Mistakes, Omissions, and Other Process Safety Information Regularities (and How to Correct Them – the “Data Turnaround”)

Patrick Nonhof
Provenance Consulting
patrick.nonhof@provenanceconsulting.com

Abstract

Recent industry performance and National Emphasis Program (NEP) citations demonstrate that the petrochemical industry continues to struggle with the basics of nearly all of the PSM elements. Many of the problems are rooted in inaccurate Process Safety Information (PSI). This paper explores how nearly twenty years after the passage of OSHA’s Process Safety Management of Highly Hazardous Chemicals regulation, facilities still struggle to effectively manage their PSI. Each facility must maintain separate and disparate systems, with each system designed for compliance with the different elements of the PSM standard.

How Did We Get Here? After the passage of the PSM standard, each facility charged multiple departments to comply with their relevant PSM element(s). Each department implemented their system separately and independently, with their own departmental goals in mind. For example:

- Reliability and Inspection departments implemented Mechanical Integrity
- Human Resources and Operations implemented Training
- Engineering implemented Process Safety Information
- Health, Environmental, and Safety implemented Process Hazard Reviews

Each system must be maintained (as it serves a critical purpose), and the divisions between the departments continue.

Law of Unintended Consequences During each element’s implementation the responsible personnel verified, confirmed, or generated PSI as they required it. Rarely did these “implementation teams” share the information across departmental boundaries. It was not uncommon to see a member from one department in the field confirming information on a pressure vessel one day and a resource from another department confirming the same information for the same equipment the next day. Lack of familiarity with PSI, inadequate procedures, and just simple human error resulted in each system having discrepant equipment listings and associated PSI. These problems have never been resolved and continue into today’s management systems.

So Where Are We? Voltaire is credited with stating: “Perfect is the enemy of the good”. This holds very true of the current PSM climate in many petrochemical facilities.

Facilities hang on to the hope that implementation of “new and improved” systems will eliminate the PSI discrepancy dilemma – even to the point of paralyzing additional activity to correct the current problems. These “improved” systems frequently compound the problem instead of solving it. Everyone hopes that someday there is one system that graphically displays the
equipment in our facilities, presents all equipment documentation, displays the current operating conditions, contains the correct engineering information, lists all the associated risks of the process, and is simple enough for all levels of the organization to use. While there are many companies claiming to be able to “do everything”, the author contends a true “do-it-all” system does not exist today.

**Where Do We Go From Here?** Each facility has implemented multiple systems that have equipment-centric data, documents, and information. Instead of hoping for a “perfect” solution, each facility should leverage their existing systems for the benefit of each other by aggregating their information into one location. This allows you to cross-check each system against one another, compile all the information into a single location, and view all the data in one spot. This can be accomplished for small facilities using simple spreadsheet applications and for larger, more complex facilities there are enterprise-level applications available to perform this data aggregation, validation, and discrepancy identification. It is helpful for facility management to think of this type of effort as a “data turnaround” – where you dedicate personnel to perform the activity and make resources from all levels of the plant available to support and guide the effort.

One of the most important aspects of a “data turnaround” is to define what makes a data value correct. While this seems elementary, it is surprising how often engineers and other personnel get this wrong. For instance, what makes a relief device set pressure correct – how it is stamped in the field, what the relief system design basis says it should be, or what the valve shop indicates they set it at last time? The author will argue that the most important aspect of getting your data aligned is to “as-built” all the information first.

The target audience for this paper includes all personnel and PSM professionals responsible to use, maintain, and validate PSI as well as engineers and management that rely on and utilize PSI to run, optimize, and manage the plant.