

PSLG Final Report Workshop

UK Petroleum Industry Association

UKpia

PSLG Final Report – Scope and Application

What is the PSLG and the Final Report?

- *Process Safety Leadership Group (PSLG) followed the Buncefield Standards Task Group (BSTG)*
- *Final report address all 25 recommendations from the MIIB Design and Operations Report*
- *BSTG report incorporated into PSLG Report – it's guidance and implementation timescales remain*

Outstanding issues

- *Independence and maximum risk reduction for safety instrumented systems*
- *Application of Phase 1 explosion mechanism report, conservative PSLG approach*

PSLG Final Report – Scope and Application

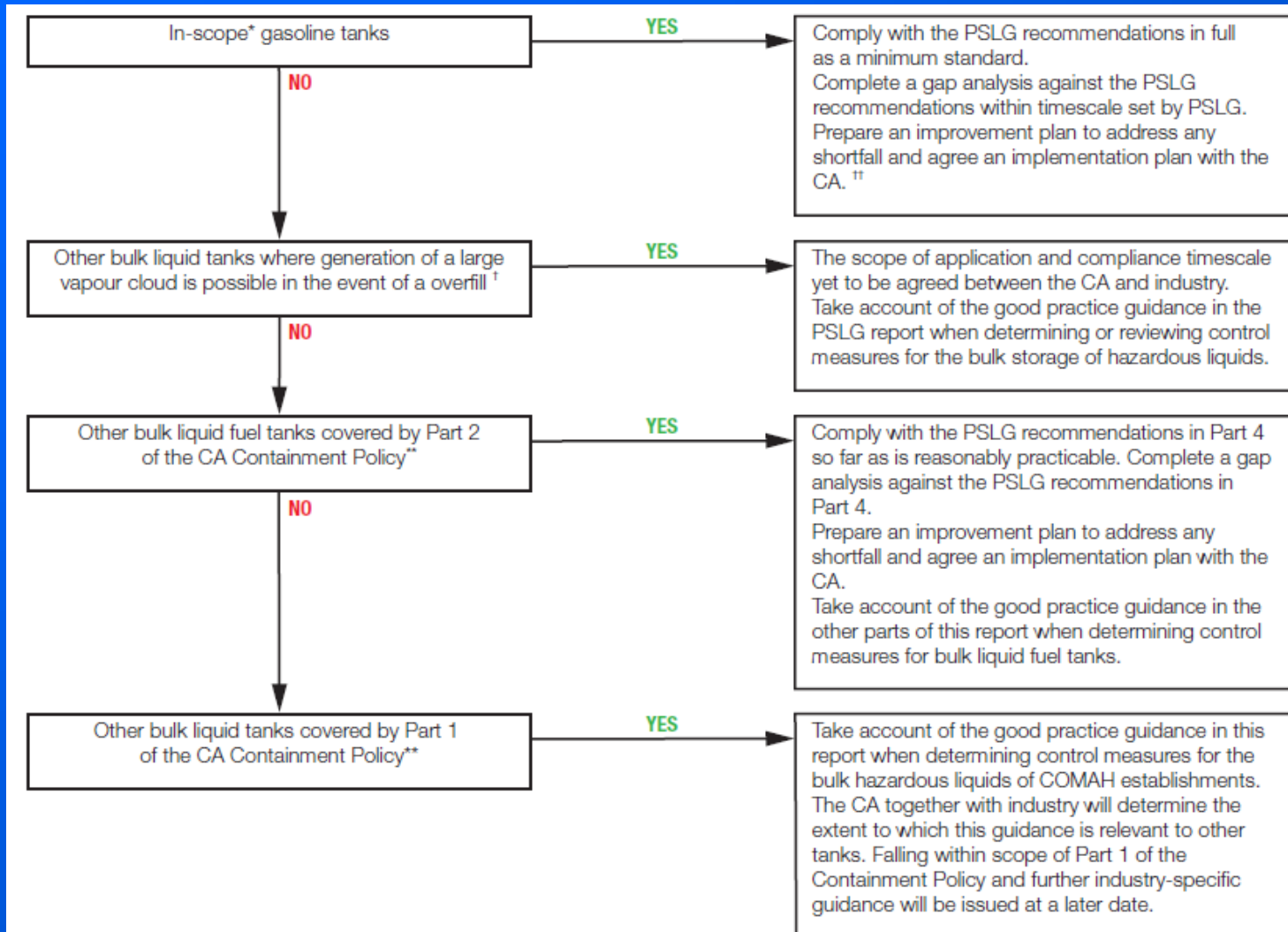


Figure 1 Compliance at existing COMAH establishments

PSLG Final Report – Scope and Application

What are in-scope tanks?

- *As in the original BSTG Report, in scope tanks are defined as:*
- those storing gasoline (petrol) as defined in Directive 94/63/EC European Parliament and Council Directive 94/63/EC of 20 December 1994 on the control of volatile organic compound emissions resulting from the storage of petrol and its distribution from terminals to service stations
- vertical, cylindrical, non-refrigerated, above-ground storage tanks typically designed to standards BS 2654, BS EN 14015, API 620, API 650 (or equivalent codes at the time of construction)
- with side walls greater than 5 m in height
- filled at rates greater than 100 m³/hour (this is approximately 75 tonnes/hour of gasoline)

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What degree of compliance do we need to achieve?

- For in-scope tanks, meeting the provisions of the PSLG report in full, will, in the majority of cases, mean that a duty holder meets the requirements of COMAH regulation 4, to take all measures necessary to prevent major accidents and limit their consequences to people and the environment, so far as is reasonably practicable
- For existing operations, where meeting the provisions in full is not considered reasonably practicable, the degree of compliance necessary, or indeed the appropriateness of alternative methods to achieve it, is subject to agreement between the duty holder and the CA
- For other tanks, covered by part 2 of the containment policy (Gasoline and similar petroleum products), meet the requirements of Part 4 of the final PSLG report so far as is reasonably practicable

PSLG Final Report – Scope and Application

What do we need to do now?

– For in-scope tanks

- The work following the publication of the BSTG work continues, in line with the previously agreed timescales
- Within 6 months (June 2010), complete a gap analysis against the final PSLG report
- Within 9 months (September 2010), agree *risk based* implementation timescales with your local CA inspector

– For other tanks, covered by part 2 of the containment policy (Gasoline and similar petroleum products)

- Within 6 months (June 2010), complete a gap analysis against the Part 4 of final PSLG report
- Within 9 months (September 2010), agree *risk based* implementation timescales with your local CA inspector

PSLG Final Report – Key Actions

The PSLG report is split into six parts, aligning with the MIB's *Design and Operation of fuel storage sites* report

- Part 1, Systematic assessment of safety integrity level requirements
- Part 2, Protecting against loss of primary containment using high integrity systems
- Part 3, Engineering against loss of primary containment
- Part 4, Engineering against loss of secondary containment
- Part 5, Operating with high reliability organisations
- Part 6, Delivering high performance through culture and leadership

The following slides provide an overview of the key features delivered through the PSLG report, excluding the BSTG guidance already issued

PSLG Final Report – Part 1

Systematic assessment of safety integrity level requirements

- Determine the SIL requirement for overfill protection systems through appropriate risk assessment technique - LOPA, Risk Graph, Fault Tree
 - PSLG uses LOPA as an example, but recognises other methods are available, much of the guidance is still relevant
- Review risk assessments for existing installations to take account of new knowledge and development in standards
- Ensure the results of the risk assessment (SIL determination) are included in COMAH safety reports

PSLG Final Report – Part 2

Protecting against loss of primary containment

– Automatic overfill protection systems

- UKPIA and TSA have committed to minimum SIL1 Automatic Overfill Protection Systems for 'in-scope' tanks at terminals and refineries – implementation timescales set as part of PSLG response
- New systems should be fully compliant with BS EN 61511
- Where existing equipment/systems are used, compliant with BS EN 61511 so far as is reasonably practicable, but attention must be drawn to:
 - Independence
 - Suitability of equipment
 - Evidence of prior use
- Existing systems may use common ROSOV valve or pump as primary means of isolation
- Note PSLG outstanding action to determine extent of 'independence' and maximum risk reduction factor of existing process system

PSLG Final Report – Part 2

Protecting against loss of primary containment

- **Automatic overflow protection systems (continued)**
 - Note PSLG outstanding action to determine extent of ‘independence’ and maximum risk reduction factor that can be claimed for existing basic process control system (BPCS)
 - Using BS EN 61511 for basis of functional safety management system
 - Safety planning and procedures
 - Operation, maintenance, inspection and testing
 - Functional safety assessment and audit
 - Management of change
 - UKPIA is working with Human Reliability Associates to develop minimum standards for operators in a SIL1 safety function – applies to other tanks not ‘in-scope’
- **BSTG previously identified requirements for ROSOV’s and the setting of appropriate set-points (operating, LAH, LAHH etc.)**

PSLG Final Report – Part 3

Engineering against loss of primary containment

- **Review Dangerous Substances and Explosive Atmospheres Regulations (DSEAR)**
 - Periodic Risk Assessment
 - Revisit risk assessment if there is reason to believe risk assessment no longer valid, or there has been a significant change
- **Review the siting of emergency equipment – is access still available?**
- **Complete and/or review on and off site emergency plans**
- **Consider methods of improved leak detection for new or substantially modified facilities**
 - CCTV
 - Gas Detection

PSLG Final Report – Part 3

Engineering against loss of primary containment

– Review the mechanical integrity of tanks

- New tanks designed to BS EN 14015 or API 650 (or equivalent)
- New tanks should be of single bottomed design – double bottom designs may still be an alternative, providing robust integrity management arrangements
- EEMUA 159 and API 653 recognised as good standards for integrity management
- Competency of personnel – EEMUA 159 Tank Integrity Assessor Level 1 or API 653 Tank Inspector

– Risk assessment

- Demonstrate periodic assessment
- Existing tanks should, as a minimum, comply with relevant recognised design code at date of manufacture
- Alternatively, against current standard, BS EN 14015, API 650

PSLG Final Report – Part 4

Engineering against loss of secondary and tertiary containment

- Provides *supporting* guidance to the containment policy
 - Advantages and disadvantages of bund lining systems
 - Penetrating pipework and expansion joints
 - Secondary containment systems under tanks – refer to Part 3 guidance on mechanical integrity
 - Bund capacity definition:
 - Bund sized to 110% of Tank Rated Capacity (See Part 2 of PSLG)
 - Record overfill levels (TRC – Overfill level) for information purposes
 - For bunds with multiple tanks – 25% of the total normal fill level for all tanks within the bund should be used
 - Carry out risk assessment to determine the extent of any requirements for tertiary containment

PSLG Final Report – Part 5

Operating with high reliability organisations

- Many human factors elements addressed in the BSTG, PSLG adds guidance on:
 - Roles and responsibilities
 - Defining for all staff, control room operators, supervisors, management
 - Competency management
 - Implementing a competence management system
 - System interfaces
 - Review of control room displays and alarm systems
 - Modifications and upgrades in line with current good practice
 - Staffing, shift work arrangements and working conditions
 - Assess if staffing levels are adequate to detect, diagnose and react to hazardous situations
 - Fatigue management plans
 - Perform a review of working conditions, and develop a plan to address gaps

PSLG Final Report – Part 5

Operating with high reliability organisations

- Organisational change and management of contractors
 - Procedure and policy for handling organisational change
 - Retaining adequate competency, retaining corporate memory
 - Maintain ‘intelligent customer’ role when outsourcing work
 - Arrangements for managing and monitoring contractor activities
- Management of Change
 - Ensuring management of change processes are well defined and understood (see UKPIA MoC Self Assessment Module)
- **BSTG already tackled such issues as Fuel Transfers (communication and planning), PSPI, Auditing, and incident investigation**

PSLG Final Report – Part 6

Delivering high performance through culture and leadership

- **PSLG Principles for Process Safety Management**
 - Process safety leadership from board level
 - Engagement of the workforce
 - Monitoring performance
 - Sharing best practice with other industry sectors
- **Tackled through UKPIA's Commitment to Process Safety**

PSLG Final Report – Gap Analysis Tool

UKPIA developed PSLG report gap analysis tool (Open Example)

- **Based on EA's Containment policy score-card**
- **Depending on requirement, assessment against either**
 - tank quantity
 - bund quantity
 - management system
- **Assessment result is either**
 - Not implemented
 - Partially implemented
 - Implemented SFAIRP
 - Fully implemented
 - Not applicable

The Future Role of the PSLG

The PSLG will continue through 2010

- Address outstanding issues
- Manage a practitioners workgroup, to help industry through the gap analysis and implementation planning phases, and ensure a common interpretation of the guidance for industry and the CA alike
- Continue to promote process safety initiatives

PSLG Final Report

Questions?