



# Inspectioneering Journal

ASSET INTEGRITY INTELLIGENCE

FEATURING

## SANDS OF TIME CREATE THE MECHANICAL INTEGRITY COMPLIANCE OFFICER (MICO)

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# SANDS OF TIME CREATE THE MECHANICAL INTEGRITY COMPLIANCE OFFICER (MICO)

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Today's inspector is gaining ever more respect for his/her abilities and knowledge as regulatory agencies lean more on Mechanical Integrity during audits.

The role of an API inspector is rapidly changing. Necessary skills for success have transformed as technology, standardization, and regulations have become part of the way of life. An API inspector has transformed over the last 40 years, from an employee that simply captured and recorded data for minimally worded handwritten reports, into a Technical Analyst that now manages and maintains complex databases to project what may happen in the future. The inspector is responsible for achieving an overall goal of safety, environmental protection, and efficient production through assured mechanical integrity (MI).

## WHAT IS DRIVING THIS ROLE CHANGE?

In the past 40 years, inspection has gone from discovery work to forecasting work and equipment reliability. Inspectors have gone from reporting what *has* happened, to projecting what *will* happen by the use of technically advanced tools. The common factors that changed have been time and public attitude; leaks, spills, and fires were no longer acceptable in the eyes of the public or regulatory agencies. As a result, the act of inspecting shifted from a reactive approach to a proactive approach. In today's operating environment, it is not enough to base future inspection plans solely on prior history of equipment condition. Inspection plans should be dynamic and account for changing process conditions, equipment modifications made over years of operation, current conditions and planned future use.

In today's world, Unit Inspectors must expand their job roles and responsibilities by maintaining supporting documentation of the continuous changes to equipment. This involves the new job duties of the "Mechanical Integrity Compliance Officer" (MICO).

This position spawned from the demand to keep the industry compliant with the OSHA & EPA requirement of using RAGAGEP (Recognized and Generally Accepted Good Engineering Practices). "RAGAGEP is any 'established' code, standard or engineering practice based on sound engineering principles. It usually takes the form of an industry consensus standard."

**(OSHA) 29 CFR 1910.119(d)(3)(ii)** "The employer shall document that equipment complies with recognized and generally accepted good engineering practices."

**(EPA) 40 CFR 68.73 (d)(2)** "Inspection and testing procedures shall follow recognized and generally accepted good engineering practices"

Unit Inspectors are now performing key duties such as:

- ✓ Creating and managing complex Mechanical Integrity databases which are critical to organizations for storing and retrieving key information. People throughout the organization must be able to depend on this data to be accurate, reliable, and user friendly in order to accomplish daily tasks and meet business goals.
- ✓ Insuring accuracy of data by having this Process Safety Information (PSI) data readily available.
- ✓ Using RBI methodology with newly developed API practices to evaluate and develop inspection strategies, including inspection intervals.
- ✓ Ensuring mechanical integrity (MI) compliance per OSHA and API codes and standards.

Wow, look at that last key duty! As a Unit Inspector, you are assuring compliance to RAGAGEP, according to API and OSHA. You, in effect, become the Compliance Officer.

## WHY ARE MECHANICAL INTEGRITY DETAILS SO DEMANDING?

It's simple, if you are managing a Mechanical Integrity Division within an OSHA Covered Process Industry, it is the law. Internal auditors, third party audit teams, and regulatory agencies have proven the mandate for precise care of equipment is essential for a successful PSM program. When the PSM program is an industrial requirement to "do business," we should all want an outstanding PSM program; therefore, a well-developed Mechanical Integrity Division will be included. Management support is the essential key to this success as well.

## DEVELOPMENT OF AN API UNIT INSPECTOR

There is a progression to becoming an API Unit Inspector. Most Inspectors spent time gaining industry experience as a craftsman, NDE technician, or in Operations. They then attain an API inspection certification based on passing the appropriate test and having appropriate, documented experience. After time and gaining experience, they eventually achieve the position of a Unit Inspector. Now (within the last 10 to 15 years), there is an additional step in the career development ladder, and that is as an RBI (Risk Based Inspection) Specialist. Adding even more training and knowledge, now the Inspector's next level of progression is to an RBI Specialist and/or the new role of a Mechanical Integrity Compliance Officer (MICO). These are two distinct roles:

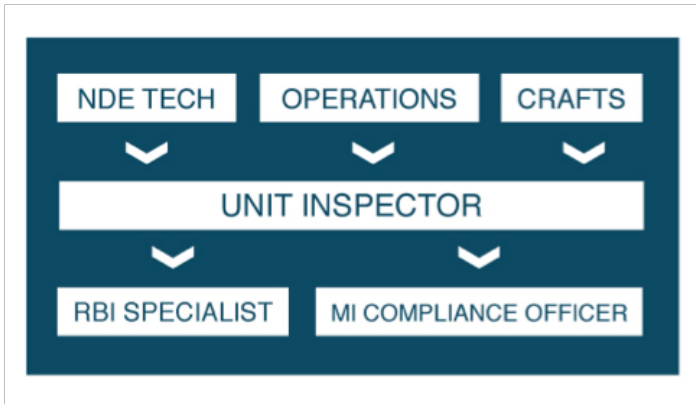
**RBI Specialist** – The candidate in this position uses both the

OSHA 1910.119  
Process Safety Management



probability of failure (POF) and the consequence of failure (COF) to develop inspection plans for each piece of equipment.

**Mechanical Integrity Compliance Officer (MICO)** – The candidate must ensure governing rules and laws of pressure equipment are being followed precisely.



**THE MECHANICAL INTEGRITY COMPLIANCE OFFICER**

A Mechanical Integrity Compliance Officer's (MICO) work centers on the four key areas of:

1. Inspection Auditing,
2. Long term planning,
3. Adhering to OSHA-referenced RAGAGEP inspection practices, and
4. Documenting.

**1. Inspection Auditing**

MICO's are often also known as "performance auditors," a title very much linked to their role as Inspectors or Process Safety experts. In most cases, one of their primary responsibilities is to make sure that a corporation, business, or other entity is complying with both internal and external rules governing how things should be done. The best way for them to make this

determination is to closely examine what goes on each day. This can happen either through constant observation or intermittent, random sampling.

Inspections look different in different industries, but the driving goal is always to compare how things should be done with how they are really being done. Mechanical Integrity (MI) often centers on proper planning, how equipment inspections and records are processed, and how records are kept in addition to filing, retention, and forecasting of increasing safety and reducing risk. Officers usually conduct their evaluations through a combination of observation and database management.

"Every day is an adventure  
when you're a MI Compliance Officer"

**2. Long Term Planning**

A Mechanical Integrity group cannot simply produce an inspection schedule without an in-depth thought process. This planning takes a team, procedures, goals, and most of all MI knowledge.

MICO's often make an effort to reach out to workers to get information, which frequently comes in the form of observations. Complications abound when it comes to evaluating observations. A good MICO is sure to follow up on any information, no matter how far-fetched it sounds. This often means that he or she spends a lot of time investigating everything that employees report, even if the complaints do not ultimately point to any legitimate concerns. Small inaccuracies are often found during these investigations but easily corrected.

When the proper time is taken to ensure quality records exist within the complex, the MI program begins to run smoothly. This takes time—long term planning evolves from years of activities put into precision formation. Once the equipment to inspect has been identified with as many details captured as possible, then the inspection plans can be laid out.

**3. Adhering to RAGAGEP Inspection Practice**

"Recognized And Generally Accepted Good Engineering Practices" (RAGAGEP) – are engineering, operation, or maintenance activities based on established codes, standards, published technical reports or recommended practices (RP) or similar documents. These practices detail generally accepted ways to perform specific engineering, inspection or mechanical integrity activities, such as inspecting a storage tanks, or servicing relief valves. This OSHA definition may be undergoing further elaboration and clarification. Documenting a sound foundation of how and why we conduct Mechanical Integrity efforts with such precision will help prove a strong management system of compliance.

**4. Documentation**

We all work with many great co-workers, with whom we have who we have shared and gained great knowledge. This is one of the best ways to gather data, but must be translated into records. As we build processes, programs, and best practices, we must document them. As employees retire, move to other facilities, or just plain leave for any reason, the acquiring records and data left

behind must be paramount. In the inspection world, the words and data we describe field new discoveries which must not leave misinterpretations to the next reader.

### IN-HOUSE OFFICERS

Most large companies hire MICOs as direct full-time employees. These workers are heavily involved in diverse audits, usually reporting their findings back to management at regular intervals. Their job is to make sure departments and divisions are complying with legal requirements and company standards and procedures as well as meeting individual corporate goals such as tracking Key Performance Indicators for Mechanical Integrity. This officer's time is devoted to evaluating and determining what raw data is valid data, and what needs further evaluation.

### PRIVATE AND CONTRACTED PROFESSIONALS

A number of compliance professionals also work independently, either on their own as freelancers or for private PSM - Mechanical Integrity companies. People in this category are usually hired on a project-by-project basis by companies looking for a one-time assessment of progress toward certain rules or achieving certain goals. Projects can be short or long depending on the depth of the information needed, but typically range from a few months to about a year. These professionals typically develop expertise in evaluating certain kinds of concerns.

Even for companies with full-time staff, compliance teams may reach out to independent contractors if they feel that an outside perspective is needed. For instance, this is often the case when a business is concerned that it is about to be audited by a government agency, or if a major new construction project overloads company officers. Getting an unbiased external view of compliance matters can be a good way to fix minor problems before they become major liabilities.

29 CFR 1910.119 requires PSM audits. During these audits, Mechanical Integrity seems to get a majority of the attention. When Mechanical Integrity Process Safety Information is in good order, these audits could move smoothly. There is an abundance of data to collect, manage, and present to prove compliance.

### JOB SKILL REQUIREMENTS AND EXPECTATIONS

The Mechanical Integrity Compliance Officer provides guidance, direction, and audits of the various departments to ensure compliance with the regulatory agencies governing covered processing systems and equipment. Getting started in the field usually requires a combination of education and experience. Years of field experience, training, mentoring, and API certifications are helpful characteristics for an effective MICO. Most people have some experience working in the crafts. Having some knowledge of how things work in the field often makes looking for disparities and navigating the complex world of industry regulations somewhat easier.

Job requirements are much more detail-orientated. Data produced, recorded, and managed today will be used for years to come. To represent the need for an extended scope of knowledge, here are some typical experience and education backgrounds that one should have or obtain:

- ✓ At least 10 years of industrial experience in a technical support function
- ✓ Understanding of OSHA Process Safety Management rules (29CFR 1910.119)
- ✓ API 580 Certification, Risk Based Inspection
- ✓ Successful completion of PSM and RMP Audit training
- ✓ Strong working knowledge of OSHA, DOT, API, ASME, NFPA, and other industry regulations and standards (RAGAGEP)
- ✓ Experience surrounding DOT compliance for intrastate regulated piping. Schedule routine annual RV inspections
- ✓ Working knowledge of plant processes and equipment
- ✓ Excellent computer skills
- ✓ Excellent interpersonal skills
- ✓ Specific abilities to:
  - o Manage, direct, facilitate and perform Risk Based Inspection (RBI) analyses for the covered process equipment
  - o Provide compliance information to Lead Inspectors so they can assure compliance with standards for insurance coverage as well as all State, Federal, and local requirements for process equipment
  - o Collaborate internally with project managers, engineers, technology managers maintenance managers, and Health, Safety & Environmental department managers
  - o Interact with the PSM Manager and Capital Expenditure Manager to report compliance issues and assist in the plans to mitigate issues
  - o Interact with regulatory agencies such as OSHA, DOT, DEQ, and EPA regarding mechanical integrity
  - o Keep current with engineering practices; recommend appropriate changes to the inspection programs and ensures compliance
  - o Work closely with all departments specifically including Operations, Maintenance, and, Engineering to ensure that the Inspection Department operates in an efficient and cost effective manner
  - o Develop and maintain reporting metrics needed to indicate the level of regulatory compliance for fixed process equipment inspection
  - o Develop and maintain electronic risk management tools as needed for compliance
  - o Audit of documentation for PSM/RMP compliance
  - o Audit, recertify, and/or, develop Mechanical Integrity procedures
  - o Lead PSM/RMP Incident Investigations for issues concerning covered process equipment, perform research and interviews, lead team meetings, facilitate and direct Root Cause

Failure Analysis, and develop the final incident report

- o Train personnel with respect to PSM/RMP and Mechanical Integrity Systems' requirements
- o Develop and maintain tracking for pressure vessels, tanks, relief valves and piping systems
- o Interact with Maintenance and Operations Supervision to ensure all PSM inspections are conducted per code requirements
- o Create the quarterly inspection presentations for unit management
- o Manage the IDMS (Inspection Department Management System) corrosion monitoring system, including license agreements, data control, auditing, and reporting

## CONCLUSION

Today's Inspectors have gained respect for their abilities and knowledge as regulatory agencies pay close attention to Mechanical Integrity during industry audits. In today's world, the Unit Inspector must increase job scope by maintaining supporting documentation of the continuous changes to equipment. The Unit Inspector is ensuring compliance according to laws and best practice alike, becoming the Compliance Officer. Mechanical Integrity details are so demanding because, when managing a Mechanical Integrity Division within an OSHA Covered Process Industry, it's the law.

Critical equipment must be identified, designed, installed, and properly maintained. Employees responsible for the integrity of the equipment must be qualified to do so. Any Mechanical



Integrity discrepancies identified must be resolved or mitigated to operate safely. The MICO can assist in designing the systems required to manage these for Mechanical Integrity.

How do you score?

- ✓ Identify your current compliance status
- ✓ What are you lacking to be compliant
- ✓ Develop the best path forward to gain compliance
- ✓ Establish systems and programs to manage ongoing compliance

Remember, you must start somewhere beginning with the end in mind and know there is always room for improvement. As the role of the Inspector changes into a more robust Mechanical Integrity Compliance Officer, so will the quality of the processes you build. ■

# Asset Integrity.

It really *is* in our name.

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Pinnacle Asset Integrity Services is your one stop shop for mechanical integrity and reliability

Minimize Risk. Optimize Cost. Improve Compliance.

## Engineering Services

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- MI Assessments
- Data Management
- Circuitization
- Corrosion Modeling
- Vessel Analysis/FFS
- OSHA Compliance
- NEP Preparedness
- Failure Analysis
- TML/CML Optimization
- Software Conversion/Implementation
- Tank and PRD RBI
- MI/RBI Evergreening

## Inspection Services

- Inspection Planning and Management
- Asset Inspection Strategies Generation
- Turnarounds
- QA/QC Vendor Surveillance
- API Inspections (510, 570, 653)
- CWI Inspections
- ASNT Level III Services
- NACE Level III Inspections
- Level II UT, PT, MT Testing
- Level II UTSW Testing
- Advance NDT Management
- API QUTE Certified Shearwave
- Inspection of New Construction

## Training

- API 571 & 580 Exams
- IDMS and RBI Software
- MI Program Maintenance Training



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