

# The Specialist – “sharing through experience”

Machines Vessels Piping Materials Fired Equipment Civil Structural Inspection Electrical Instrument Control Process Safety Projects

## Containment

“What have we learnt about containment?”

We are all aware of the impact of Buncefield in 2005 where due to a loss of containment an explosion and fire ensued. Thankfully, there was no loss of life.

One of the many learning points that came from this event was that priority and policy must be given to maintaining the integrity of primary containment systems but also appropriate secondary and tertiary containment. This was essential for environmental protection and safety in the event of loss of primary containment.

The clear policy should be applied immediately to new establishments or existing facilities where significant changes in inventory or operations are proposed. Most importantly existing facilities are to be upgraded as far as is reasonably practical to do so.

Support reference documents:

**Safety and environmental standards for fuel storage sites (BSTG)**  
<http://www.hse.gov.uk>

**Containment of bulk hazardous liquids at COMAH establishments containment policy**  
<http://www.environment-agency.gov.uk/>

Contact **Keith** for further information.  
 Tel. +44 (0)1642 372343  
 Mobile. +44 (0)7889 829175  
[keith.baisden@gb.abb.com](mailto:keith.baisden@gb.abb.com)

## Buncefield! Failure of containment, direct costs circa. £1 Billion!!!

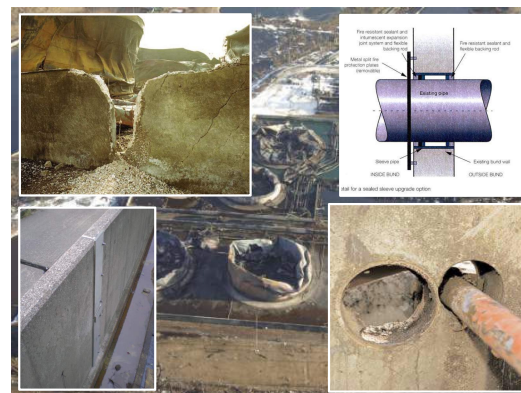
“Sunday 11<sup>th</sup> December 2005”

### Background

- Flammable vapour cloud formed and ignited resulting in explosion and fire
- 32hrs to extinguish, 55M litres of water, 0.75M litres of fire fighting foam
- Property damage up to 5 miles away
- The size of the explosion was greater than theory at that time would have predicted

### Key Elements

1. COMAH Guidance applicable to COMAH sites but generally recognised as reflecting best practise for many applications
2. Options for bringing storage facilities up to standard need to be risk assessed.



### COMAH Guidance

- Ground storage tanks shall be banded to provide secondary containment
- Bunds (dykes - for our US readers) shall be impermeable and have:
  - adequate corrosion resistance
  - adequate strength and durability
  - adequate capacity, and design to allow fire prevention and control measures to be taken
  - no pipework that penetrates through the bund floor
  - no pipework that penetrates through the bund walls AFARP otherwise it shall be with adequate sealing and support
- Bunds shall be subject to periodic inspection and certificated by a competent person regarding their condition and performance
- Bunds shall have fire resistant structural integrity joints and pipework penetrations.

**“Nothing in the world is more flexible and yielding than water. Yet when it attacks the firm and the strong, none can withstand it..“**

Lao Tzu, Chinese philosopher, 600-531 BC