

Process Safety Management What Is the Right Audit Approach for You?

**Brian D. Rains
Global Process Safety Management Leader
DuPont Safety Resources
Wilmington, DE**

In the implementation of Process Safety Management (PSM) to a highly hazardous process, those who implement or lead this effort need good feedback to ensure that development and continuous improvement of the managing systems do occur and that the desired results are achieved. This feedback can come in more than one form. One important feedback method is the use of metrics. A second valuable and often more detailed feedback system is the periodic and robust process of auditing. As such, I am going to discuss “Process Safety Management, What Is the Right Audit Approach for You?”

I will share my perspectives as one who has been involved in thousands of audits. I have worked primarily in operations management at eight different plant locations, on three continents, and with two different companies. In addition, I have held various regional and global positions which required travel to many other sites. Most of my experience has been in conducting First Party Audits and I have also been audited by both Second and Third Party Audit teams. And now, as the Global Process Safety Management Leader for DuPont Safety Resources, I conduct what amounts to third party assessments (or audits) for current and potential clients around the world.

Universally, I have found auditing to be critical to the successful implementation of Process Safety Management. The same could also be said of just about any managing process that is being implemented--Six Sigma, Lean Manufacturing, Environmental Planning and Product Stewardship.

So what is the right audit approach for you? I will organize the balance of my presentation around the simple concept of First Party, Second Party and Third Party Auditing, describing from my experience the pros and cons of each and why each type should be included in your own audit approach. And as I referenced earlier, I also believe strongly that the learnings I will share with respect to PSM auditing have strong relevance to all forms of EHS auditing.

First Party Auditing

First Party Auditing is a term with various definitions. DuPont’s First Party Audit Standard defines five different types:

- Behavior Based Audits where an employee or employees observe other employees performing work and then provide feedback

- Layered or Tiered Audits where a manager leads an audit team of individuals from his/her organization. This allows the manager to demonstrate his/her value for safety and establish high standards of compliance and performance
- Area Audits where the focus is a geographic area of the site
- Cross Area Audits where an area audit is performed by auditors drawn from other areas within the site
- Focused Audits where the audit concentrates on a single aspect of the EHS or PSM management system

I am a bit of a traditionalist; therefore, for me, a First Party Audit is analogous to writing in the first person when the pronouns “I” (singular) and “we” (plural) are used. Auditing in “first person” is the spirit behind First Party Auditing where managers and workers audit themselves, observing current conditions, evaluating performance against standards, and deciding what is acceptable and where corrective actions are needed. An audit without participants from the audit area is a different breed of First Party Audit.

One tool that I have found to be very effective for conducting First Party Audits is a digital camera, taken along, of course, with the appropriate work permits in hand. Pictures can be worth a thousand words or more. When shared in a leadership team meeting, in a one-on-one counseling session or in an organization-wide safety meeting, really good pictures do not need further explanation. In the following examples, there was no disputing the unacceptability of the observed conditions. It was also crystal clear to everyone how I felt about what was observed and what I believed needed to be done to correct the situation. Here are a few of my favorites:



Exhibit 1



Exhibit 2



Exhibit 3



Exhibit 4

In these instances, as an additional training exercise, we spent time in a group setting attempting to identify as many corrective actions as possible from what was visible in the pictures.

Another technique I have found helpful is to teach the organization in a safety meeting the lessons I have learned about auditing. My favorite training slide is below:

What are Brian's Audit 'Best Practices'?

- Know what you are looking for. Know the standard you are comparing against. Be prepared
- Get close to the source and make the observation first hand;
 - Touch the actual permit or procedure
 - See the field observation with your eye; take a picture
 - Get physically close to what you are auditing. Get down on your knees. Climb the stairs or the stationary ladder
- Make a record of your observations, including the location, so that future corrective action is properly directed
- Look for anything and everything that is not 100% correct. Find an expert and ask questions as to what should be correct.
- Correct as many of the observations as possible on the spot

An interactive SHE observation process is an effective First Party Audit approach for creating positive interactions while identifying at-risk behaviors and correcting them. It is intended to deliver direct, positive reinforcement and reinforce acceptable standards. The basic approach is simple.

What Is a Behavior-Based Safety Audit?

It *IS*

- A 30-minute observation of people working in the site
- A key indicator of the level of safety management in that area
- An activity that motivates employees and increases safety awareness
- A positive experience

It is *NOT*

- A “gotcha!” (no names)
- Just a job for the safety office

What type of contact do you believe would be appropriate for these persons?



Exhibit 5



Exhibit 6

All of the principles that apply to safety First Party Auditing also apply to First Party Auditing of Process Safety Management. At the same time, there are numerous differences. The largest single difference is that unsafe PSM behaviors and conditions are not as readily observed. I have very few pictures of a poor quality PHA, a piece of new equipment that was started up without a Pre-Startup Safety Review or a PSM training course that was not taken per schedule. These might be my two best:

Mechanical Integrity



Exhibit 7

Facility Siting



Exhibit 8

We have been collecting a series of questions that leaders can ask during routine, informal First Party Audit interactions with employees with respect to PSM, their knowledge, and their degree of compliance. A few appropriate questions include:

- Can operators or maintenance technicians show how they access the most up-to-date P&ID's and/or equipment inspection histories?
- Has the individual participated in any recent PSM activities? An incident investigation? A PSSR? A procedure review? An audit?
- Have there been any recent changes in Standard Operating Conditions, Alarm Set Points or Interlock Set Points? Were they approved and documented? Were the operating personnel trained on the changes?
- Does a control room technician know the safe operating limits of the plant and the consequences if operated outside those limits?
- Is the control room technician currently operating the facility with any interlocks by-passed? If so, was the by-pass procedure appropriately followed?
- Is the control room technician aware of any work going on in the plant so that he/she can alert people to any process emergency? Any hot work in progress?

On larger sites, it is often more meaningful to conduct PSM audits across areas or units. In these situations, members of management or other knowledgeable subject matter experts perform audits in units outside their own area of responsibility. The strength of the cross-area audit is that auditors bring new and different perspectives into the area being audited. In addition, they might also be site level resources with advanced knowledge and training. An added plus is that the audit team members learn how others are addressing the same PSM challenges they likely face in their own units.

It is true that one of the weaknesses of First Party Auditing is the potential that a less than rigorous and comprehensive audit will be performed. This could come from a desire to reduce the resulting work load, to feel better about the progress made to date or to protect the leader or team from scrutiny about their poor performance. Auditors must display strong leadership and

commitment in order to conduct meaningful First Party Audits. It has been my observation, however, that the best performers are also the best First Party Auditors, even within their own area of responsibility. The best performers demand brutal honesty, have often studied more and have achieved a higher level of subject matter expertise. The best performers place the integrity of the managing system and its efficacy before any individual friendship or ego. Thus, the best performers also perform the best First Party Audits. I personally do not have any reservation relying upon First Party Audit results that are performed by the best performers and leaders in their own area of accountability. When I have concerns, they are concentrated on the First Party Audits performed by the lesser performers. So maybe the best way to strengthen the effectiveness of a facility's First Party Audit program is to upgrade the caliber of the individuals who are performing the audits rather than changing the programs or relying more heavily on Second or Third Party Audits.

I counsel all leaders who are striving to improve their unit's PSM performance to:

1. Become involved in the audit program's design,
2. Learn the standards and procedures that are basis for the audit, and
3. Make time on their calendars to personally participate in formal and informal First Party Audits.

The strengths of First Party Auditing include:

1. The ability to be conducted at any time and in whatever frequency the situation demands
2. Direct involvement by leaders, since audits force leaders to learn the standards
3. Enables establishing high standards of performance
4. Uncovering issues easily and quickly correcting them
5. Offering a less formal and often, less threatening approach

In contrast, the limitations of First Party Auditing include:

1. Leanings are limited by what you don't know
2. One's biased, self serving interpretation influenced by our human tendency can accentuate the positive while de-emphasizing the negative
3. Heightened procrastination

All units should have a robust First Party Audit program, culture and mindset. Overall, it should be the fundamental driver of an organization's continuous improvement process.

Second Party Auditing

The primary purpose of Second Party Audits is to determine whether appropriate management systems and controls are in place to effect compliance with corporate policies and standards, site procedures and applicable laws and regulations. The use of independent auditors that are from outside the organization being audited is an attempt to bring a higher degree of objectivity to the audit findings and to lift the technical competence of the audit team, drawing upon the best of all the company's resources.

The DuPont Company has an excellent Second Party PSM Audit program. It can be credited for playing a major role in the reduction of process safety incidents through the years as evidenced by the following slide:

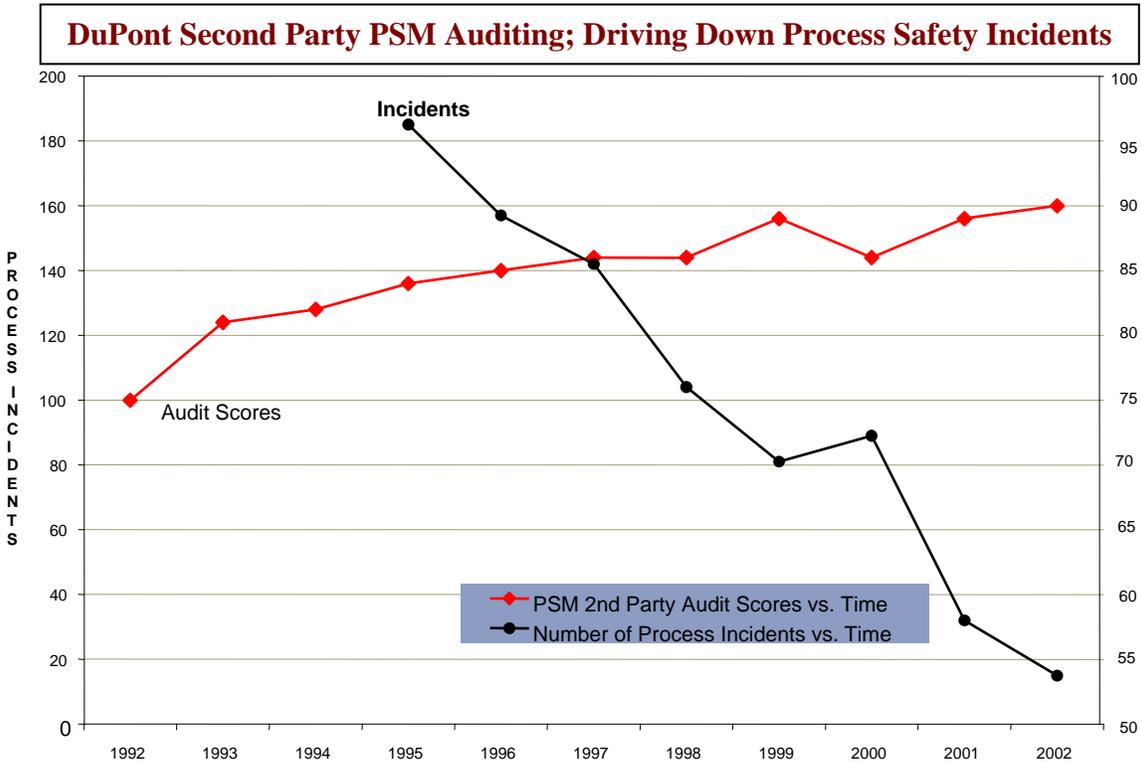


Table 1

The data reflects that over the 11 year period from 1992 through 2002, the average PSM Second Party Audit score rose from 75% to 90%. It should be noted that the audit checklist was modified several times during this period with increasingly demanding requirements being added. It is also interesting to note that the number of serious Process Incidents fell from 1995 to 2002. In talking with those closest to these numbers, there is a strongly held belief that the improvements in audit scores have accurately measured real improvement in the audited facility’s PSM managing systems. In turn, this has led to a reduction in the number of process safety incidents.

One of the potential drawbacks of intra-company auditing, or Second Party Auditing, is what I will term the “subtle intimidation factor.” It is impossible to know how much of a problem even exists at all, but I have sensed it in multiple ways. It goes something like this: “You may be my auditor today but I may be your auditor tomorrow. If you will be kind to me, then I will be kind to you.” Another form of the same disease is facility management subtly communicating their expectations for the audit. A simple comment by a Plant Manager such as “We will be very disappointed if we don’t achieve at least a 90% score” can put undue pressure on the audit team to live up to those expectations, not create enemies in the process and find what some might erroneously call a win-win: the facility gets a good score while the audit team still documents a solid number of opportunities for improvement to justify the time and effort spent conducting the audit.

Lastly, I would like to make one final comment on Second Party Auditing. Most strong and successful Second Party Audit programs have a strong corporate PSM standard as a foundation. With the standard in place, a detailed audit protocol can be developed. In the case of DuPont, this is nearly a hundred page document containing over three hundred questions. Similar rigor can be found in the published OSHA audit guidance. An added benefit of a common Second Party Audit protocol and common PSM Audit questions is that these same documents can and should be used for all First Party Auditing. The only caution is that local governmental regulations and site based procedures must also be incorporated into the First Party Audit questions.

The strengths of Second Party Auditing include:

1. Emphasizing and facilitating the implementation of a common PSM standard across the entire company, while helping to strengthen the PSM corporate culture
2. Using common audit questions across the company which allows for the ready comparison of results across sites. In DuPont, a scoring system is used with all questions receiving a weighted score based on the percent of expected implementation that has been completed
3. Tracking corporate level metrics, which includes the trend performance for each individual PSM element
4. Creating development opportunities as every audit team can be a mix of highly experienced auditors with a few less experienced auditors or those still in an auditor apprenticeship program
5. Lower costs than Third Party Audits
6. Standardizing report writing and recommendation tracking across the company

In contrast, the limitations of Second Party Auditing include:

1. The fact that they can be somewhat incestuous with a relatively small group of people being relied upon to lead most of the audits. They may not get sufficient external exposure and they may not be aware of new industry learnings
2. Weak knowledge of both site procedures and local/national regulations, depending upon the team makeup (whereas the quality of auditing of the corporate standards is usually strong)
3. Regulatory compliance often becomes a lower priority in the audit findings and report
4. Possibly biased results that can be too internally focused
5. More time constraints since part time auditors may be used. The audit team may focus too much on “finishing” the audit questions rather than ensuring that all possible findings are identified and corrective actions delineated

Third Party Auditing

My presumption is that most of us have less experience with Third Party Audits than either First or Second Party Audits. But before we describe some of the pros and cons, clarification regarding a Third Party Audit is needed.

In my experience, there are at least 4 distinct types of Third Party Audits.

1. When a company pays an outside firm who specializes in auditing or the field, in our case presumably PSM, to perform an audit on a specific facility

2. When a company pays an outside firm to perform a systems audit on the company's internal Second Party Audit program
3. When a community group (Community Advisory Panel) orchestrates a review of a company facility, usually with a focus on off-site impact potential
4. When a governmental regulatory body conducts an on-site facility audit

Regardless, the common theme is that Third Party Audits introduce an external view. It is expected that Third Party Audits are even more objective and less biased than any internal First or Second Party Audit. For the purposes of this presentation, I will confine my remarks to company sponsored Third Party Audits since this type can be designed into a company or facility's overall audit program.

I mentioned auditor objectivity earlier when discussing Second Party Audits. This same issue has a different face when considering company sponsored Third Party Audits. Most auditors feel the need to "find something" so that he/she feels they are contributing, are able to identify areas of weakness and are providing the client the opportunity to improve. Overall, there is nothing wrong with this. However, in a Third Party Audit, the level of aggressiveness with which an auditor pursues findings often increases. The stakes are higher and the auditor wants him/herself and the company to look good. Unfortunately, the facility being audited can sense such aggressiveness. The facility also has plenty of incentive to describe completely what they have implemented and to defend itself as the audit findings and report will likely receive a very high profile. A potentially contentious situation can develop with no simple arbitration process.

One symptom of this situation is the poor quality of discussion that may occur over minor findings. Please permit a personal experience as an example. An auditor listed as a finding that a Pre-Startup Safety Review document that he observed had a "yes" recorded for a specific action item rather than a specific date of completion. The conversation about this trivial finding, its relevance and the procedural citation that was the basis for the finding lasted for more than thirty minutes.

In my experience, it is not unusual to have ~25% of the initial auditor findings withdrawn as a result of the sometimes protracted discussions. Discussing these withdrawn recommendations does detract from the overall results and effectiveness of the audit. Aggressiveness on both sides of the audit process leads to tremendous time lost and some level of frustration for both parties. Often, only a common sense of professionalism along with a healthy dose of "the client is always right" permits both teams to move beyond the intense discussions to a point of reconciliation.

The use of an outside firm to provide a quality control assessment of a company's Second Party Audit program can provide an added layer of objectivity and review. In this approach, an independent contractor evaluates the status and accomplishments of the company's Second Party Audit program. It is an independent review of the audit program, rather than a direct Third Party Facility Audit. In this case, the auditor will likely review key audit program metrics, the training and experience of the auditors, the quality of the audit reports and recommendations, and the effectiveness of the corrective action plans. For large companies, the focus of the review will likely be at the corporate, regional or group level. This approach can also be extended down to the individual facility level with specific Second Party Audit reports being reviewed. This quality

assurance approach to Third Party Auditing is less expensive and resource intensive than a facility Third Party Audit.

The strengths of Third Party Auditing include:

1. Greater balance between corporate and site standards and regulatory requirements that can be designed into the audit, either by selection and use of appropriate protocols or by selecting auditors with the desired mix of experience or both
2. Even greater objectivity than a Second Party Audit
3. The potential for greater subject matter expertise than a Second Party Audit and thus, higher quality output
4. The potential for more direct, actionable recommendations to achieve full compliance
5. Additional motivation on the part of the receiving organization to respond quickly and effectively to the audit recommendations due their higher profile

In contrast, the limitations of Third Party Auditing include:

1. Company funded facility audits that can be expensive (in excess of \$100,000 depending on the size and complexity of the facility being audited and the extent of field sampling for compliance)
2. Loss of auditor development and learning since it is gained by a third party entity (none of this training is kept inside the company)
3. Contentious discussions over specific findings and recommendations which can consume valuable time and test the relationship between auditors and those being audited
4. Very detailed "letter of the law" citations that, by their nature, can divert attention away from the "spirit of the law" objective of reducing process safety incidents
5. Decreased quality audits may actually result due to the facility's limited knowledge about the capability of the auditors. Third Party Auditors may also not be familiar with the facility's culture, technology, or corporate standards and site procedures
6. Difficulty in comparing the results from one Third Party Audit to the next, from a management perspective, even if performed by the same company as auditor variability will be higher

First Party vs. Second Party vs. Third Party Auditing

Given the power and key role of feedback in the continuous improvement process while also recognizing that all facilities and companies have limited resources to audit and be audited, what might be an ideal blend of First Party vs. Second Party vs. company sponsored Third Party Audits? Are all necessary? My answer is an unqualified "yes." In any comprehensive PSM Audit program, some frequency of First, Second and Third Party Auditing should be included.

Overall, First Party Auditing should be the foundation for the PSM audit program. The power of line management leading First Party Audits can not be duplicated. Informal safety observations provide powerful, positive reinforcement, while cross area audits are also a very effective means to leverage learnings and experience across a site.

The question of Second vs. Third Party Auditing is much tougher and I have worked in both environments. One company has had a strong Second Party Audit program with Third Party

Auditing only reviewing the efficacy of the Second Party Audit program. A second company believed that only Third Party Audits gave a true picture of reality and thus, elected not to use Second Party Auditing at all.

Ultimately, the decision is clearly up to the company and/or facility but my recommendation is that both Second and Third Party Audits be used. The frequency of auditing should be the variable that management uses to allocate resources and to impact the amount and type of feedback that it will receive. In my experience, First Party Auditing frequency should range from the daily safety observation process up to a once yearly cross-area First Party Audit.

Second Party Audits should be performed every two to three years and the audit area should be of a size that the audit can be completed in one to two weeks. The hazards in play and complexity of the operation will be the key determinants. Use of a company sponsored Third Party Auditor to oversee the quality of the Second Party Audit programs can be contracted as frequently as every year. Company sponsored Third Party Audits, where the company pays an outside firm to perform a facility specific audit, should be performed every three to five years. I am of the opinion that the benefits of a totally independent and intensely focused third party facility audit can not be totally replaced by even the best Second Party Audit program.

Conclusion

In conclusion, auditing of a company's process safety management systems followed by implementation will provide management with invaluable feedback in its pursuit to safeguard the environment, employees, physical assets, business, communities and all of its stakeholders. A robust audit program is needed to bring subject matter expertise and management representatives into the operating facilities to ask the tough questions. Reality must be determined so that appropriate actions can be taken and resources allocated.

Overall, First Party Auditing is essential and forms the backbone of all effective audit programs; however, First Party Audits also have their limitations. It is recommended that Second Party and company sponsored Third Party Audits are also included in a company's overall audit program to ensure objectivity and to obtain additional insight. When all three audit approaches are used properly with trained and capable people, and the resulting audit recommendations are implemented, all companies can expect sustainable improvement in the prevention of process safety incidents along its journey towards zero.

<i>Audit Pros and Cons</i>		
<u>First Party</u>	<u>Second Party</u>	<u>Third Party</u>
+ Flexible Scheduling	+ Common Corporate Culture	+ Balance between standards and regs
+ Direct leader involvement	+ Results easily comparable	+ Totally objective and unbiased
+ Less formal/threatening	+ Develops internal auditors	+ Highest quality audit
+ Immediate response	+ Reasonable costs	+ Receiving organization is highly motivated to respond and act
- Limited learnings	- Weaker on local requirements	- Expensive
- Biased reporting	- Part time auditors; lower quality	- Detailed citations may miss big picture
- Easily procrastinated	- Too internally focused	- Progress difficult to track