



Marsh Specialty

Power Deep Dive: Process Safety Management

Energy & Power Risk Engineering





A suite of in-depth surveys conducted by specially qualified and certified Marsh Specialty engineers, deep dive surveys are designed to provide a better understanding of risk quality and considered insights that result in risk recommendations that deliver real value to your business.

Transforming risk recommendation programs to ensure clients understand their risks and make informed decisions about mitigation and transfer.

What is, a process safety management deep dive?

Developed in 2019, the deep dive survey is a focused, targeted (towards known areas of improvement) and collaborative exploration of a key issue in systems or processes. Focused critical thinking, beyond that applied during a standard risk engineering survey, emphasizes strengths and opportunities for improvement.

Marsh Specialty risk engineers who are professionally qualified, expert in the specific topic and skilled in leading a deep dive will conduct these surveys.

Their knowledge and skill has been gained through significant practical experience in the power industry including a deep understanding of the criticality of process safety management in safety, integrity and reliability.

Deep dives can be conducted as a stand-alone review or integrated with a general survey visit. Generally, the in-depth examination takes one day, involving specific departments, field visits, and structured interview sessions.

The consequences of lapses in process safety management, can have devastating effects:

- **An Explosion at a hydroelectric plant in Russia in 2009, killing 70 people.**
- **An explosion at a gas fired power station in the US in 2010, during commissioning, killing 20 people.**

To be confident process safety risks are under control, it is important to identify potential major accident hazards, assess the status of the safety critical risk reduction measures, and monitor the status of planned improvements. It is not enough to just manage the risk, you should seek to ensure that process safety management systems and processes are robust, resilient and achieving their intended outcome.

Why is a process safety management deep dive important?

Process safety management is a term more frequently associated with highly hazardous industries like oil refining and gas processing.

However, process safety management can apply to any industry where people are working in and around any hazardous equipment or environment.

For the power industry, process safety management, in simple terms, is keeping the hazards inside the equipment, avoiding uncontrolled releases of energy, or keeping electricity in the wires, blades in the turbines, steam and gas in the pipes, and water behind the dam wall.

The process safety management deep dive helps a business answer the questions:

- Do we understand what can go wrong?
- Do we know what our systems are to prevent this?
- Do we have information to assure us that our systems are working effectively?

A process safety management deep dive allows businesses to improve their understanding of performance against key metrics that have a correlation to losses.

These include maintenance and testing, training and competence, audit and improvement, of process safety management systems and processes.

Following the deep dive, Marsh Specialty is able to provide tailored insights and advice on industry best practices to positively impact the risk profile of the plant.



How is a deep dive structured?

A process safety management deep dive is a focused review, drawing on the **plan-do-check-act** philosophy, assessing system maturity across seven key performance parameters:

The topics included in the deep dive are ranked and mapped on the basis of system and process maturity to provide a visual representation of our findings.

REVIEW

Review provides the mechanism for organizational learning and continuous improvement. Review and audit key performance indicators (KPIs) are established, tracked, and reported. Closing the loop is deemed critical to the success of learning.

SYSTEMS

Systems provide structured and controlled means of achieving certainty of outcome. Risk thrives in uncertainty.

PROCEDURES

Current, regularly reviewed, controlled documents, available and used. The value of procedures is understood, use of procedures is normal operating behavior and no critical activity occurs without a procedure.

DOCUMENTATION

Documentation not only supports a systematic approach to work but provides auditable evidence of the activity. It underpins audits and is a key element in retaining organizational knowledge.



IMPLEMENTATION

Systems and processes are fully implemented, maintained, controlled, and audited. Evidence of implementation should be widespread and implementation effectiveness is a KPI.

COMPETENCY

Competency is a core strength of the organization; response to emergencies are instinctive, well-rehearsed, and regularly refreshed. Competency assurance is inherent to all position qualification requirements.

TRAINING AND AWARENESS

Training and awareness are integrated into the organization's strategic fabric, the approach is pro-active and student-centric, with rich content. Training and awareness effectiveness KPIs defined, monitored, and reported.

The process provides the business with an understanding of its resilience to loss enabled through process safety management, and delivers practical insights to:



Mitigate against potential losses and associated costs, including loss of production.



Protect against exposure of company personnel or third parties.



Reduce the risk of loss of containment of energy.



Reduce property damage and business interruption exposure.



Demonstrate the corporate approach to 'tolerance of risk' and enhance positive safety culture.

What is the output of a process safety management deep dive?

Undertaking a process safety management deep dive provides a risk-based approach to assessing the systems, processes and people aspects that underpin an organization's systems, processes and behaviours to ensure the process safety management is appropriate, implemented, active and robust.

On completion of a deep dive, the plant will receive a detailed report describing the strength of process safety management of the site, including tailored risk rankings and specific recommendations to address identified exposures.

This service can be customized in terms of both depth and length of assessment. Site risk resilience and strengthening barriers to loss are just two of the immediate benefits from a process safety management deep dive.

In addition, it strengthens the underwriting information, providing a better risk engineering focused understanding of the site capabilities, which supports insurance placement.

For further information, please contact: riskengineering@marsh.com or visit the [risk engineering page](#) on our website.

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