

VI. - MECHANICAL INTEGRITY PROGRAM
Nevada Division of Environmental Protection
Chemical Accident Prevention Program
Data Form



1. Is there a Mechanical Integrity Program Procedure?

Title:	Revision & Date:
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2. Describe how all equipment, piping and instrumentation has been identified and evaluated to ensure necessary preventive maintenance as defined by vendors, plant experience or good engineering practice is being performed.



3. Types of preventive maintenance identified. Check any that apply.

Type of Preventive Maintenance	Corrosion/Erosion Monitoring <small>note 1</small>	Other Monitoring <small>note 2</small>	Calibration	Function Testing	Part Replacement or Rebuild	Total Replacement	Other <small>note 3</small>
Heat Exchangers							
Other Types of Pressure Vessels & Storage Tanks							
Piping Systems							
Manual Valves							
Pressure Relief Devices							
Pressure Relief Systems (<i>pressure relief discharge headers and flare systems</i>)							
Scrubber Systems							
Building Ventilation Systems (<i>if CAPP process inside</i>)							
Emergency Shutdown Systems							
Instrumentation							
Sensors (<i>toxic/combustible gas, flame</i>)							
Alarm Systems							
Pumps							
Compressors							
Other Rotating Equipment							

Notes:

1. Indicates corrosion or erosion monitoring through non-destructive examination, corrosion coupons or other methods.
2. Indicates other types of monitoring such as external and internal visual inspection, vibration monitoring or other types of monitoring.
3. Indicates other types of PM such as heat exchanger cleaning, valve rebuilding



Questions to consider while developing the PM list and schedule (*response to these questions on this form is not required*):

- a. Is wall thickness monitored for all pressure vessels and storage tanks (operating in excess of 15 psi), and does the frequency of monitoring consider historical wall loss or the potential for corrosion or erosion in the system?
- b. Is wall thickness monitored for all vessels and storage tanks (operating at 15 psi or less), and does the frequency of monitoring consider historical wall loss or the potential for corrosion or erosion in the system?
- c. Is wall thickness monitored for all process piping (where failure could result in the release of toxic gas, or a fire or explosion) and does the frequency of monitoring consider historical wall loss or the potential for corrosion or erosion in the system?
- d. Are all pressure relief devices recertified or changed-out on a periodic basis, which includes verifying the set pressure, and is the recertification conducted by a nationally recognized code shop when required?
- e. Is the recertification of the pressure relief device pursuant to nationally recognized codes & standards, vendor recommendations, industry recommendations or operating experience?
- f. Are flares & igniters maintained in a manner and frequency consistent with vendor recommendations or industry recommendations or operating experience?
- g. Have scrubber components been evaluated for inspection type and frequency, and are the components being maintained adequately? If the scrubber vendor recommends more stringent maintenance activities or schedule, is this being maintained?
- h. Are emergency shutdown system circuits checked for continuity, and are system components checked for operability on some frequency? Are system components maintained pursuant to vendor recommendations, industry recommendations or on a frequency and criteria based upon operating experience?
- i. Are critical process instruments, controls and analyzers calibrated and maintained pursuant to vendor recommendations, industry recommendations or on a frequency and criteria based upon operating experience?
- j. Are pumps, compressors, blowers and other rotating equipment maintained pursuant to vendor recommendations, industry recommendations, or on a frequency and criteria based upon operating experience?

NOTE: If instrumentation, sensors and alarms are used to initiate action under the Emergency Action Plan / Emergency Response Plan, calibration and testing must be performed at least annually.



4. Source of maintenance requirements and procedures. Check any that apply for each type of equipment or instrumentation.

Source of Maintenance Procedures	Vendor O&M Manuals	Codes & Standards	Industry Recommended Practice	Facility Experience	Other (specify)
Heat Exchangers					
Other Types of Pressure Vessels & Storage Tanks					
Piping Systems					
Manual Valves					
Pressure Relief Devices					
Pressure Relief Systems (<i>pressure relief discharge headers and flare systems</i>)					
Scrubber Systems					
Building Ventilation Systems (<i>if CAPP process inside</i>)					
Emergency Shutdown Systems					
Instrumentation					
Sensors (<i>toxic/combustible gas, flame</i>)					
Alarm Systems					
Pumps					
Compressors					
Other Rotating Equipment					

5. Is a work order system used to schedule and track preventive and corrective maintenance activities?



6. Types of training provided to maintenance personnel. Check any that apply for each position listed below.

<p style="text-align: center;">Type of Training (Below, list different maintenance positions including mechanical, instrument & electrical)</p>	Preventive Maintenance Procedures	Corrective Maintenance Procedures	Safe Work Practices	Overview of Process	Management of Change	Other (specify)

7. What system is in place to ensure the compatibility of new components and spare parts with the process?

8. What system is in place to ensure that equipment, instrumentation and electrical components are installed per design specifications and vendor requirements?



9. QA/QC (Quality Assurance / Quality Control)

Quality Assurance is the management oversight function of the portion of the Mechanical Integrity Program procedure that deals with the proper specification, procurement, receiving, warehousing and installation of process components

Quality Control is the technical function of the Mechanical Integrity Program that insures verification that the process components were installed according to the Quality Assurance Program.

What system is in place to insure:

- a. Proper materials are specified?

- b. Specified materials are ordered?

- c. Specified materials are received?

- d. Specified materials are issued for installation?

- e. Specified materials were correctly installed?