

# RISKworld

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the newsletter of risktec solutions ltd

## In This Issue

Over the years there has been substantial progress made in reducing Health, Safety & Environmental (HSE) risks through engineering and management system improvements. Today, the primary cause of incidents has been exposed as human error, often attributed to a lack of positive HSE culture.

In this issue of RISKworld our lead article (page 2) introduces some of the tools and techniques available to Risktec to help organisations improve their HSE culture and encourage people to look after themselves and others. This involves the winning of hearts and minds so that HSE is simply "how things get done round here".

## The Global Safety Group

Welcome to Issue 4 of RISKworld. Since the last issue our parent company has taken on a new name - The Global Safety Group. The group helps clients in major industries to improve the safety of people and reduce avoidable costs. With its head office in The Netherlands, the group focuses on three business lines through the international brand names of Nutech, Risktec and Tritanium:

With over 300 people in 12 countries, the Global Safety Group is a leading provider of risk management solutions. It is the Global Safety Group's view that managing risk

will increasingly be recognised as one of the most important business operating criteria. Chief Executive Officer Jan Hart commented, "Within the group we have the proven skills and experience to not only identify and quantify risk, but also to develop processes for managing risk and provide training to help develop competent people. As a group we are only at the beginning of what promises to be a very exciting journey. The group will continue to expand wherever there is a sound business case."

Contact Alan Hoy



Consulting



Training



Software



## BROADCAST NEWS

A leading player in the construction insurance sector, GE Frankona Re, has appointed Risktec to provide risk management support for the redevelopment of BBC headquarters in London, a complex project with specific areas of risk requiring careful management by the main contractor. Risktec's role is to review the principal risk management activities on behalf of the panel of insurers.

The BBC flagship building, Broadcasting House, is set to become the largest live broadcasting centre in the world, accommodating all of the BBC's national and international tv and radio networks. Risktec's involvement includes examining management systems and seeking evidence of their successful implementation on site and throughout the sub-contractor supply chain.

Contact Sheryl Hurst for more information.



# WINNING HEARTS AND M

**Over the years there has been substantial progress in reducing health, safety and environmental (HSE) risks (Figure 1). Initially, significant benefit came from improving the intrinsic safety of engineering. As the scope for further enhancement reduced, attention was drawn to improving management systems. Now HSE specialists are looking to deliver improvements through positive changes in organisational culture and personal behaviour.**

## Company culture

Safety in the workplace cannot be managed by focusing on regulations and procedures alone.

Ultimately, safety is the result of motivated and competent people working in an organised business, looking after themselves and others. So how does an organisation create an HSE culture where people conduct business safely without having to control their every action?

In 1986 Shell started sponsoring a research programme involving the universities of Leiden, Manchester and Aberdeen (Ref. 1) to better understand what can be done to prevent accidents. In the first instance a culture "ladder" was developed to characterise increasing levels of cultural maturity (Figure 2).

At the lowest level is the Pathological culture where nobody cares as long as they are not caught. At the highest level, the Generative culture, HSE is part of everything that is being done. In between are intermediate stages. Different sets of personal

personal perspective on preferred behaviours.

## Hearts and Minds

Research has shown that a highly motivated workforce, from the management team to those on the shop floor, can be equated with a highly developed HSE culture. These findings

have been translated into "Hearts and Minds" tools that aim to get everyone to understand and agree on the value of positive HSE behaviour and foster a desire for outstanding performance.

The tools are "light", self-contained, and designed for non-expert people, with the background science built in. They are tailored for small syndicate groups, taking no more than a few hours to identify and solve a problem. They help to understand your HSE culture, manage rule breaking and improve supervisory skills.

## Tripod

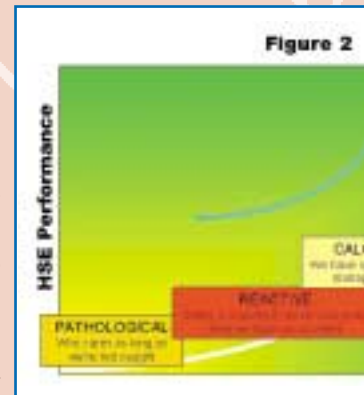
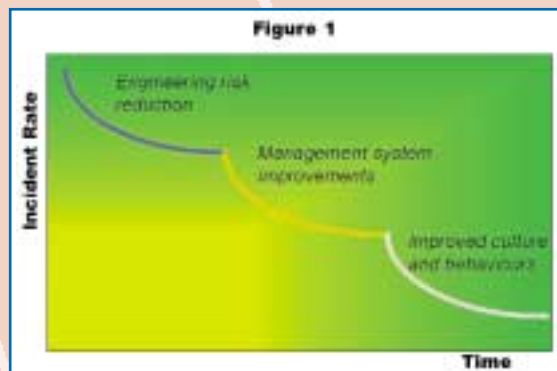
The research also led to the Tripod methodology, recognised today as a leading tool for human and organisational factors evaluation (Refs. 2, 3).

Tripod Delta is a diagnostic tool that helps to determine the susceptibility of an organisation to possible incidents. The tool uses a technique that resembles psychometric testing, where a survey of all employees builds an objective picture of the strengths and weaknesses of the organisation within the framework of 11 "basic risk factors". The results can be used to initiate pro-active and sustainable strategies for reducing and managing risk.

*"Ultimately, safety is the result of motivated and competent people looking after themselves and others"*

behaviours align with these cultural stages and can be used as "seeds" for people to develop their own

Tripod Beta is a reactive tool facilitating the investigation and analysis of incidents in order to prevent recurrence. The strength of the method lies in the identification of



# MINDS



latent or hidden failures within the organisation that contributed to the incident, instead of focusing on the immediate causes, to enable lasting and sustainable improvements.

## Tripod - does it work?

- 30% fewer accidents in 6 months, following use of Tripod Delta at four drilling rigs working for NAM in the Netherlands.
- 25% cost of a traditional audit

Sources: Ref. 4 and 5

*and Minds tools help to understand your HSE culture, manage rule breaking and improve supervisory skills"*

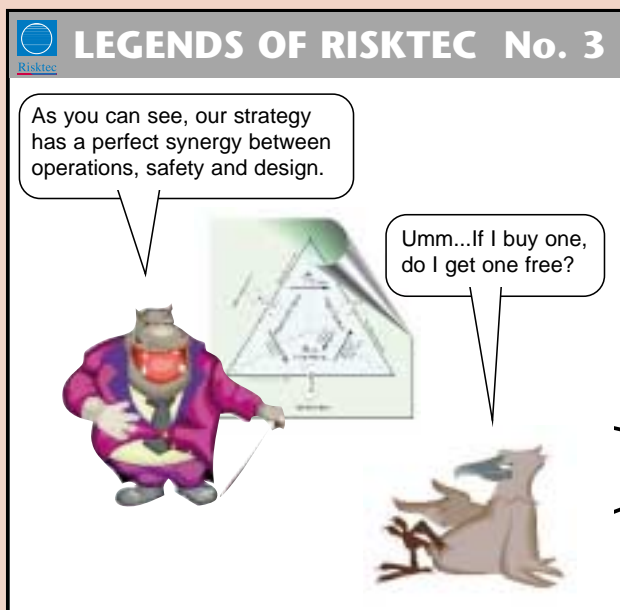
## Conclusion

The approaches outlined represent an alternative to the "command and control" attitude prevalent in many companies. Winning the hearts and minds requires the creation of a culture in which safe behaviour is considered more important than mere compliance.

## References

- Ref. 1 - van der Graaf, Hudson, SPE Conference Kuala Lumpur 2002, paper 73941  
 Ref. 2 - Germanischer Lloyd, funded by EC, Deliverable D1, 1999  
 Ref. 3 - Technical Research Centre of Finland, 2000  
 Ref. 4 - Watts, 1999, Proceedings of First International Tripod Symposium  
 Ref. 5 - Pearce, Tripod in Shell Expro, 1996 and 1997

**Contact Steve Lewis for further information.**



## Third International Tripod Symposium

The Global Safety Group, in cooperation with the Stichting Tripod Foundation and Technotrans Institute for Technology Transfer, will be organising the Third International Tripod Symposium which will be held in Amsterdam, The Netherlands, on 2nd and 3rd December 2003.

Speakers who will present their views on controlling business processes to prevent accidents, environmental damage and financial losses, include: Mr. Pieter van Vollenhoven, Chairman of the Dutch Transport Safety Board, Prof. Jop Groeneweg, Project Manager Human Error at the Centre of Safety Research, Leiden University, and Dr. C. Visser, Partner Business Risk Management Services, Ernst & Young.

## For further information, visit

**[www.tripodsolutions.net](http://www.tripodsolutions.net)** (at this site you can also order the recently revised edition of Prof. Groeneweg's definitive book on accident causation, "Controlling the Controllable", price €39.95 excl. VAT and p&p).

## DID YOU KNOW...?

*That too much bull can be bad for business*



- Rather ironically perhaps, Deloitte Consulting has developed Bullfighter, an add-on to MS Word and Powerpoint that seeks out unnecessary jargon with suitably scathing remarks and suggests alternative straight talk.
- Use of the word "holistic" prompts Bullfighter to advise, "Unless you're addressing the feng shui and spiritual aspects of your client's problem, you're probably not taking a holistic approach," and suggests "comprehensive" instead.
- Try "synergy" and the response is, "The consulting version of 'buy one, get one free.' A legendary bit of consulting jargon. You'd think we would give you credit for using a classic like this. But, we won't. Say something in English."
- Using the tool to analyse 30 companies in Dow Jones Industrial Average, Deloitte concluded that straightforward communications can be linked to financial performance.
- Bullfighter can be downloaded for free at [www.dc.com/bullfighter](http://www.dc.com/bullfighter) and is installed on all Risktec computers to improve our jargon-busting.
- This newsletter has been certified bull free by Bullfighter (...well, almost!). See *Legends of Risktec*.



## A WELL-PACKAGED STANDARD

Risktec is continuing to work with leading packaging company Rexam plc (see RISKworld issue 3) in the development of its Safety Management System (SMS) both at corporate and site level.

A compliancy analysis of site systems against the OHSAS 18001 specification for occupational health and safety management systems has recently been completed at plants at Limmared in Sweden and Milton Keynes in the UK.

Although not yet formally released as a standard, OHSAS 18001 is compatible with ISO 9001 (Quality), and ISO 14001 (Environmental) management system standards, and is becoming accepted as a means of integrating quality, environmental and safety management systems.

The key features of OHSAS 18001 are:

- It was developed in response to industry demand.
- It presents a structured approach for delivering health and safety performance improvement.
- It promotes benchmarking of SMS development.

*For more information, contact Tim Storey or Lesley Rawlinson.*

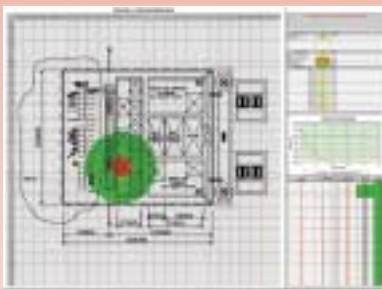


## LOCATION, LOCATION, LOCATION

In response to increasing client demands for facility layout studies at the conceptual design stage, Risktec has developed a Layout Assessment Tool.



Application of safety principles during the development of concept design is one of the key strategies for reducing risks as low as is reasonably practicable. The appropriate locating of potential sources of hazard leading to events such as fire, explosion or gas dispersion, can help to reduce the vulnerability of sensitive areas, such as accommodation blocks, offices and fire fighting systems.



The tool maps the frequency and consequences of hazardous events onto the facility layout and calculates hazard levels at defined locations. Hazard source and target locations can then be readily altered to optimise layout.

One of the main benefits of the tool is that 'real time' hazard assessments can be conducted during team layout reviews to support decision making by the project.

So far, the tool has been successfully used to aid safety case and design development, including:

- Option studies for temporary refuges and escape, evacuation and rescue provisions.
- Optimisation of concept and detailed design.
- ALARP assessment.

*For more information, contact Rob Steer.*

## NUCLEAR DECOMMISSIONING AUTHORITY - THE NEW DNA FOR THE NUCLEAR INDUSTRY?

With the publishing of the draft "Nuclear Sites and Radioactive Substances" Bill, the impact of the Nuclear Decommissioning Authority (NDA) in managing the nuclear legacy in the UK is becoming clearer.

The role of the NDA from April 2005 will be to provide the overall management and direction for legacy clean-up, developing a coherent strategy whilst making the best use of available skills and resources. To achieve this it will work in partnership with the site licensees, who will be responsible for doing the work, and the nuclear regulators.

Initially the NDA will have responsibility and financial control for the nuclear liabilities of the UKAEA and BNFL. However, the clear intent of the Bill is that over time the NDA will take responsibility for all Public (or Crown) owned nuclear liabilities and those that are privately owned. In the latter case, the NDA will take over the Governmental undertakings with respect to the decommissioning of British Energy's nuclear power stations. It is also expected that the NDA will be responsible for the decommissioning of Ministry of Defence sites, including those associated with the

strategic deterrent and the Naval Nuclear Propulsion Programme.

Like the Strategic Rail Authority, the NDA's work will be largely franchise management of site operators or site licensee companies, who will have an incentivised 5 to 10 year contract to perform and drive forward clean-up of each site. The NDA will consist of 100-200 staff at headquarters in West Cumbria, with up to another 100 at NDA site offices around the UK.

Whilst the current site licensee companies will be the main contractors, competition will be encouraged to stimulate innovation and raise safety and environmental standards, so some sites may have new operators in 2005. The security of the supply chain and skill base will also be fostered by requiring the site licensee companies to subcontract large, discrete projects and develop local supply chains around each site.

The NDA has a vast, steadily increasing scope of work to manage. The challenge will be to engage the best minds in the industry without losing sight of its commercial or strategic goals.

*For more information, contact Greg Davidson*



# Achieving Order From Chaos

## MANAGING REGULATORY RISKS IN COMPLEX PROJECTS

### Complexity or Chaos?

Major new projects are faced with an increasing burden of complexity from numerous sources, including legislation, financing arrangements and public pressure.

While many projects are successfully completed within acceptable budget and time limits, there are many examples which hit the headlines with long delays and extensive cost overruns.

Projects which lead to the operation of high hazard plants have the additional burden of requiring formal regulatory approval to operate. This will generally mean the robust demonstration, through formal reports and supporting studies, of compliance with appropriate legislation, including that risks to the workforce, the public and the environment are As Low As Reasonably Practicable (ALARP) [see Page 6]. This can add considerable extra complexity and present additional challenges for project management organisations.

### From Chaos to Clarity

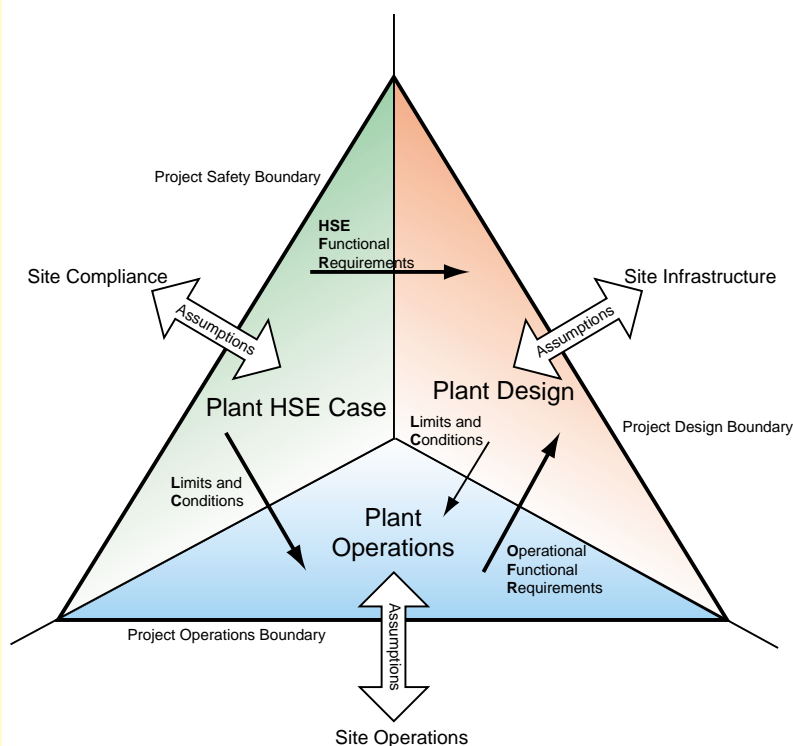
In these circumstances, it is critical to the success of the project that all operational and Health, Safety & Environmental (HSE) requirements and any key assumptions are well understood and clearly defined early in the project life cycle [see adjacent inset].

Successful integration of operational, HSE and design requirements during a project's infancy is vital if a cost effective solution is to be delivered in the design, construction, commissioning and operational phases.

In many instances approval routes can be complex and involve the customer and national regulatory bodies. Clear identification of these stakeholders and their early engagement can dramatically reduce project risks, particularly those that would otherwise emerge late in the project life cycle.

The introduction of project hold points with pre-determined success criteria can help to control actual and committed expenditure and often provides a much needed focus on the progress towards regulatory approval.

If this structured approach is given the same emphasis as traditional project controls, such as cost and programme tracking, order may well prevail over chaos.



*Illustration of a structured approach to the integration of Project Operational, HSE and Design requirements.*

- The Project objective is to design the plant to operate safely within the regulatory regime of an existing site.
- Operational Functional Requirements ensure clear communication across the Operations-Design interface.
- HSE Functional Requirements ensure clear communication across the Safety-Design interface.
- Limits and Conditions are imposed on Operations from HSE and Design requirements (via procedures and maintenance requirements).
- A register of Assumptions (relating to Operations, Design or HSE dependencies on the site) enables the project to capture requirements and proceed. During the course of the project the Assumptions are justified and closed out.

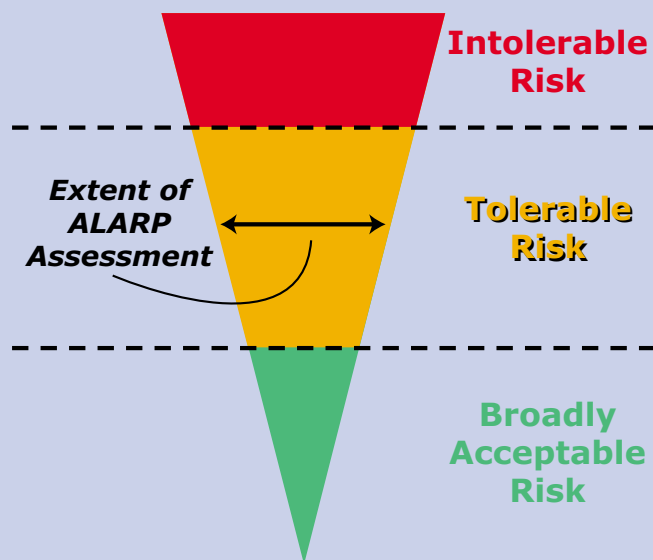
**Contact Steve Pearson for more information**

# So What is ALARP?

## The ALARP Principle

No industrial activity is entirely free from risk and so many companies and regulators around the world require that safety risks are reduced to levels that are As Low As Reasonably Practicable, or "ALARP".

The "ALARP region" lies between unacceptably high and negligible risk levels. Even if a level of risk for a "baseline case" has been judged to be in this ALARP region it is still necessary to consider introducing further risk reduction measures to drive the remaining, or "residual", risk downwards.



The ALARP level is reached when the time, trouble and cost of further reduction measures become unreasonably disproportionate to the additional risk reduction obtained.

## ALARP for Life

Risk can be reduced by avoidance, adopting an alternative approach, or increasing the number and effectiveness of controls.

At the concept stage of a new project there is the greatest opportunity to achieve the lowest residual risk by considering alternative options, e.g. for an offshore oilfield development, options may range from fixed legged platforms to floating production vessels to subsea facilities.

***"The concept stage provides the greatest opportunity to achieve the lowest residual risk by considering alternative options"***

Once the concept is selected and the early design progresses, the attention shifts to considering alternative layout and system options to optimise inherent safety. In the detailed design phase, the focus moves on to examining alternative options for improving safety systems.

During operations, the attention is on collecting feedback, improving procedures and managing change to maintain the residual risk at an ALARP level. However, with advances in technology, what is ALARP today may not be ALARP tomorrow, so periodic reviews will be necessary.

### ALARP Tools

- 'Optioneering'
- Codes and standards
- Good practice and engineering judgement
- Risk assessment and cost benefit analysis
- Peer review and benchmarking
- Stakeholder consultation

### Rules of Thumb

- The more complex the project, the more complex the decisions and the more sophisticated the tools required.
- The higher the risk, the more comprehensive and robust the ALARP assessment needs to be.

## Conclusion

The key to a convincing ALARP assessment lies in the documented consideration of improvement options, both implemented and discounted, at a level of resolution appropriate to the project phase. ALARP decision making amounts to taking a balanced view and reaching a defensible consensus.

**Contact Steve Hendrie for further information.**

### Web-Fresh

We are pleased to announce the launch of our new website at [www.risktec.co.uk](http://www.risktec.co.uk). In addition to a new look and improved content, you can download our brochures and issues of RISKworld. Please send any suggestions for further improvement to [enquiries@risktec.co.uk](mailto:enquiries@risktec.co.uk).



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