



Marsh Specialty

# Power Deep Dive: Human Elements

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 human elements deep dive?

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

Marsh Specialty risk engineers who conduct these surveys are professionally qualified and experts in the specific area they conduct deep dive surveys.

Their knowledge and skill has been gained through significant practical experience in the power industry including an in depth understanding of the criticality of asset integrity and reliability across the major asset classes integral to the power industry.

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.

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**Given the complexity of power generation systems, both automated and human operated, it is inevitable that human error can play a significant role in power generation losses.**

**The Bowring Marsh Report – *Global Loss Trends: Analysing the Causes of Power Generation Claims* – presented a breakdown of losses arising between 2001 and 2015 in the power generation industry.**

**The report cited that “human error/fault” accounted for approximately 30% of total losses for the period, equating to US\$317 million in claims. This figure is even higher if the total cost of risk is considered to include deductibles, uninsured losses, and reputation.**

# Why is a human elements deep dive important?

Avoidable, expensive losses in the power generation industry often result from 'failure on demand' of safety relevant equipment.

Equally, losses can result from the 'human element' failures relating to systems and processes. This can include performing routine tasks through to critical decision making under stress.

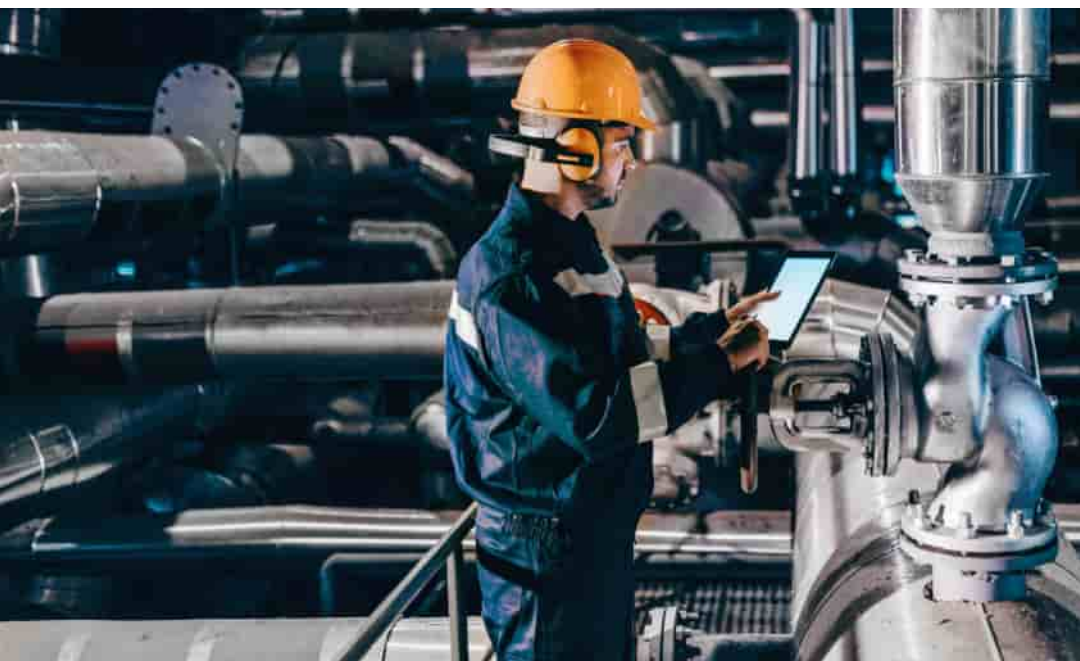
There is an increasing focus on the importance of managing the human elements that may contribute to losses. What is crucial for risk management is how people, roles, and the organization interact as a whole system, to achieve improved safety, plant reliability and business performance.

The emphasis of this deep dive is to explore the human elements, and look for any possible gaps within operation and maintenance departments. This includes leadership and setting clear direction.

A human elements deep dive allows organizations to improve their understanding of performance against key metrics that correlate to losses.

These include maintenance and testing, training and competence, audit and improvement of human related processes, that ensure people do the right thing, at the right time, in the right place.

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 human elements 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 an organization with an understanding of its resilience to loss, through effective management of human elements and good decision making. The deep dive 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 human elements deep dive?

Undertaking a human elements deep dive provides a risk-based approach to assessing the functional relationship between systems, processes and human behaviors.

On completion of a human elements deep dive, the plant will receive a detailed report describing the strength of people related capability at the site, including tailored risk rankings and specific recommendations to address identified exposures.

The depth and breadth of the assessment can be customized to suit unique organizational requirements.

Site risk resilience and strengthening barriers to loss are just two of the immediate benefits from a human elements deep dive. In addition, it improves the information provided to underwriters about site capabilities, which will support insurance placement.

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

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**KANCHAN SHERE**

Vice President  
Power & Property Risks  
Marsh (Bahrain) Company SPC



+973 6671 0698  
[kanchan.shere@marsh.com](mailto:kanchan.shere@marsh.com)

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**SYLVAIN ANDRAUD**

Engagement Lead  
Risk Consulting  
Energy & Power  
Marsh Specialty



+336 2098 6271  
[sylvain.andraud@marsh.com](mailto:sylvain.andraud@marsh.com)

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**IAN HENDERSON**

Managing Director  
Risk Engineering  
Energy & Power  
Marsh Specialty



+971 50551 2178  
[ian.henderson@marsh.com](mailto:ian.henderson@marsh.com)



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