Outcomes from a strategic approach to plant ageing at Seveso establishments in Great Britain.

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Plant Ageing programme-foundations

• 2000 – COMAH Regulations 1999 (Seveso II)
  – Focus on integrity management
• 2006 – First research report
  – Do ‘old’ plants require a different approach?
  – Introduced the commonly used definition of ‘ageing’
  – Monitoring condition through life is key
What is ‘Ageing’

- Not simply related to chronological age of equipment

- Ageing is related to what we know about a piece of equipment’s condition and how that is changing over time
Plant Ageing programme-foundations

• 2008-09 Second research report
  – Looked at the contribution of ‘ageing’ to major accidents
  – Broader approach – looked beyond examination of plant to include;
    • Leadership
    • Resources
    • Maintenance
  – Provided a means for self assessment and survey

• 2010 Onshore Ageing Programme introduced.
Plant Ageing programme - structure

• Intervention Programme
  – Ultimate objective to cover all Seveso sites at which ageing might be an issue
  – Survey results directed/ prioritised inspections
  – Structured approach by specialist mechanical engineers
  – Site performance scored against key topics

• Stakeholder Engagement
  – Raise awareness within industry
  – Address industry wide issues
Plant Ageing programme – interventions

• Performance Measured over 5 Topics;
  – Leadership
  – Asset Register
  – Primary Containment
  – Safety Critical Mechanical Equipment
  – Resources

• Use of Performance Scores
  – Tracking of sector performance
  – Identification of common issues
    • Use of 3rd parties in integrity management
Plant Ageing programme – interventions

• Prioritisation
  – Survey results and site hazard ranking
• Structured interventions against specific topics
• Delivery Guide defining expectations to both inspectors and industry
• Inspectors identify any areas requiring improvement
  – Legally binding actions placed
  – Formal enforcement where appropriate
  – Once started interventions continue until required improvements are made
Plant Ageing programme – Progress to Date

• Approximately 500 of a total of 800+ Seveso sites covered

• Slow but steady improvement
  – Albeit from a poor starting point
  – 1st year results showed > 70% of sites required to improve their performance
Plant Ageing – progress …

Distribution of scores, by category, overall for each work year

<table>
<thead>
<tr>
<th>Year</th>
<th>Good or Exemplary</th>
<th>Need to Improve</th>
<th>Poor or Unacceptable</th>
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<tr>
<td>2010/11</td>
<td>20%</td>
<td>30%</td>
<td>50%</td>
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<td>2011/12</td>
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<td>2012/13</td>
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<td>20%</td>
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<tr>
<td>2015/16</td>
<td>45%</td>
<td>5%</td>
<td>50%</td>
</tr>
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</table>
Plant Ageing programme – Stakeholder Engagement

• Collaboration with UK Trade Associations and Professional Engineering Institutions
  – To raise awareness of the ageing issue and our programme across the industry.
  – Performance data provided strong evidence of areas that need attention
  – Developed guidance with strong industry input
    • secured rapid acceptance and take-up by industry in general
Plant Ageing programme – Progress to Date

• Stakeholder Engagement
  – Performance data indicated an issue with the use of external bodies for examination
    • Significant difference in performance in industries that predominantly use in-house resource vs those using external contractors
    • Importance of being an ‘intelligent customer’
  – This led to development of two significant guidance documents
Plant Ageing programme –
Progress to Date

• Good Practice in Plant Examination
  – With Trade Association for external examination bodies and representatives of in-house bodies
  – Covers all aspects of examination, including management and execution
  – Published in 2012
  – Evidence of strong ‘take-up’ by industry
Plant Ageing programme – Progress to Date

- Use of External Contractors in Managing Ageing Plant
  - With the Chemical and Downstream Oil Industries Forum (CDOIF)
  - Addresses the interface between client and contractor
  - How to be an ‘intelligent customer’
  - Published 2015

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Pant Ageing programme – Lessons Learned

• Benefits/ plus points
  – Combination of site interventions with stakeholder engagement works well
  – Stakeholder engagement is resource intensive but has been worthwhile
  – Performance data provides a strong base of evidence to convince decision makers of the need for action
  – Structured approach provides confidence in consistency of Performance Scores
  • Allows Senior Management to use data to demonstrate concerns
Plant Ageing programme – Lessons Learned

• And learning points/ challenges…
  – Imbalance in scoring structure
    • An ability to distinguish between sites close to compliance and those needing more significant improvement would be useful.
    • Very little use for scores in worst two categories
  – Multiple operating units/ satellite sites
  – Plant ownership changes
  – Changes in third party inspection
Where to Next?

- Currently reviewing the approach and findings
- Continuation of the programme within the current framework
- Address the challenges
Information Sources

• RR509 – Plant Ageing http://www.hse.gov.uk/research/rrhtm/rr509.htm
• RR823 – Plant Ageing Study http://www.hse.gov.uk/research/rrhtm/rr823.htm
• SAFed IMG1 / EEMUA 231 The mechanical integrity of plant containing hazardous substances - A guide to periodic examination and testing http://safed.co.uk/technical-guides/pressure-equipment. Sept 2012

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Thank you