

Process Safety in National Grid

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**Leading from the top – avoiding major incidents –
29th April 2008**

National Grid – delivering energy safely, reliably, efficiently and responsibly

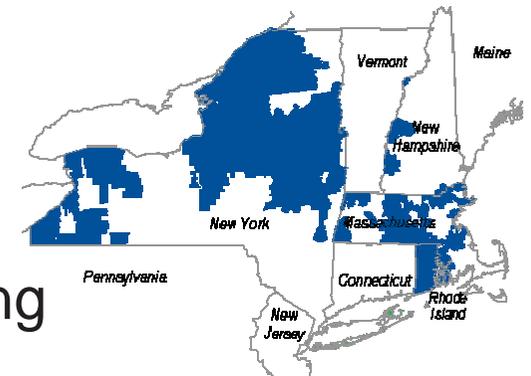
UK

- ◆ High pressure gas transmission system in Britain
- ◆ Britain's largest distribution business delivering gas to 11 million consumers
- ◆ Liquefied natural gas importation and storage facilities
- ◆ High-voltage electricity transmission system in England and Wales



US

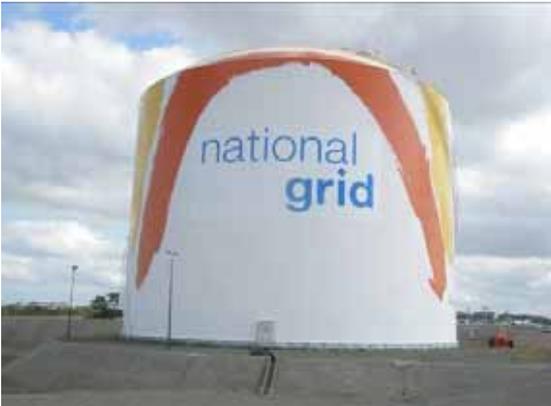
- ◆ Provide natural gas to approximately 3.4 million customers and operate gas storage facilities
- ◆ Distribute electricity to approximately 3.3 million customers
- ◆ Service the 1.1 million electricity customers of the Long Island Power Authority
- ◆ Power generation stations with a total capacity of 6,650 MW



**“We must learn from the experience of others
rather than learn the hard way”**



Relevant assets within National Grid



Board and Executive Engagement

- ◆ Understand the scope of the issues arising from Baker and Buncefield
- ◆ What are National Grid's process safety risks and does it include electricity assets?
- ◆ What's our current position – are we vulnerable?
- ◆ Board agreement and visible sponsorship of our action plan
- ◆ Periodic updates of progress and outcomes
- ◆ A different reaction to the Fluxys incident in Belgium



What have we done?

- ◆ Raised the profile of process safety with the company's leadership to help Directors and Senior Managers demonstrate their interest
- ◆ Quantified our process safety risks across all our gas assets, including the US
- ◆ Reviewed our process safety K.P.I.s and aggregation to give line of sight to the Board
- ◆ Implemented a process safety culture survey to understand employees views

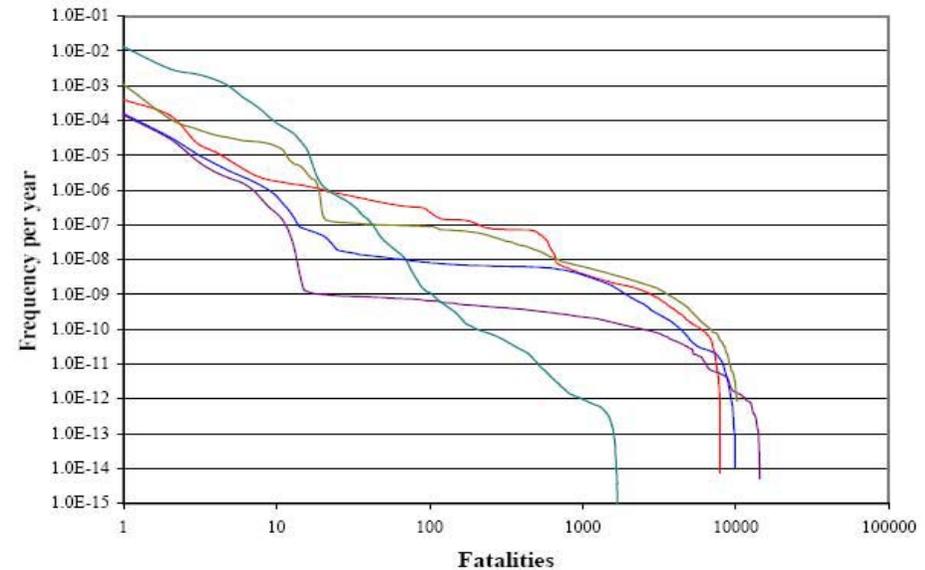
Process safety is a leadership issue

- ◆ Process Safety Commitment Statement issued by Chief Executive
- ◆ All Directors and Senior Managers have attended 1 day process safety awareness session
- ◆ Process safety discussions integrated into behavioural safety visit programme



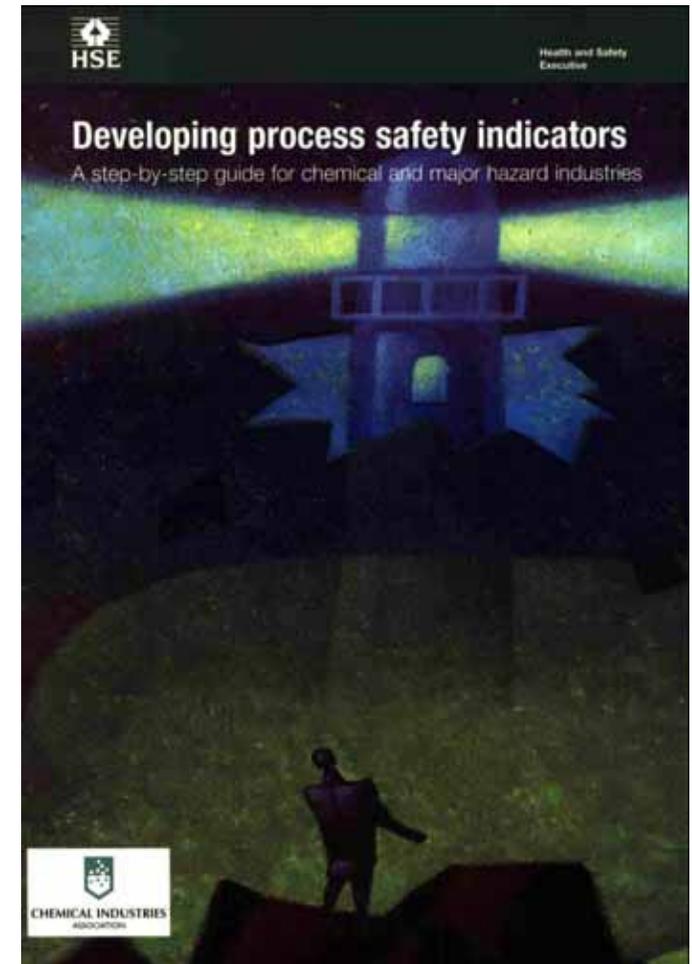
Process safety risk assessment

- ◆ Fundamental to a National Grid focused programme
- ◆ Updated previous risk profiles to include US assets
- ◆ Different views on 'risk' in US and its impact on operational practice
- ◆ It's a challenge to meaningfully articulate the numbers to the Board and Executive

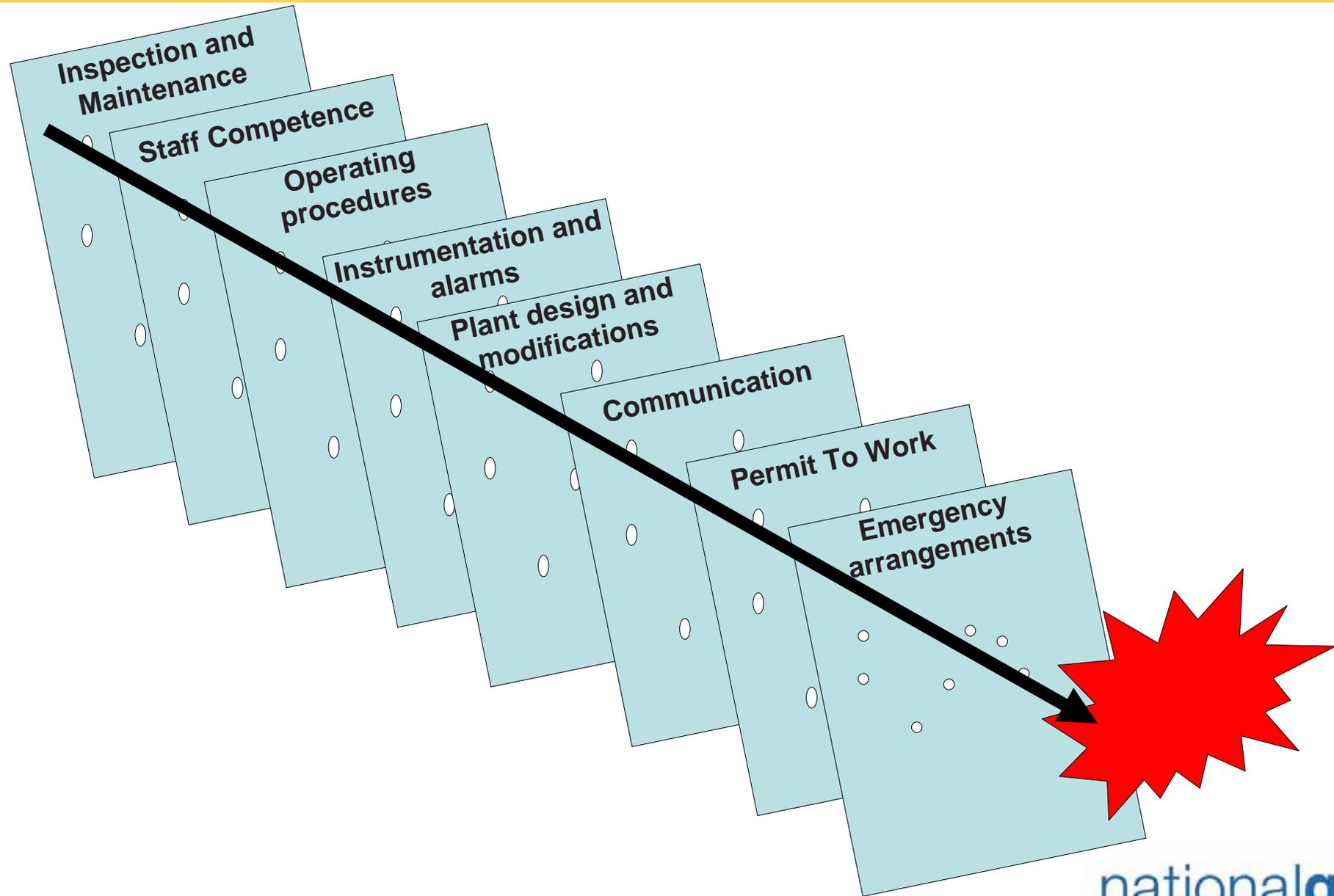


Measuring Process Safety – K.P.I.s

- ◆ Leading and lagging indicators in place for many years
- ◆ Tended to be analysed at lower levels of company by ‘experts’ with limited line of site to Board
- ◆ Challenges around consistency across company and meaningful aggregation up to Board level
- ◆ HSE published approach needed to be developed for National Grid’s size and complexity



Major Incidents usually occur when “the gaps in our control measures line up”



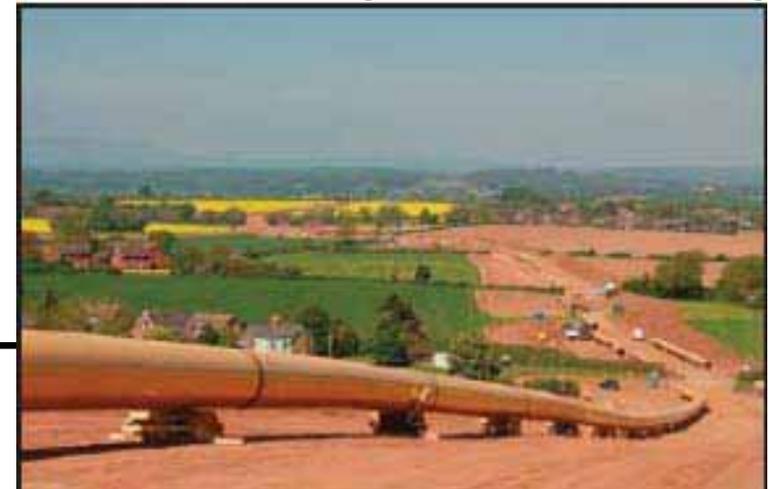
We have adopted the Risk Control Systems (RCS) in line with HSE Guidelines

- ◆ Inspection and maintenance
- ◆ Workforce competence and resources
- ◆ Operating procedures
- ◆ Instrumentation and alarms
- ◆ Plant design and modifications
- ◆ Communications and human factors
- ◆ Permit to work
- ◆ Emergency arrangements
- ◆ Process safety leadership
- ◆ Asset records and data quality
- ◆ Third party activities
- ◆ Audit review and close out

Outlined in HSE document HSG 254

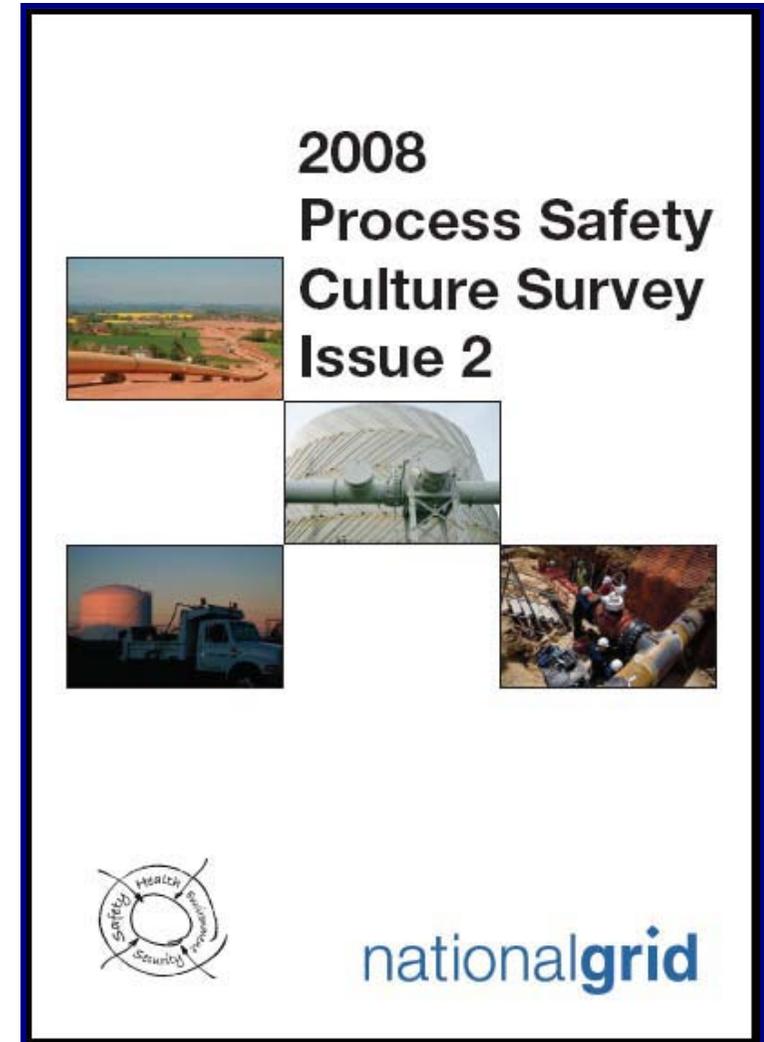
We have developed separate measures for each asset group and each Risk Control System (RCS)

RCS	Description	Leading	Lagging	Control opinion
Third Party Activities – Asset group: Pipelines	Procedures in place and implemented to avoid 3 rd party damage	% of aerial surveillance undertaken to schedule	Number of significant sightings (A1& B1) recorded in UKOPA infringement database	
		% of vantage point surveys undertaken to schedule		
		% of landowner liaison letters dispatched on time and response followed up in 12 months	Number of third party interference damages to pipelines	
		% of contacts with statutory bodies, local authorities etc. undertaken to schedule		
		% of enquiries responded to in required timescales		



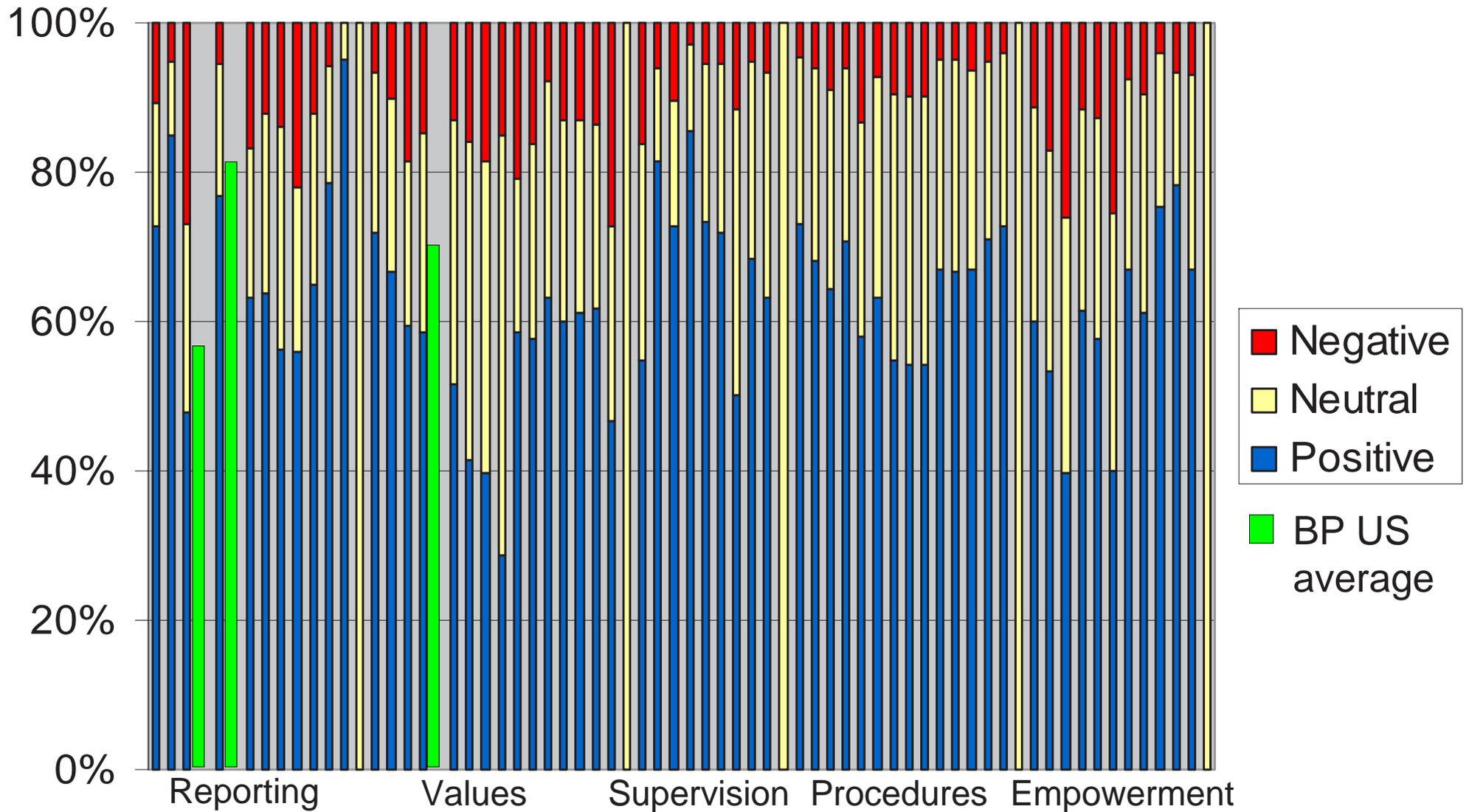
“The people on the ground are a huge source of input”

- ◆ Specific Board request to understand employee views on process safety
- ◆ Survey issued to employees directly involved in process safety based on the questions used by Baker
- ◆ 1250 employees returned the survey (68% response)
- ◆ Comparison with BP and wider employee survey on safety



nationalgrid

Process Safety Culture Survey Results



Culture survey: Examples of strengths:

- ◆ The culture exists that encourages raising process safety concerns (Q 4)
- ◆ They are free to report hazardous processes without fear of negative consequences (Q 2)
- ◆ They do not hesitate to report actions or conditions that raise a process safety concern, even when a co-worker is involved (Q 10)
- ◆ They are free to refuse to participate in work activities that are unsafe (Q 63)



Culture survey: Examples of weaknesses:

- ◆ Do not always report minor process-related incidents, accidents and near-misses (Q3)
- ◆ Are not informed about the result of process-related incidents, accidents and near-miss investigations (Q8)
- ◆ Feel the need to work considerable overtime from their own sense of loyalty to their work unit (Q27)
- ◆ Do not actively participate in incident and accident investigations (Q56)



Quotes from culture survey – examples:

“Process safety is the most important aspect of where I work and I know, firsthand, that reporting any concern is encouraged.”

“If the task is not safe it is not performed.”

“More training required”

“Process safety has been taken for granted for the last few years on the gas side with the emphasis firmly on personal safety”



“Our procedures look wonderful. If someone from outside our plant was asked to follow each other line by line you would understand why they are not being followed.”

Process Safety specific insights:

- ◆ Don't jump into action as there is no quick fix
- ◆ Listen and be open to challenge
- ◆ Worry when its all good news
- ◆ It's not a failure to admit you need help
- ◆ Process Safety must be owned by the line
- ◆ Employee engagement is critical
- ◆ Staff can get immune to the major risks
- ◆ Rigorously track improvement actions
- ◆ Value and reward the “silent champions”

Conclusions

- ◆ For National Grid, management processes are in place but focus has been on occupational safety not process safety
- ◆ There is strong interest and willingness by Directors and Senior Managers to get involved
- ◆ Input from the people on the ground is key
- ◆ Presenting a holistic picture of performance at Board level is challenging – the KPIs don't tell the whole story and need to be supported by a culture of trust and integrity
- ◆ This is an ongoing journey and need to maintain a continual focus and avoid complacency