

Process Safety

National Grid Approach

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nationalgrid

What is Process Safety ?

“Process Safety” is a collective name for the measures, systems, procedures or policies which prevent incidents and/or protect people/ environment from effects of Major Accidents

What do we mean by Major Accidents ?

- Multiple Fatalities
- Significant effect on the Environment
- Major news items
- High consequence – low frequency events (compared with occupational injuries which are low consequence, high frequency events)

Why is Process Safety a hot topic ?



BP Texas City Incident



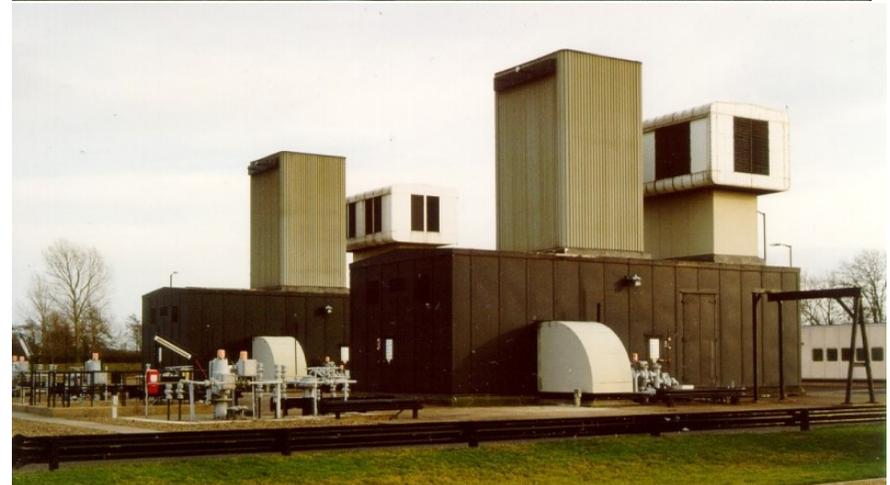
Buncefield



Reminded people of what happens when it goes wrong ?

Scope of process safety in Transmission

- ◆ Top tier sites
 - ◆ 4 LNG peak shaving plants
 - ◆ Bacton and St Fergus Terminals
- ◆ Lower tier sites
 - ◆ Theddlethorpe terminal?
- ◆ Major accident hazard pipeline
 - ◆ 4326 miles of pipeline and 24 compressor sites



Baker report recommendations for BP

- ◆ Process Safety Leadership
- ◆ Integrated And Comprehensive Process Safety Management System
- ◆ Process Safety Knowledge And Expertise
- ◆ Process Safety Culture
- ◆ Clearly Defined Expectations And Accountability For Process Safety
- ◆ Support For Line Management
- ◆ Leading And Lagging performance Indicators For Process Safety
- ◆ Process Safety Auditing
- ◆ Board Monitoring
- ◆ Industry Leader

Action plan - Baker recommendation 1

- ◆ Process Safety Leadership
 - ◆ Setting of process safety targets for directors and senior managers
 - ◆ Training of directors and senior managers
 - ◆ Inclusion of process safety in SHE visits
 - ◆ Define governance structure for process safety
 - ◆ TSHE and DSRAC to include process safety agenda items
 - ◆ Develop company 'Vision' statement for process safety
 - ◆ Inclusion of process safety in high level company communications

Process Safety commitment statement



The graphic is a vertical rectangular poster with an orange header and footer. The header contains the title 'Process Safety Our commitment' in blue and orange text. The left side features four images: a large industrial dome, workers in a trench, a desert landscape with a pipeline, and a large white storage tank with the National Grid logo. The right side contains text sections: 'Our vision' (To be an industry leader...), 'Our belief' (That safety is paramount...), and 'Our approach' (a list of 12 bullet points). The footer contains the National Grid logo and the text 'nationalgrid'.

Process Safety Our commitment

Our vision
To be an industry leader in managing the process safety risks from our assets throughout the world.

Our belief
That safety is paramount and we can protect our people and the public by putting in place an effective safety management system and culture.

Our approach

- We assess and manage the major hazards arising from our assets and operations.
- We ensure our employees and contractors have the necessary expertise to manage and operate our assets safely.
- We consider inherent safety and apply relevant laws, codes and standards to ensure our assets are designed and constructed to be safe throughout their lifetime.
- We operate within defined safe operating limits and ensure that any deviations are properly assessed and controlled.
- We maintain and inspect our assets to ensure their integrity.
- We maintain up to date documentation detailing our assets and the procedures for their safe operation.
- We take into account human factors and implement controls to reduce errors and their impact.
- All changes in our operations are assessed and managed to ensure we continue to operate safely.
- We monitor our safety critical systems and procedures.
- We have emergency plans for our major hazards which are regularly tested to ensure we remain in a state of preparedness.
- We investigate and analyse any incidents and near misses to determine the root causes and prevent a recurrence.
- We encourage everyone to identify and act upon process safety hazards they find.
- We independently audit our management systems and technical arrangements and respond to any findings.
- We review our process safety performance on a regular basis and update our plans to ensure continuous improvement.

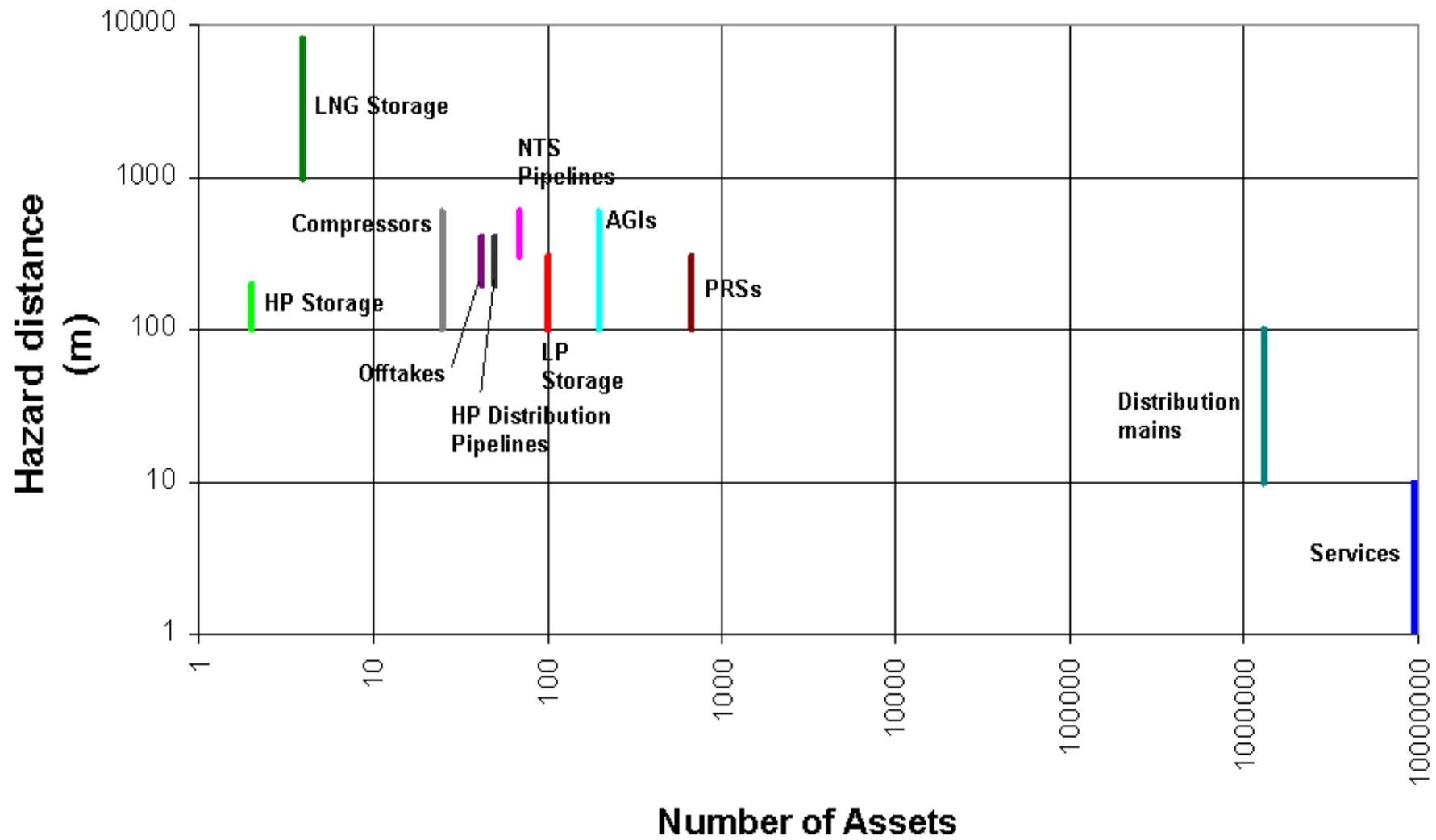
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Action plan - Baker recommendation 2

- ◆ Integrated And Comprehensive Process Safety Management System
 - ◆ Review hazards and risks for beach to meter (gap analysis to identify major hazards and risk profile, including US)
 - ◆ Review SHE Safety Management Framework documents to ensure process safety is fully integrated into Safety Management process (including reviewing audit process)

Range of Assets and Hazard Distances

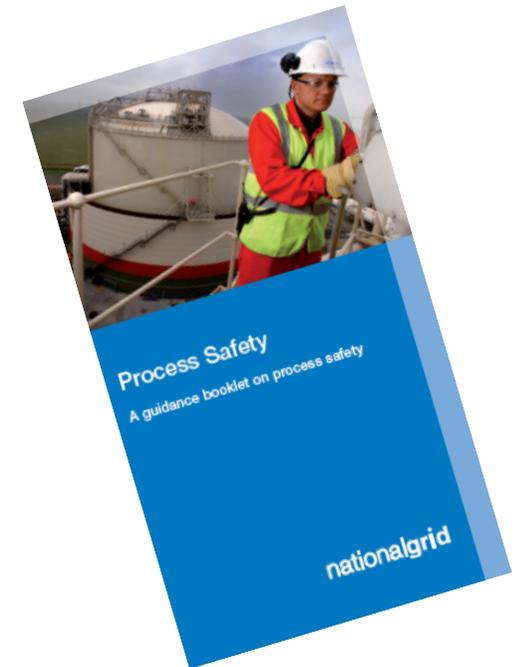


Action plan - Baker recommendation 3

- ◆ Process Safety Knowledge And Expertise
 - ◆ Briefing, training and awareness
 - ◆ Short term - training for managers
 - ◆ Longer term - more targeted training for staff
 - ◆ Review of resources and competences, e.g. review singleton expertise and specialist support

Process Safety – Leadership Training

- ◆ Process safety leadership
- ◆ One day training course covering
 - ◆ Process safety incidents and learning
 - ◆ Understand the principles of process safety and the risk control systems
 - ◆ Process safety discussions – reinforcing the processes



Executive air-time on process safety

- ◆ Process safety is now an agenda item at monthly TSHE.
- ◆ Major Accident Prevention Policy (MAPP) was approved in May '07.
- ◆ Process safety improvement programme was reviewed in May '07 and key projects accelerated.
- ◆ Process safety KPIs reported monthly, and risks quarterly

TSHE process safety deep dives	
Employee Competency	June 07
Adequate level of Resources	July 07
Pipeline 3rd Party Interference	Aug 07
Human Factors	Sept 07
Modification Processes	Oct 07
Clear lines of responsibility	Nov 07
Permit Process	Dec 07
Dangerous Substances Explosive Atmosphere Regulations	Jan 08
Management of Organisational Change	Feb 08
Audit and Inspection	Mar 08
Maintenance & Inspection	April 08
Understand Asset Condition	May 08
Safety Integrity level Assessment	June 08

Action plan - Baker recommendation 4

- ◆ Process Safety Culture
 - ◆ Readdress balance between personal and process safety (e.g. SHE visits)
 - ◆ Undertake process safety culture survey (to focus on key areas)



Action plan - Baker recommendation 5

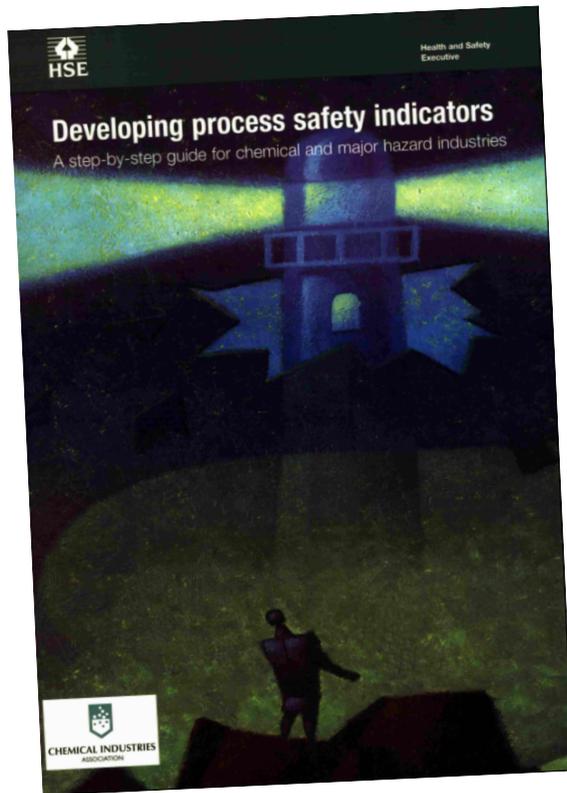
- ◆ Clearly Defined Expectations And Accountability For Process Safety
 - ◆ Review management responsibilities for key process safety risks and ownership
 - ◆ Check key policies and procedures for clarity of responsibilities (see governance structure above)
 - ◆ Review accountabilities and responsibilities in business operating model for process safety

Action plan - Baker recommendation 6

- ◆ Support For Line Management
 - ◆ Review access to process safety knowledge within business (key experts, who to ask - see review of resources and competences)

Action plan - Baker recommendation 7

- ◆ Leading And Lagging Performance Indicators For Process Safety



Review incident and fault reporting across each business

Further develop process safety KPIs

Develop Group level set of process safety KPIs for main risks

Action plan - Baker recommendation 8

- ◆ Process Safety Auditing
 - ◆ Audits to target major hazards and key areas from gap analysis
 - ◆ Review how process safety audits should be carried out in future to provide process safety assurance (e.g. introduce COMAH type/LNG type safety audits)
 - ◆ Ensure competency of auditors
 - ◆ Follow up audit actions and risk based close out of corrective actions

Action plan - Baker recommendation 9

- ◆ Board Monitoring
 - ◆ Progress reporting on this initiative to board
 - ◆ Quarterly Reports Presented by each Business to the Board

Process Safety Risk Control Measures		Transmission			
		LNG Storage		Gas National	
		Rating	Comments	Rating	Comments
PS.1	Process Safety leadership				
PS.2	Plant design and modifications				
PS.3	Operational procedures				
PS.4	Workforce competence				
PS.5	Human factors				
PS.6	Emergency arrangements				
PS.7	Protective devices, instrumentation and alarms				
PS.8	Inspection and maintenance				
PS.9	Permit to work				
PS.10	Asset records and data quality				
PS.11	Third party activities				
PS.12	Audit, review and close out				
KEY					
	Action required	↑	Performance Improvement		
	Areas for improvement	↓	Deterioration		
	Satisfactory				

Action plan - Baker recommendation 10

- ◆ Industry Leader
 - ◆ National Grid should be industry leader in process safety
 - ◆ Continuously monitor process safety developments

Summary

- ◆ Transmission leadership now has an increased visibility of the management of process safety.
- ◆ Regular reporting of risks and KPIs is providing assurance of progress.
- ◆ Further training of the leadership team will allow SHE visits to focus on the full range of safety risks on site.

