own employees. However, the plant should during evaluation of the contractor employer, ensure that appropriate training is provided to the contractor employees and associated documentation is available. The plant should use the plant's own training standards and procedures for comparing with the contractors program (Vista H&S Audit, 11-93 Version, Section 6 items 7,8,9).
- b) **The employee is instructed in the hazards and the emergency action plan;**
This evaluation should determine if the contractor employer is communicating the information related to the hazards and the emergency action plan to all contractor employees (Vista H&S Audit, 11-93 Version, Section 6 item 9).
- c) **Each employee follows the safety rules and safe work practices;**
This should be established by the plant by periodic evaluation of contractor employee performance on the job (Vista H&S Audit, 11-93 Version, Section 6 items 15,16).
- d) **The contract employer has established procedures for informing the facility of any unique hazards.**
If contractor employees find hazards, how are they reported to the plant, and what is done with it.

4. Does the plant maintain a site injury and illness log for contractor employees?

The audit team should verify that the plant is maintaining a site injury and illness log. The plant may not fulfill this responsibility by having the contractor maintain the log.

5. *Does the plant have available copies of information the facility has used during the contractor selection process to evaluate the contractor's safety program and performance?*

The availability of this information proves that the plant is screening contractors before hiring them.

6. *Does the plant have a generic contractor safety manual?*

The audit team should evaluate the contractor safety manual to ensure that appropriate information is conveyed to the contractor employees. The contractor safety manual may be prepared by the plant or by contractor employer from information received from the plant.

7. **Does the plant have a list of safe work practices that contractors are required to follow?**

The audit team should evaluate the list to make sure that appropriate safe work practices are included in the list. The audit team should then cross-check the contractor safety manual to make sure that the listed safe work practices are listed and/or described.

- 8a. **Does the plant have examples of information given contractors about the specific hazards associated with the covered processes?**

The audit team should evaluate the information given to the contractors to ensure that appropriate and sufficient information is provided.

- 8b. Are the contract employees informed of these hazards prior to the initiation of work at the site?

All contract employees must be informed of the known potential fire, explosion or toxic release hazards related to the contractor's work and the process are before being permitted to perform work in, or adjacent, to the covered process area.

9. *Are there booklets, badges, logbooks, or cards used to help control the entrance and exit of contractors into the covered process area available?*

This may be necessary to prove that the plant has procedures in place for control of entrance, presence, and exit of contractor employees from the covered process area.

10. *Does the plant have evidence documenting the periodic auditing of contractors?*

The audit team should look for any evidence which shows that the plant is conducting periodic audits of the contractors. The evidence may include forms, criteria, or other documents associated with periodic auditing of contractors (Vista H&S Audit, 11-93 Version, Section 6 items 15, 16).

11. *Does the plant have copies of memos, data, or other records indicating that appropriate action was taken when contractor employee safety infractions were discovered?*

The audit team should verify the existence of memos, data, and other records and ensure that appropriate action was taken to address the safety infractions.

12. Does the plant have OSHA 200 logs for contractor employees?

The contractor may maintain their own OSHA 200 logs. However, the OSHA 200 logs should be available for inspection by the plant.

Field verification and interviews

13. Based on spot-checks, are contractor employees following safe work practices?

The audit team should spot-check current conditions in the plant with respect to contractor safe work practices. Comparison of the conditions or procedures should be made with the description and procedures given in the written safe work practices established by the plant.

14. Based on spot-checks, is the plant's program to control entrance, presence, and exit of contractor employees into the covered process area effective?

The audit team should spot-check current conditions in the plant with respect to control of entrance, presence, and exit of contractor employees into the covered process areas. Comparison of the conditions or procedures should be made with the description and procedures established by the plant.

15. Based on interviews with contractor employer:

- a) Have contractors been informed of the potential catastrophic hazards related to their work prior to initiation of work at the site?
- b) Have contractors been informed of the applicable provisions of the plant's emergency action plan prior to the initiation of work at the site?
- c) Are contractor employees controlled on entering, being in and exiting covered process areas?
- d) Does the employer periodically audit the contractor?
- e) How are deficiencies in the performance of contractor employees corrected?

The answer to these questions should be obtained by interviews with a representative number of contract management. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

16. Based on interviews with a representative number of contractor employees:

- a) Have contractor employees been informed of the potential catastrophic hazards related to their work prior to the initiation of work at the site?
- b) Have contractor employees been informed of the applicable provisions of the plant's emergency action plan prior to the initiation of work at the site?
- c) Are safe work practices understood by the contractor employees?

The answer to this question should be obtained by interviews with a representative number of contractors. If there is a conflict between the contractor employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional contractor employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

17. Has the host employer ensured that the training provided to contractor employees, by the contractor employer, is equivalent to the training required for a direct hire employee?

The answer to this question should be obtained by interviewing the person(s) in charge of contractor training and monitoring at the host site.

4.8

4.8 Pre-startup Safety Review § 29 CFR 1910.119(i)

1. *Does the plant have procedures for pre-startup safety reviews for new and modified processes?*

Audit team should establish if the plant has pre-startup safety review procedures.

2. **Do the pre-startup safety procedures include:**

- a) **Construction and equipment are in accordance with design specifications;**
- b) **Safety, operating, maintenance, and emergency procedures are in place;**
- c) **A process hazards analysis has been performed and the findings have been resolved; and**
- d) **Operator training has been completed.**

These are specific requirements of the PSM rule and the audit team should verify that the above-mentioned items are included in the established pre-startup safety review procedures.

3. *Does the plant have procedures, forms, or checklists used to perform pre-startup safety reviews?*

These are required as backup to the existence of pre-startup safety review procedures and to establish that pre-startup safety review procedures are performed.

4. *Does the plant have examples of completed copies of pre-startup safety review forms on file?*

Completed copies of pre-startup safety review procedures are needed to ensure that pre-startup safety review procedures are followed as established by the plant.

Field verification and interviews

5. Based on a review of completed pre-startup safety review forms, does the plant follow established pre-startup safety review procedures?

The audit team should spot-check a few of the pre-startup safety reviews to make sure that appropriate procedures as established by the plant are followed.

6. Based on interviews with a representative number of employees:

- a) Does the pre-startup safety review ensure that safety, operating, maintenance, and emergency procedures are in place and adequate prior to startup?
- b) Does the pre-startup safety review ensure that training of each employee involved in operating the process has been completed prior to startup?

The answer to this question should be obtained by interviews with a representative number of employees. A broad representation of types of employees at the facility shall be included in this group (e.g. union, contract, salaried, hourly). If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.9

4.9 Mechanical Integrity § 29 CFR 1910.119(j)**1. Does the plant have a written mechanical integrity program?**

The PSM rule specifically requires that the plant develop a plant-specific written mechanical integrity program.

2. Does the mechanical integrity program include:

- a) Listing of covered equipment and instrumentation critical to process safety;
- b) Routine maintenance procedures;
- c) Inspection and tests; and
- d) Quality assurance.

The written mechanical integrity program should cover the above-mentioned issues in appropriate detail. The list of covered equipment must at a minimum include the following. As appropriate other equipment should be included in the plant's mechanical integrity program (e.g. UPS, fire water pumps, fire extinguishers and monitors, emergency response equipment).

- i) Pressure vessels and storage tanks;
- ii) Piping systems (including piping components such as valves);
- iii) Relief and vent systems and devices;
- iv) Emergency shutdown systems;
- v) Controls (including monitoring devices and sensors, alarms, and interlocks);
- vi) Pumps; and
- vii) *Technical basis for equipment exclusion.*

Any equipment or instrumentation determined to not be critical to process safety in a covered facility shall be documented, along with the basis for exclusion.

3. Do the inspection and test procedures follow recognized and generally accepted engineering practice?

The audit team should verify the technical validity of inspection and test procedures (including frequency) by comparing them with applicable codes, industry standards, and Vista practices. In case Vista practices are significantly different from consensus industry standards, the audit team should check for documentation which shows Vista

practices are in accordance with good engineering practice.

4. **Do the quality assurance procedures cover fabrication, installation, maintenance materials, spare parts, and equipment?**

The audit team should spot-check the quality assurance procedures to make sure that fabrication, installation, maintenance materials, spare parts, and equipment are covered by the procedures.

- 5a. **Does the plant have a maintenance training program?**

The audit team should verify the existence of a training program for personnel involved in the ongoing maintenance of the plant. Even though the rule does not specifically require a written program, it is prudent to develop a written program. A written program allows easier implementation. In addition, regulatory compliance is easier to prove.

- 5b. *Is maintenance training grandfathered and is associated documentation available?*

In contrast to the training for operators, the PSM rule does not specify that maintenance training be grandfathered. Neither does it say that grandfathering is acceptable. However, OSHA representatives have said that the plant must be able to prove that maintenance personnel have the necessary training as stated in the rule. Thus, reading between the lines, it can be inferred that the plant may follow the following procedure to establish that the maintenance personnel have the appropriate training:

- i) Establish specific maintenance training requirements for each job description,
- ii) Evaluate the past training, education, and experience of each maintenance employee separately and compare them with the established requirements, and
- iii) Certify appropriate employees to be trained for specific job descriptions.

- 5c. *Does the maintenance training for employees and contractor employees include: Process overview, skills training (including craft skill), and job task procedures training?*

Maintenance training on the above-mentioned areas should, at the minimum, cover the following job descriptions:

- i) Non-destructive testing;
- ii) Welding on pressure vessels;
- iii) Instrument calibration;
- iv) Pipe fitting; and
- v) Grinding and cutting operations (Vista H&S Audit, 11-93 Version, Section 21 item 1-7).

In addition, maintenance personnel (direct hire and contract) should be trained in the use of the plant's safe work practices such as hot work permits, lockout/tagout, confined space entry, and line and vessel opening (this question addressed as it relates to job description specific training in Vista H&S Audit, 11-93 Version, Section 28 item 6).

5d. *Does the plant have records of training for the maintenance personnel?*

The audit team should spot-check some of the maintenance training records to ensure that established training is being provided as established by the plant.

6. **Does the mechanical integrity program include procedures for correcting equipment deficiencies?**

The audit team should establish the following:

- i) When discovered, deficiencies outside acceptable equipment limits are corrected immediately;
- ii) If not corrected immediately, procedures exist to ensure safe operation. Such procedures may include: continuous or more frequent verification of process parameter readings; increased unit staffing with continuous watches on critical equipment; operating at reduced temperatures or pressures, reduced flow rates or feed rates, and/or reduced unit throughput;
- iii) Maintenance records show that deficiencies are identified and a rational is recorded that explains what will be done to correct the deficiency; and
- iv) Maintenance records show that deficiencies are corrected according to the schedule assigned.

7. *Does the plant have checklists of maintenance tasks or knowledge to be demonstrated by maintenance employees who undergo on-the-job training?*

of the training program. However, this type of training should also be documented to prove regulatory compliance. Thus, the audit team should evaluate the checklists of maintenance tasks to be demonstrated by each employee and make a determination that the checklists accomplish the objective of providing the adequate training to the employees.

8. Does the plant have records of inspections and tests?

The audit team should spot-check a few of the inspection and test records to ensure that appropriate inspections and/or tests have been carried out at the established frequency and the results fall within the acceptable limits. Inspection and testing program adequacy will be determined by comparison with API and ASME standards, manufacturers recommendations and good engineering practice.

9. *Does the plant have records of quality assurance procedures for new equipment and for maintenance materials, spare parts, and equipment?*

For new plants or equipment being constructed, engineering and/or purchasing records should show how the fabrication of equipment adhered to the appropriate design codes and standards. In the case of used equipment, there should be sufficient documentation to ensure proper maintenance has been performed.

10. *Does the plant have manufacturer's installation and repair manuals for covered equipment?*

The audit team should spot-check a few pieces of equipment to ensure that appropriate installation and repair manuals are available.

Field verification and interviews

11. Based on spot-checks of a representative number of equipment, are equipment maintained as described in the plant's mechanical integrity program?

The audit team should spot-check a few pieces of equipment to ensure that equipment is maintained as described in the plant's mechanical integrity program.

12. Based on interviews with a representative number of maintenance employees:

- a) Are there written procedures available for maintaining process and equipment integrity? Have these procedures been implemented?
- b) Have maintenance employees and contractors received adequate training in an overview of the process, its hazards and procedures to ensure that the employee can perform the job tasks in a safe manner?

The answer to this question should be obtained by interviews with a representative number of maintenance employees. Answers to the above questions from mechanical and maintenance personnel will be weighted more heavily than those from persons of other disciplines. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.10

4.10 Hot Work Permit § 29 CFR 1910.119(k)**1. Does the plant have a written procedure for permitting hot work?**

The audit team should establish the existence of procedures for permitting hot work (Vista H&S Audit, 11-93 Version, Section 29 items 1, 12-25).

2. Does the hot work permit procedure and the actual hot work comply with the requirements of 29 CFR 1910.252(a)?

The permit procedures and actual hot work should comply with the requirement of 29 CFR 1910.252(a). These include:

- i) Does the procedure define when a hot work permit is required (Vista H&S Audit, 11-93 Version, Section 29 item 12)?
- ii) Is a firewatch required for all hot work jobs (Vista H&S Audit, 11-93 Version, Section 29 item 13)?
- iii) Are duties of a fire watch spelled out clearly in the procedure? Are those duties listed on the permit form? Is the firewatch required to sign signifying that he/she understands his/her duties? (Vista H&S Audit, 11-93 Version, Section 29 item 14)
- iv) When hot work is performed, does the procedure require isolation of the work with blinds or other positive means of positive isolation (Vista H&S Audit, 11-93 Version, Section 29 item 15)?
- v) Does the procedure require that lines, equipment, etc. be checked for flammable and combustible materials before permits are issued (Vista H&S Audit, 11-93 Version, Section 29 item 16)?
- vi) Is there a provision in the procedure to remove exposed flammable or combustible material from the welding area (Vista H&S Audit, 11-93 Version, Section 29 item 17)?
- vii) Are provisions made for spark containment or abatement especially on burning, gouging, grinding operations (Vista H&S Audit, 11-93 Version, Section 29 item 18)?
- viii) Are provisions made for protecting sewer openings from slag or sparks (Vista H&S Audit, 11-93 Version, Section 29 item 19)?
- ix) Is it stated in the procedure that block valves are not normally considered acceptable methods of isolation (Vista H&S Audit, 11-93 Version, Section 29 item 20)?
- x) In regards to electrical welding, is it stated that: a) Grounds should be as close to the work as possible, b) Welding machines must not be left unattended while running, and c) Welding leads must be inspected for damage before use? (Vista H&S Audit, 11-93 Version, Section 29 item 21)
- xi) Is it stated in the procedure that oxygen and acetylene or other compressed gas bottles must remain outside of confined spaces (Vista H&S Audit, 11-93 Version, Section 29 item 22)?
- xii) Does the procedure require that oxyacetylene hoses and torches be

- removed from confined spaces during breaks and periods of non-work (Vista H&S Audit, 11-93 Version, Section 29 item 23)?
- xiii) Are provisions made for controlling potential welding fume exposure when welding in enclosed spaces (Vista H&S Audit, 11-93 Version, Section 29 item 24)?
- xiv) Is welding on lines and equipment pressured up with plant air prohibited (Vista H&S Audit, 11-93 Version, Section 29 item 25)?

3. Does the hot work permit require authorization from supervisory personnel?

The audit team should spot-check a few hot work permits to ensure that appropriate authorization requirements are fulfilled (Vista H&S Audit, 11-93 Version, Section 29 items 4,9).

4. *Is there a procedure for cancellation and/or carry-over of permits between shifts?*

This is not a specific requirement of the PSM rule. However, good practices require that hot work permits be valid only for a specified period of time (e.g., maximum duration of one shift and extended for one additional shift by written authorization). In order to avoid lack of communication between different shifts, hot work permits should be automatically invalidated at the end of each shift (Vista H&S Audit, 11-93 Version, Section 29 items 8, 9).

5. Does the plant have copies of blank hot work permit forms?

The audit team should ensure that blank hot work permits are easily available.

6. *Does the plant have recently completed hot work permit forms?*

Even though this is not a specific requirement of the PSM rule, completed hot work permits may be necessary to prove that the established hot work permit procedures are appropriately followed.

Field verification and interviews

7. Based on spot-checks of current and/or recent hot work permit, is the plant complying with the plant's hot work permit procedures?

The audit team should spot-check a few hot work permits to ensure that the plant's established procedures are being followed.

8. Based on interviews with a representative number of employees, are the plant's hot work permit procedures followed for all hot work?

The answer to this question should be obtained by interviews with a representative number of employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.11

4.11 Management of Change § 29 CFR 1910.119(l)**1. Does the plant have a written management of change program?**

The PSM rule specifically requires that the plant develop a written management of change program. Process changes should be managed as specified in the written procedures. Process changes are not specific to changes in process hardware or equipment. Changes in operating procedures, interlocks, ESD's, chemical hazards, etc. are also considered to be process changes.

2. Do the contents of the management of change program include:**a) Process change criteria (not specific to hardware);**

The purpose, scope, and objective of process changes should be documented such that responsible parties can understand their full implications.

b) Authorization requirements;

Written procedures should exist requiring authorized review and approval before any changes are made. The authorization procedures and responsible individuals should be clearly identified.

c) Evaluation procedure;

The evaluation procedure should be clearly described.

d) Technical basis for the proposed change;

The technical basis for change should include a description of why the change is necessary.

e) Impact of change on safety and health.

Procedures should exist to require an assessment of the effect changes may have on safety and health.

3. Do the management of change procedures trigger appropriate modifications to process safety information and operating/maintenance procedures?

This is a specific requirement of the management of change procedure. First, the audit team should check whether the management of change procedures include procedures to update or revise process safety information, operating and maintenance procedures when required. Second, verification of implementation of the update and revision

procedures should be conducted. A check to verify that all hard-copies and/or electronic copies of the process safety information, operating or maintenance procedures reflect updates should be made. Where process safety information, operating or maintenance procedures has been updated, verification of communication of these changes with the affected employees should be made.

4. *Is there documentation showing that required training has been completed before the intended process change is implemented?*

The audit team should verify documentation showing that employees affected by change, or whose actions could create a potential hazard as a result of the change, are adequately trained in the new procedures before startup.

5. *Is there evidence of communication to the employees of the existence of the management of change program and how to use it?*

Management of change procedures can be implemented only if employees at all levels participate. This requires a constant awareness of change recognition and adherence to management of change procedures. The audit team should evaluate any evidence of this awareness activity where basic concepts regarding management of change are communicated to employees. The evidence could consist of awareness training documentation, minutes of safety meetings where management of change is discussed, or other appropriate means of communication.

6. *Does the plant have copies of completed management of change authorization forms?*

Completed forms can be used to prove: a) implementation of a management of change program, and b) adherence to established management of change procedures.

7. *Does the plant have copies of sample backup documents (e.g., safety & health review, process engineering review, pre-startup safety review)?*

Sample backup documents are evidence of adherence to established management of change procedures and good engineering practices.

8. *Does the plant have minutes of change review meetings, if such meetings are held?*

These minutes also can be used to prove adherence to established management of change procedures and good engineering practices.

9. *Does the plant have meeting minutes, lists, or other evidence of having communicated changes to affected employees, before they were exposed to the change?*

The audit team should spot-check a few of the documentary evidence to establish that changes were communicated to employees before they were exposed to the change.

Field verification and interviews

10. Based on review of a process that is undergoing a change, have the following been addressed:

- a) Technical basis of the change;
- b) Impacts on safety and health;
- c) Modification to operating procedures;
- d) Necessary time period for change; and
- e) Proper authorization.

The audit team should spot-check current process changes in the plant to ensure that established procedures with regard to the above-mentioned issues are being followed. Comparison of the current plant conditions or procedures should be made with the description and procedures established by the plant.

11. Based on interviews with a representative number of employees:

- a) Are management of change procedures followed for all changes?
- b) If needed, are operating procedures and process safety information updated, and is training on revised operating procedures completed before change is implemented?

The answer to this question should be obtained by interviews with a representative number of employees. A broad representation of types of employees at the facility shall be included in this group (e.g. union, contract, salaried, hourly). If there is a

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve the conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.12

4.12 Incident Investigation § 29 CFR 1910.119(m)**1a. *Does the plant have written incident investigation procedures?***

Even though a written procedure is not specifically required by the PSM rule, in order to prove regulatory compliance, it is prudent to develop a written procedure. The procedures should require that investigations are started within 48 hrs of the incident (Constitution of the team signifies the start of the investigation). The procedures should also specify criteria for selecting team members, i.e., multi-disciplinary; personnel trained in the techniques of investigation including how to conduct interviews or witnesses, assemble needed documentation, and write reports (Vista H&S Audit, 11-93 Version, Section 2 items 1, 9).

1b. *Do the incident investigation procedures cover near-misses?*

The PSM rule specifically requires investigation near-misses. The audit team should evaluate the near-miss reporting and investigation procedures (Vista H&S Audit, 11-93 Version, Section 2 item 2).

2. *Does the incident investigation procedure include:*

- a) *Incident recognition and reporting;*
- b) **Incident investigation report** (Vista H&S Audit, 11-93 Version, Section 2 item 9);
- c) **Resolution of incident investigation findings** (Vista H&S Audit, 11-93 Version, Section 29 item 15);
- d) **Report review by affected persons; and**
- e) **Retention of reports for a five year period.**

The audit team should evaluate the incident investigation procedures to make sure that all of the above-mentioned issues are covered. All incident (including near-misses) investigations should result in a report which should, at the minimum, contain: i) Date of the incident, ii) Date investigation began, iii) A description of the incident, iv) The factors that contributed to the incident, and v) Any findings that resulted from the investigation vi) incident investigation team members and their qualifications and involvement in the incident.

3. *Is there evidence of incident recognition and reporting awareness activity?*

Incident recognition and reporting awareness activity ensures that all incidents are reported and investigated. The audit team should look for any evidence of such activity. This may include documented orientation sessions and/or minutes of safety meetings where such issues were discussed.

4. **Procedures for acting on findings and tracking their resolution?**

The audit team should evaluate procedures for acting on incident investigation findings and make sure that the intent of the rule is met. The following issues should be addressed:

- i) Management response to incident investigation findings has been issued which includes:
 - a) How each recommendation will be resolved;
 - b) Assignment of responsibility for resolution of recommendation; and
 - c) Schedule for resolution of recommendation. The schedule for resolution of the findings should be reasonable and comparable to industry standards or established corporate policies. If schedules for resolution of recommendation are changed, documentation should be available for reason for change.
- ii) Incident investigation findings and management response to findings has been conveyed to affected employees; and
- iii) Incident investigation report is available for employee review.

The audit team should verify that the established procedures include tracking of resolution of findings. Positive indicators for this item is established management systems which may include computerized database systems for tracking of resolution of findings (Vista H&S Audit, 11-93 Version, Section 2 item 12-17).

5. *Is there a procedure to incorporate incident investigation findings into the plant's training program?*

Incident investigation findings may require changes in the plant's training program. The audit team should verify that the plant's procedures include methods to accomplish this.

6. *Is there a procedure to incorporate incident investigation findings into the plant's operating/maintenance procedures?*

Incident investigation findings may require changes in the plant's operations/maintenance procedures. The audit team should verify that the plant's procedures include methods to accomplish this.

7. **Are completed incident investigation reports (including near-misses and fires) available?**

The audit team should make sure that incident investigation reports are easily available.

8. **Is documentation on resolutions and corrective actions taken as a result of incident investigations available?**

Management response to incident investigation findings and corrective actions taken as a result of incident investigations should be documented. The audit team should spot-check a few of these documents to ensure that appropriate procedures are being followed.

9. *Is there evidence of communication of the results of incident investigation reports to affected employees?*

The audit team should evaluate evidence of communication of the results of incident investigations to affected employees. The evidence may consist of minutes of meetings or other appropriate documented means of communication.

Field verification and interviews

10. Based on interviews with a representative number of employees:
- a) Is there a positive atmosphere which encourages reporting of all incidents and near-misses?
 - b) Are incident investigation findings reviewed with all personnel whose job tasks are relevant to the incident investigation findings?

The answer to this question should be obtained by interviews with a representative

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

number of employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.13

4.13 Emergency Planning and Response § 29 CFR 1910.119(n)**1a. Does the plant have a written emergency action plan?**

The audit team should verify the existence of a written emergency action plan which is current and satisfies the requirements of 29 CFR 1910.38(a) (Vista H&S Audit, 11-93 Version, Section 10 item 1).

1b. Is the plan or applicable parts of the plan reviewed with new employees?

The audit team should verify that the emergency action plan or appropriate parts of the plan are reviewed with new employees (Vista H&S Audit, 11-93 Version, Section 10 item 1).

1c. Is the plan available for all employees for review?

The audit team should also verify that the plan is available on a reasonable basis for all employees to review (Vista H&S Audit, 11-93 Version, Section 10 item 1).

2. Does the plan include:

- a) **Predesignated emergency escape procedures and escape routes;**
- b) **Procedures for personnel who must remain to operate critical equipment during an emergency;**
- c) **A method to account for all personnel after evacuation is complete;**
- d) **Rescue and medical duties for those employees who are to perform them;**
- e) **Methods of reporting emergencies; and**
- f) **Names or job titles of the those who can further explain the plan.**

The audit team should review the plan to make sure that the above-mentioned issues are described appropriately (Vista H&S Audit, 11-93 Version, Section 10 items 2a,c,d,e,f).

3. Does the facility maintain an alarm system which meets the following criteria:

- a) **The alarm system must be capable of being perceived above ambient noise or light levels by all employees in the affected areas of the workplace.**

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

- b) **The alarm must be distinctive and recognizable as a signal to evacuate or to perform designated actions under the emergency plan.**

The audit team should verify that the alarm system meets the specifications given above (Vista H&S Audit, 11-93 Version, Section 10 items 3 a,b).

4. Does the plant have a fire prevention plan as required by 29 CFR 1910.38(a)?

The audit team should verify the existence of a fire prevention plan and make sure that the plant includes (Vista H&S Audit, 11-93 Version, Section 10 item 4):

- i) *A list of the major workplace fire hazards and their proper handling and storage procedures, potential ignition sources and their control procedures and the types of fire protection equipment or systems which can control a fire involving them;*
- ii) *Names or job titles of those personnel responsible for maintenance of equipment and systems installed to prevent or control ignitions and fires; and*
- iii) *Names or job titles of those responsible for control of fuel source hazards.*

5. *Is the implementation of the emergency action plan complete?*

The audit team should establish that all elements of the emergency action plan including employee orientation and/or training has been completed.

6. Does the emergency response plan include procedures for handling small releases?

The audit team should verify that the plan includes procedures for handling small releases.

7. *Does the plant have evidence of communication of the emergency action plan to all employees and contractors?*

The audit team should make sure that there is evidence of communication of the plan to all employees and contractors. This may include documentation of orientation and/or training (Vista H&S Audit, 11-93 Version, Section 10 item 1).

8. *Are drills and critiques held regularly to test the plan?*

The audit team should establish that the plant holds regular drills and critiques to test the plan (Vista H&S Audit, 11-93 Version, Section 10 item 33).

9. *Does the plant maintain records of employee training on emergency response?*

The audit team should spot-check a few of the employee training records to make sure that all employees are trained on the emergency response procedures.

Field verification and interviews

10. Does an on-site review indicate that:

- a) Alarm systems are operational;
- b) Evacuation routes are not blocked, locked, or barricaded.

The audit team should spot-check current conditions in the plant to establish the answers to these questions. Comparison of the current plant conditions or procedures should be made with the description and procedures established by the plant.

11. Based on interviews with representative number of employees:

- a) Are employees who have been identified to assist in emergency evacuations or assigned other emergency response duties provided adequate training?
- b) Do employees understand the emergency action plan and their duties or responsibilities under the plan, including how to handle small releases?

The answer to this question should be obtained by interviews with a representative number of employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.14

4.14 Compliance Audits § 29 CFR 1910.119(o)

1. *Are procedures, forms, and checklists for performing PSM compliance audits available?*

The audit team should verify the existence of procedures, forms, and checklists for performing PSM compliance audits.

2. **Are the persons performing the audit knowledgeable in the audit process?**

The audit team should establish that the personnel performing the compliance audits are knowledgeable in the audit process.

3. **Are copies of audit reports available?**

The audit team should establish that, at the minimum, copies of audit reports for the last two audits are available.

4. **Does the plant have a procedure for resolution of audit report findings?**

The audit team should establish that the plant has a procedure for the resolution of audit findings. The procedure should cover the following issues:

- i) Management response to audit findings has been issued which includes:
 - a) How each finding will be resolved;
 - b) Assignment of responsibility for resolution of findings; and
 - c) Schedule for resolution of findings. The schedule for resolution of the findings should be reasonable and comparable to industry standards or established corporate policies. If schedules for resolution of findings are changed, documentation should be available for reason for change.
- ii) Audit findings and management response to findings has been conveyed to affected employees.

5. **Does the plant have evidence showing that audit findings have been resolved?**

Management response to audit findings and corrective actions taken as a result of compliance audits should be documented. The audit team should spot-check a few of

these documents to ensure that appropriate procedures are being followed.

Field verification and interviews

6. Based on interviews with a representative number of employees, were employees or their representatives provided access to all compliance audit findings?

The answer to this question should be obtained by interviews with a representative number of employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

4.15

4.15 Trade Secrets § 29 CFR 1910.119(p)**1. Is the plant claiming any trade secrets?**

The audit team should establish if the plant is claiming any trade secrets. If no trade secrets are being claimed, verification of the remaining items in this section are not required.

2. *Are procedures available for dealing with trade secrets?*

The audit team should establish that for plants claiming trade secrets, there are specific procedures for dealing with trade secrets.

3. *Are copies of confidentiality documents available?*

The audit team should review completed confidentiality documents to ensure that the established procedures are being followed.

Field verification and interviews**4. Based on interviews with a representative number of employees, is necessary PSM information provided to personnel who need it?**

The answer to this question should be obtained by interviews with a representative number of employees. If there is a conflict between the employee interview results and the data obtained in earlier items, the audit team should resolve this conflict by interviewing additional number of employees until the audit team can reach a definitive conclusion (see highlighted discussion at the beginning of section 4).

RMT/JN Report
VISTA CHEMICAL COMPANY

NOVEMBER 18, 1994
FINAL REPORT

APPENDIX A
REFERENCE DOCUMENTS

Appendix
