How long for you to spot the difference

- A demonstration of ‘change blindness’...
What I’ll Cover

- Peer Review and HSE
- IOSH Safety Critical X-Industry Peer Review

What we did and how you could use it
Common Lessons From Major Accidents

Lessons learnt from Major Accidents 2006
Reactive or Proactive?

- “Radioactive Leak Stops THORP Operations”
  - Lessons same as 1998 HSE Team Inspection
  - BNFL spent £37m responding to 1998 “Team Inspection”
    - In 1978 BNFL Re-engineered Plant
    - In 1998 BNFL Improved Procedures.
    - In 2003 BNFL joined World Association of Nuclear Operators
      - People and Performance improved.

- WHY?
  - Focus on Process Safety and Peer Review
Peer Review

- Used by WANO, INPO, IAEA ~ 30 years
- Identifies good practice and accelerates improvement
- Reinforces good safety culture
- Underpinned by sound safety management principles

Chernobyl
26/04/86
Peer Review – Is/Isn’t

- Is Observation  
  Not an Audit or inspection
- Is Fact based  
  Not opinion or perception
- Is dependent on SQuEP  
  Not a safety officers role
- Is pro-active  
  Not reactive
- Is continuous improvement  
  Not the best in class
- Is journey of excellence  
  Not a destination
The X-Industry Approach to PR

- Introduce Principles
- Create a Vision for Excellence
- Train Observers - Observe Tasks – Analyse and Report
- Feedback back to observed and senior managers
- Gain commitment to make improvement
What have we done so far?

- Reviewed Control Room Operations (3 sites) and Maintenance (3 sites)
- Spent 5/6 days reviewing the 3 sites
- Produced Principles and Performance Aims and Expectations
- Produced a confidential report for each site
- Established a network of specialists
- Identified Best Practices
- Gained support for PR from each site.
Atomic Weapons Establishment,
AWE provide and maintain the warheads for the UK’s nuclear deterrent across the entire life cycle of nuclear warheads.

BAE Submarine Solutions,
BAE’s site in Barrow in Furness is designated as a submarine centre of excellence and is engaged in the design, build and initial in-service support for the Astute class submarine.

Centrica, Hydrocarbon Resources Ltd,
Centrica provides a significant proportion of the UK’s demand for gas supply from its Morecambe Bay gas fields via its processing terminals at Barrow in Furness.
Principles, Aims and Expectations

Maintenance is performed to make our assets available to enable the business to function safely, effectively and economically.
What was Feedback Format?

Maintenance Management and Supervision

The quality of front-line leadership determines the standards of workmanship for maintenance tasks.
Managers and supervisors must be of a high calibre with the ability to hold people to account for the standards of their work, to operate in a fair and just way in dealing with shortfalls and be consistent in their communications and demands for high standards. One Performance Aim addressed this issue along with supporting strengths, improvement opportunities and facts.

Maintenance Management and Supervision Performance Aim

Maintenance managers and supervisors establish high standards of performance through clear accountability and alignment of the maintenance resources to effectively control and implement maintenance.
Feedback Format

Maintenance Management and Supervision

Example **Maintenance Management and Supervision Strength**
*Good clear communication, leadership and maintenance management practices were observed.*

**Facts:**
- A supervisor demonstrated his knowledge and understanding of the acceptance criteria to be used during his task briefing of the technician.
- It was observed during the tool box talk that the planned work was highlighted on the associated drawings and maintenance plan for each job. This helped clarify information.
- During task observation of technicians who working for the first time on a safety critical task, supervision was regular and often.

Example **Maintenance Management and Supervision Area for Improvement**
*There is no consistent provision, control of or recording and retrieving of maintenance work information.*

**Facts:**
- There was no concession during a task brief for the presence of an apprentice, nor check-back from the maintainer that his task had been understood.
- During team briefing an individual asked for confirmation about an aspect of work, this was given but not acknowledged by 3 way communications nor use of the phonetic alphabet. This has the potential for human performance errors.
- Maintenance hours were not updated for the tasks observed, nor for planned work for mothballed/redundant equipment. This can lead to inefficient and unnecessary maintenance or inappropriate maintenance frequency which can divert resources or lead to intervention errors with safety implications.
Fundamentals of Successful Peer Review

- Common Industry Aim

- Leadership alignment and Vision for Excellence

- Matched Skills and Experience of Peers

- Fact based Task Observation and Targeted feedback

- Management and accountability of Improvements
Application to Your Work

- Clarify Safety Focus
- Create a vision for excellence and set new expectations
- Align leadership
- Gain commitment from end users
- Train Peer Reviewers and Observers
- Capture, celebrate and share best practice
- Develop the Networks that are created
- Develop strategic framework for improvements
Summary

- IOSH has shown cross sector Peer Review adds Value
- HSE continue to support High Hazard Industry sharing
- WANO support industry safety improvement
- Opportunity for
  - Local use of Peer review
  - Industry Programme
  - Cross Industry Programme
  - Safety Critical Industry Organisation – Like WANO
Questions?

- I’m happy to take questions
- And would be pleased to help you get the best from your people and improve your safety performance.

Dave Mason
Safety Management Consultant
Eskdale Ltd
davidjmason51@aol.com
07771 940454
019467 23315
Supporting Information

- Relationship of Peer review and Safety Culture
- Nuclear Safety/Process Safety Dashboard
- Extracts From IOSH Stage 2 Maintenance Peer Review Report
Typical Nuclear Safety Dashboard

- **Containment**
  - Plant Area 1: Item1
  - Plant Area 2: Item5
  - Plant Area 3: Item9
  - Plant Area 4: Item13

- **Cooling**
  - Plant Area 1: Item2
  - Plant Area 2: Item6
  - Plant Area 3: Item10
  - Plant Area 4: Item14

- **Control**
  - Plant Area 1: Item3
  - Plant Area 2: Item7
  - Plant Area 3: Item11
  - Plant Area 4: Item15

- **Criticality**
  - Plant Area 1: Item4
  - Plant Area 2: Item8
  - Plant Area 3: Item12
  - Plant Area 4: Item16

**RED**
Multiple Barriers failed and at boundary of safe operation

**AMBER**
Single Barrier failure, or safety related plant unavailable
IOSH Hazardous Industries Group is leading the challenge from HSE to undertake cross sector peer review.

- Health and Safety Executive’s (HSE) ‘Leading from the top’ was attended by CEOs and Directors across a wide range of UK major hazard industries in April 2008.
- HSE challenged industry to spread learning and good practice across all the major hazard industries, through a peer review process.
- IOSH Hazardous Industries Group set up a Working Party, which decided to lead a trial cross-industry peer review on behalf of industry.
- A Stage 1 pilot based on control room operations was successfully carried out by the Group (representing nuclear, offshore and utilities) in August 2008.
- Development by IOSH Hazardous Industries Group of Peer Review based on the nuclear approach was supported by HSE in October 2008.
- A Stage 2 Pilot based on maintenance was set up in March/April 2009 to provide a more demanding test of the process in different industries.
Diverse Sites and Complex Topic Selected for Peer Review

- The 3 Sites that were selected for Peer Review had been aware of the progress with the first review and were aware of its potential benefits.
- Centrica nominated one of its onshore gas processing terminals at Barrow-in-Furness. This provided continuity and the opportunity for comparison with the first review which involved Centrica’s Easington facility.
- The AWE site and that of BAE Submarine Solutions were nominated through the nuclear industry Safety Directors Forum.
- The first review examined control room operations. The advantage was a focussed activity in a set environment. Maintenance was selected as the topic area for the second review because of its importance to process safety in safety critical industries.
- Maintenance would be challenging to undertake because of the variety of operations on each site, the scale and complexity of each site and the different maintenance regimes.
Objectives for the Stage 2 Pilot Peer Review:

- testing and developing a process to achieve accelerated improvement in business and safety performance through peer review between experts from different high hazard, safety critical industries.

- Providing worthwhile findings for the participating organisations

- Producing Performance Aims and Expectations for maintenance at high hazard, safety critical establishments.
Preparation

- The team spent a day considering the scope of maintenance to be examined and the standards that it would expect to see for excellent maintenance operations.

- A set of Performance Aims and Expectations were produced. They covered:

- Time was also spent on the first day preparing the team to undertake factual observation, reporting and recording information to enable overall strengths and problem areas to be identified.
On site peer reviews

- The team witnessed maintenance activities at each site for a period equivalent to three \( \frac{1}{2} \) days and recorded what was observed.

- Where appropriate, documents used in the planning, safety review and permissioning of maintenance were examined (e.g. risk assessments, permits and instructions) along with evidence of competence.

- The opportunity was also taken to question maintenance staff on what they understood at different stages in the process.

- Support activities associated with planning, recording and reporting maintenance were also observed.

- The opportunity was taken to observe operational practices on the route to and from the observed maintenance activity.
On site peer review (continued)

- The data collected from observations from the first ½ day period were pooled and organised around the Maintenance Performance Aims.

- This information was used to examine where there may be further opportunity to test information to validate findings or fill potential gaps. This enabled further observations to take place in the second and third ½ day periods.

- Once all observations had been completed and organised against the Maintenance Performance Aims and Expectations a team discussion took place to identify strengths and areas for improvement that should be given as feedback to the site.

- By the end of the third ½ day period a report was finalised and agreed by the team, who then verbally presented this back to representatives of the site management and observed staff.
On site peer review (continued)

- At two sites local maintenance staff were co-opted to support the Peer Review. This worked particularly well in enabling the team to divide into groups allowing more maintenance to be observed. The local knowledge also enabled more efficient use of the Peer Review team’s resource.

- Each site demonstrated different strengths and areas for improvement. However, there were themes that emerged at the end of the review and these are discussed below.

- The reports that have been produced are the property of the observed site and remain confidential to them.

- With the permission of the sites, examples of findings, not attributable to any site are shown below.
Below is a summary of the process reviews held with the Peer Review Team that were conducted throughout the duration of the Peer Review.

**Strengths**

- A lot was achieved in a short time with meaningful output
- Local staff on review team added great value
- The observation report is very focussed
- Frank and open exchanges
- The Peer Review team worked well under pressure.
- The matched skills of the review team helped focus on the task in hand
- Good rapport between observer/observed established an emotional commitment to change and improve.
- The x-industry network established is powerful and enhanced by the teamwork.
- The peer review process is a good foundation for observational training and opens one’s eyes.
- Peer Review is not defensive approach and not an audit requiring close out of all observations: the key to helping a site improve is the analysis to define the fundamental overall problem.
Process review (Continued)

Areas For Improvement

- Engage with senior managers to get buy-in.
- Develop a full set of Principles, Performance Aims and Expectations covering all operations.
- Timing was tight.
- Identification of fundamental overall problems, the “big hitters” and quality of report can be improved with more time for critical analysis.
- Set objectives for each stage in process.
- Use administrative support and technical aids.
Did the IOSH Stage 2 Peer Review achieve its objectives?

testing and developing a process to achieve accelerated improvement in business and safety performance through peer review between experts from different safety critical industries.

- The commentary from the process reviews is that meaningful outputs were achieved in a short space of time, high performing teams were developed and these enhanced the cross industry networks that had been established.
- Conclusion: The Peer Review process has been demonstrated in widely different safety critical industries and has demonstrated value in cross industry sharing of experience in setting and maintaining high standards of performance in a way that is proactive in encouraging safety and business improvements

- Providing worthwhile findings for the participating organisations.
  - The commentary from the process review is that a lot has been achieved in a short space of time and that the output was meaningful. This was supported by the feedback provided at the debriefs at each site.
  - Conclusion: The analysis and reporting of factual observation against a set of Performance Aims has added value at each site observed.

- Producing Performance Aims and Expectations for maintenance at safety critical establishments.
  - Maintenance Performance Aims and Expectations were produced at the outset and were refreshed at the start of each Peer Review. They are appended at the end of this report.
The Stage 2 Pilot has demonstrated clear value from the cross-sector Peer Review process and confirmed the Stage 1 results in a more complex industrial context

- Each member of the Peer Review acknowledged the career development provided by the review in terms of a wider network of cross industry contacts, observing different working practices and environments and developing new observational and analytical skills.
- Peer Review has been substantially developed by the nuclear industry and both the Stage 1 and Stage 2 IOSH Peer Reviews have demonstrated that the process can be adapted and applied in widely different safety critical industries and to different operational circumstances to help improve both safety and business performance.
- Peer review is a proactive approach to enhancing business performance and helps identify gaps and weaknesses in a management system in a way that enhances the culture (by developing leadership, improving standards and engaging workers in improving behaviour and understanding in a non-confrontational manner). The approach addresses not only safety issues but also general business improvement.
- Peer review enables an emotional engagement with process safety improvement resulting in high motivation of all those involved. Crucial to its success is leadership engagement, the confidentiality of findings and industry/practitioner led reviews.
- Stage 2 Peer Review has been successful and the learning will enable further development of the process.
- IOSH Hazardous Industries Group should consider how best to develop Peer Review and cross industry sharing.