

VISTA CHEMICAL COMPANY - ABERDEEN PLANT

PROCESS SAFETY MANAGEMENT MANUAL

Part H: Mechanical Integrity Plan
-----APPROVED BY: *M. G. Symon*

PLANT MANAGER

DATE: 9/17/92**1.0 SCOPE**

This plan defines the requirements for establishing mechanical integrity procedures for the Aberdeen Plant. Development and implementation of mechanical integrity procedures per this plan will fulfill the requirements specified in OSHA 29 CFR 1910.119 paragraph (j) (Attachment "A").

2.0 PURPOSE

The purpose of this plan is to serve as a basis from which procedures will be developed for maintaining the mechanical integrity of plant equipment and facilities.

3.0 APPLICATION**3.1 General Equipment**

This plan applies to the following list of equipment and plant facilities and is broken into two sections. The first section is required by OSHA for the listed equipment in VCM, propane, chlorine, and peroxide initiator service at the Aberdeen Plant. The second section is additional equipment that will be included in the application of this plan. The first section will be first priority for completion of the mechanical integrity procedures:

I. OSHA required equipment (VCM, Propane, Peroxide Initiator, and Chlorine service)

- a. Pressure vessels and storage tanks - exchangers, reactors, filters, heaters, knockout pots, and tanks;
- b. Piping systems (including piping components such as valves, gaskets, instruments, and fittings);
- c. Relief/vent Systems - relief valves, rupture discs, vents, vent headers, incinerators.
- d. Emergency shutdown systems;
- e. Controls - safe operating limit measurement and control devices, safety, health and environmental monitoring devices, critical safety interlocks and alarms;
- f. Pumps.

II. Other required equipment:

- a. Boilers;
- b. Incinerators, fluid bed dryers and rotary dryers;
- c. Compressors and blowers;
- d. Electrical Systems;
- e. Safety systems - fire protection systems, emergency communication systems, breathing air systems, etc.;
- f. Equipment listed in I. above in other services;

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- g. Buildings and Ventilation Systems;
- h. Refrigeration Systems.

4.0 PROCEDURES**4.1 Basic Requirements**

The Mechanical Integrity procedures developed shall be written and maintained to provide an up to date resource. The general format for these procedures is as follows:

I. General Information

- a. Location.
- b. Procedure title.
- c. Date.
- d. Issue or revision number.

II. Purpose**III. Scope****IV. Definitions - if required.****V. Body - Detailed description of the procedure. This should include specific job steps, special training (if required), frequencies of tests or inspections (if applicable), documentation, and any special forms.**

- a. Any design code or consensus standards that are applicable shall be identified. Test and inspection procedures for code compliance must be defined if they are required.
- b. The procedures shall define the appropriate action to be taken if inspection or testing indicates a system or equipment does not meet specifications or is outside the defined limits.
- c. The procedures shall define the appropriate action to be taken if the documentation for existing equipment and systems is not available. In some cases this may lead to an equipment adequacy review (See section 4.3).

VI. Quality Assurance - The written procedure shall define any Quality Assurance methods, tests, or documentation that is required for materials, fabrication, and installation of new equipment, replacement parts, or materials.**VII. Records - The procedure should define the specific documentation required to be retained as part of the permanent records of the equipment or system.**

- a. The procedure shall define which certification records are required to verify design codes or standards, inspections, installation, or quality control checks.
- b. The certification record must contain the date of the inspection or test; the person performing the test or inspection; and identification of the equipment or system.
- c. The records shall be maintained in the Maintenance Equipment files.

VIII. Training - Each procedure must define the skills required to perform the job functions and ensure each employee is adequately trained.

- a. Definition of the skills can be general such as by craft type, if the normal craft training adequately covers the job scope.

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- b. If this training is a unique skill then the procedure must define the training plan and certification of the training must be documented.
- IX. Safety - If required, the procedure must define any special safety precautions or procedures.
- X. Responsibilities - The procedure must identify the personnel that are responsible for the execution of each procedure as a whole or each part of the procedure as applicable.

4.2 Vista Standard Engineering Procedure

Standard engineering procedures will be developed to define specific detailed procedures and/or basic standards for the process equipment defined in paragraph 3.1.

- a. The procedures should be categorized by equipment or types of systems.
- b. These procedures should follow the basic requirements defined in paragraph 4.1. The procedure should detail as applicable, all phases of plant equipment or systems life; from design, installation, and construction, routine maintenance and repairs, to retirement.

4.3 Equipment Adequacy Reviews

Equipment and systems that do not comply with either the plant or company mechanical integrity procedures must be reviewed. This review must determine that the equipment or system is safe for continued operation under current conditions or corrective action must be implemented. The review shall include, but is not limited to, the following items:

- a. Special non-destructive tests such as ultrasonic thickness measurements, x-ray, acoustic emission testing, etc.;
- b. Hydrotests;
- c. Pressure calculations;
- d. Other tests as applicable.

This review must be documented and retained in the Maintenance Equipment files.

4.4 Quality Assurance

Quality Assurance procedures will be developed as part of the Vista Standard Engineering Procedures (VSEPs) and for the Aberdeen Plant.

- a. The VSEPs will identify critical steps or materials that require a detailed quality assurance procedure and incorporate these critical steps or materials as part of the overall procedure.
- b. The Aberdeen Plant will identify critical materials, repair parts, and equipment. Quality assurance procedures will then be developed for the critical materials, repair parts, and equipment. These procedures will define the methods used to ensure that these items are ordered, received, warehoused, issued, and installed properly. These procedures shall also define quality assurance responsibilities by job position.

ATTACHMENT "A"29 CFR 1910.119
PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS(j) MECHANICAL INTEGRITY

- (1) Application: Paragraphs(j)(2) through (j)(5) of this section apply to the following process 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; and,
 - (v) Controls (including monitoring devices and sensors), alarms, and interlocks.
 - (vi) Pumps
- (2) Written procedures.
 - (i) The employer shall establish and implement written procedures to maintain the on-going integrity of process equipment.
- (3) Training.
 - (i) The employer shall assure that each employee involved in maintaining the on-going integrity of the process is trained in an overview of the process and its hazards and in the procedures applicable to the employee's job tasks.
- (4) Inspection and testing.
 - (i) Inspection and tests shall be performed on process equipment.
 - (ii) Inspection and testing procedures shall follow generally accepted good engineering practices.
 - (iii) The frequency of inspections and tests shall be consistent with manufacturer's recommendations and good engineering practices; or, more frequently if determined necessary by operating experience.
 - (iv) The employer shall have a certification record that each inspection and test has been performed in accordance with this paragraph. The certification shall identify the date of the inspection; the name of the person who performed the inspection and test; the serial number or other identifier of the equipment; a description of the inspection or test; and the results of the inspection or test.
- (5) Equipment deficiencies. The employer shall correct deficiencies in equipment which are outside acceptable limits before further use or in a safe and timely manner where necessary means are taken to assure safe operation.
- (6) Quality assurance.
 - (i) In the construction of new plants and equipment, the employer shall assure that the equipment as fabricated is suitable for the process

- application.
- (ii) Appropriate checks and inspections shall be performed as necessary to assure that equipment is installed properly and consistent with design specifications and manufacturers instructions.
 - (iii) The employer shall assure that maintenance materials, spare parts, and equipment are suitable for the process application for which they will be used.