

COMAH Competent Authority

Ageing Plant Operational Delivery Guide

the Competent Authority



1. Purpose

- 1.1 This Delivery Guide (DG) underpins the Competent Authority's programme to prevent, control and mitigate major accidents at COMAH sites; it does this by ensuring ageing mechanisms which could cause plant deterioration and increased major hazard risks are recognised and are being managed effectively. The COMAH Competent Authority has identified ageing plant as a strategic priority within the CA's workplan.
- 1.2 Ageing mechanisms such as corrosion, erosion, fatigue, obsolescence and calibration failure should form part of a site's asset integrity management system. The issue of ageing plant is just part of the overall management of the integrity of a site's assets, and is closely linked to the effectiveness of the inspection, testing, maintenance and calibration regimes. In practice, ageing plant issues may be best tackled as part of overall inspection plans related to asset integrity management.
- 1.3 This DG is provided to help identify those sites where ageing plant may be a priority, and to assess the extent of ageing issues and how well these are being managed. It should enable operational teams to:
 - identify COMAH sites where ageing plant is an issue with the potential to give rise to a major accident;
 - target inspections and interventions;
 - assess how well an operator is managing ageing plant and record their performance in a consistent way; and
 - identify issues, secure improvements or arrange further interventions as required.
- 1.4 The DG may also be useful when assessing sub-COMAH or non-COMAH sites where ageing plant could present a significant risk.

2. Scope

- 2.1 The key focus is on COMAH sites. This guide should be followed where there is a significant risk of a major accident due to ageing plant.
- 2.2 The CA's ageing plant programme comprises three main elements:
 - a) June 2010 – **publication of new guidance** for industry;
 - b) July – Nov 2010 – an **intelligence gathering exercise** at sites where the CA has little or no information on ageing plant; and
 - c) June 2010 onwards – **an inspection programme** during 2010/11 based on what is already planned on ageing plant issues, followed in 2011 by further targeted inspection based on improved intelligence from (b).
 - d) June 2010 onwards – a gap analysis on sites where the CA has carried out previous interventions on ageing plant issues.

- 2.3 The main controls expected to be in place to manage ageing plant risks are Risk Control Systems (RCS), with a focus on the prevention, control and mitigation of major accident hazards (MAH) arising from potential ageing related deterioration in, or failure of, plant or system performance. These include systems and procedures for:
- hazard identification and risk assessment;
 - planned maintenance;
 - examination and testing of safety-critical plant (i.e. systems and procedures for preserving the integrity of structures, plant, equipment, process control and instrumentation, etc);
 - testing and calibration of safety-related electrical, control and instrument, EC&I, equipment; and
 - management of change.
- 2.4 Ageing mechanisms leading to deterioration can affect a wide variety of plant systems and features.
- 2.5 Asset types susceptible to ageing can be segregated into four basic categories:
- primary containment systems;
 - structures;
 - prevention, control and mitigation safeguards (non EC&I); and
 - EC&I systems.
- 2.6 EC&I systems can be considered as a type of safeguard. However, given the different nature and relative importance of the functions performed by this type of equipment, it is considered desirable to highlight this category specifically.
- 2.7 The structural integrity factors that should be considered are structures and civil engineering features designed to protect people on plant or provide access for people, structures which could impact the plant if they fail or collapse, and those structures protecting the plant from environmental hazards (e.g. flooding or subsidence) as well as the primary structures supporting the plant, fire and blast walls, emergency shelters, bunds and drains.
- 2.8 An overview guide entitled *Managing Ageing Plant: A Summary Guide* has been published to promote an awareness of ageing mechanisms and how to manage these effectively. The guide has been designed to work alongside this Delivery Guide. Reference to further relevant guidance is in Appendix 1.

3. Justification

- 3.1 Plant ageing, leading to an increased risk of loss of containment and other failures due to plant and equipment deterioration, has been shown to be an important factor in incidents and accidents. Recent research shows that 50% of European major hazard loss of containment events arising from technical plant failures were primarily due to ageing plant mechanisms such as erosion, corrosion and fatigue. Between 1980 and 2006, there have been 96 major accident potential loss of containment incidents reported in the EU Major Accident Reporting System (MARS) which are estimated to be primarily caused due to ageing plant mechanisms. This represents 30% of all reported major accident loss of containment events, and 50% of the technical integrity and control and instrumentation-related events. These 'ageing' events equate to an overall loss of 11 lives, 183 injuries and over 170€m of economic loss.
- 3.2 The UK RIDDOR data shows that between 1996 and 2008 there have been 173 loss of containment incidents that can be attributed to ageing plant mechanisms.

4. What is meant by 'Ageing Plant'?

- 4.1 The term 'ageing plant' can be misleading; it is not just related to the age and design life of a plant, system or piece of equipment. Research Report 509 'Plant ageing: Management of equipment containing hazardous fluids or pressure' defined ageing and ageing plant as:
- "Ageing is not about how old your equipment is; it is about its condition, and how that is changing over time. Ageing is the effect whereby a component suffers some form of material deterioration and damage (usually, but not necessarily, associated with time in service) with an increasing likelihood of failure over the lifetime.*
- Ageing equipment is equipment for which there is evidence or likelihood of significant deterioration and damage taking place since new, or for which there is insufficient information and knowledge available to know the extent to which this possibility exists.*
- The significance of deterioration and damage relates to the potential effect on the equipment's functionality, availability, reliability and safety. Just because an item of equipment is old does not necessarily mean that it is significantly deteriorating and damaged. All types of equipment can be susceptible to ageing mechanisms".*
- 4.2 **Overall, ageing plant is plant which is, or may be, no longer considered fully fit for purpose due to deterioration or obsolescence in its integrity or functional performance. 'Ageing' is not directly related to chronological age.** There are many examples of very old plant remaining fully fit for purpose, and of newer plant showing evidence of accelerated or early ageing, e.g. due to corrosion, fatigue, erosion failures or out of calibration incidents.
- 4.3. Operators who utilise plant and equipment subject to ageing should adopt a risk-based approach that entails:
- recognition of ageing and where this is or may be occurring;
 - increased coverage, frequency and depth of inspection and maintenance; and
 - re-rating or replacement.

5. Identifying where ageing plant may be an issue

- 5.1 Ageing is more likely to be an issue on sites that have processes with:
- a high cycling rate of extreme temperatures, pressures loads or flexing (which may lead to fatigue);
 - a history of operating at the limit of, or beyond, its original design envelope;
 - a high operating temperature;
 - aggressive chemicals (corrosive or abrasive);
 - use of many different materials or construction (indicator of aggressive conditions and potential for interface corrosion issues);
 - aggressive environmental conditions (e.g. salty atmosphere, hot and/or humid conditions, fumes, standing water);
 - insulated pipework and equipment with potential for corrosion under the insulation;
 - key parts of the plant difficult to access or inspect;
 - a history of poor maintenance and inspection; and
 - EC&I equipment that is obsolescent or no longer supported by the manufacturer or supplier.
- 5.2 Equipment such as pumps, compressors, furnaces, orifice plates, injection points, poorly supported small bore pipework, pipework/equipment under lagging, and buried pipelines, may be particularly prone to ageing mechanisms such as corrosion, erosion and fatigue.
- 5.3 The clearest evidence will be where:
- there are frequent or recurring defects and failures, or increasing trends of unplanned maintenance and repair work and breakdowns;
 - there are signs of ageing e.g. cracking, corrosion, creep and increasing corrosion rates;
 - plant has had to be re-rated (i.e. where plant has had to be downgraded to a lower rating, e.g. pressure, temperature, loading, stream concentration or flow due to deterioration); and
 - operators have had to increase the frequency of their inspection and testing regimes for specific components or plants, or operators have moved from a same period/same inspection regime to a risk-based one where periodically and depth of inspections have changed.
- 5.4 The following could indicate situations where the potential for ageing is not being identified or monitored:
- records of corrosion monitoring activities and pressure vessel inspections and their findings are not being kept and reviewed for lessons, trends or important issues. An extreme case of this is that these monitoring activities and inspections are not being carried out at all.
 - operators are not using the findings of plant tests and inspections to check/modify their testing and inspection frequencies.
 - significant safety-related equipment is not listed on the asset register or in the maintenance management system.
 - there is no procedure for assessing under insulation corrosion, for example.

5.5 For all top tier sites, ageing plant is also addressed in the COMAH Safety Report Assessment Manual (SRAM), [see Table 1]. Assessment of COMAH Safety Reports against these criteria should indicate whether the operator has ageing plant issues at their site. Control of modifications is also important to ensure the plant integrity is not compromised by equipment, process or operating and maintenance system changes. Safety Report assessment guidance for mechanical systems assessment directs that the safety report should describe:

- the specified design basis and the assessment that has been made of the impact for continued operations, inspection, testing and maintenance;
- equipment condition derived from known inspection history e.g. the corrosion history, operational performance, how the plant has degraded;
- processes that need to be gone through for determining and carrying out more detailed inspections, and to positively justify what is needed to keep the plant going (as opposed to rebuilding it);
- reviews to compare the original design with up-to-date design principles and the consideration of measures to reduce risk to ALARP where appropriate; and
- use of fitness-for-service and remnant life assessment techniques in re-evaluation of structural integrity.

Table 1: COMAH SRAM Criteria	
Maintenance	Criterion description
Criterion 12.2.4.1	The safety report should show that an appropriate maintenance scheme is established for plant and systems to prevent major accidents or reduce the loss of containment in the event of such accidents
Criterion 12.2.4.3	The safety report should show that systems are in place to ensure that safety-critical plant and systems are examined at appropriate intervals by a competent person
Criterion 12.2.4.4	The safety report should show that there is a system in place to ensure the continued safety of the installations based on the results of periodic examinations and maintenance
Modifications	Criterion description
Criterion 12.2.5.1	The safety report should describe the system in place for ensuring modifications are adequately conceived, designed, installed and tested

6. The CA Ageing Plant Programme

6.1 The programme has four main elements:

- a) publication of new guidance;
- b) intelligence gathering;
- c) inspection programme consisting of seven elements; and
- d) gap analysis.

These are discussed in more detail below.

a) Publication of new guidance – June 2010 – HID CI4

The new guidance booklet 'Managing Ageing Plant: A Summary Guide' is based on research undertaken by ESR Technology. The full research report is also being published. The new guidance will be supplemented by a summary question set to help dutyholders assess compliance with the guidance. The question set is at Appendix 2.

By the end of June 2010 HID CI4 will publish Managing Ageing Plant: A Summary Guide together with the self assessment question set in Appendix 2 and supporting research reports. Use of the guidance and details of the CA's inspection programme will be published to key stakeholders.

b) Intelligence gathering exercise – June – December 2010 – CI 1-3/HSL

This will use the questionnaire in Appendix 4, developed from the new guidance. The aim is to identify dutyholders where ageing plant may be an issue relating to major hazard potential, but for which the CA currently holds little information. The results of the survey will be used to develop a targeted inspection programme to be undertaken from 2011 onwards.

Between June - July 2010: Regulatory inspectors in CI 1-3 operational teams, in consultation with specialist mechanical and C&I inspectors, will identify COMAH sites where ageing plant may be a feature in relation to the risk of a major accident, and for which CI operational teams currently hold no information on where there are no interventions planned for 2010/11. Paragraph 5 above provides guidance on the factors to be considered when identifying sites for inclusion in the survey.

By end of July 2010: Regulatory inspectors in CI 1-3 operational teams should send a list of target sites for survey to HSL using the structured format in Appendix 3.
Between August – October 2010: HSL will send out the survey questionnaire and analyse the returns. A copy of the Managing Ageing Plant: A Summary Guide will also be sent to target sites.

By end of October 2010: HSL will forward the results of the survey to CI 1-3 operational team leaders. The results will be tabulated with suggested priority sites and issues to be reviewed during the subsequent 2011/12 inspection programme. The sites will be categorised as high, medium or low priority with respect to ageing plant issues.

HSL will send an acknowledgement to dutyholders submitting a return and inform the site operator that the results will be used to inform the CA's future intervention programme. Sites surveyed who choose not to respond will be notified to operational teams.

November – December 2010: CI 1-3 operational teams will review the prioritised list of survey returns and incorporate ageing plant as an inspection item for 2011/12 onwards when undertaking the annual review of intervention plans. High priority sites identified via the survey should be included within the 2011/12 inspection programme and medium priority sites identified for inclusion at the latest within the 2012/13 work year. If resources permit, operational teams should also aim to include medium priority sites within the 2011/12 inspection programme.

Operational teams should exercise discretion based on their original assessment of ageing plant risk on whether to include sites that fail to respond to the survey in the subsequent inspection programme.

Low priority sites need not be included in the intervention programme.

c) Inspection Programme – June 2010 onwards

A targeted inspection programme will be developed to assess compliance with the new guidance.

From June 2010 onwards - CI 1-3 Mechanical and C&I specialist inspectors in consultation with regulatory inspectors will assess the issues set out in Appendix 5 at sites where ageing plant and plant integrity is included within inspection plans within 2010/11. These priority topics have been drawn from the summary question set in Appendix 2. Where there have been previous interventions on plant integrity or C&I issues at the site, a gap analysis should be carried out against the information in Appendix 5 in order to target future interventions effectively. Some elements of work may be incorporated into inspections already planned for 2010/11. Other elements will be added to intervention plans for future years. Where appropriate inspectors may wish to send the Site Operator Self Assessment Question Set (Appendix 2) to sites in advance of the visit.

Inspection should provide assurance of the following:

- i) **There is coordination, leadership, ownership and senior management engagement in the topics which follow.** The effective management of plant ageing is fundamental to the maintenance of process safety on a high hazard site. As such, it is imperative that the operator has a clear understanding of the processes in place to manage the issue and that they monitor their effectiveness. Key elements in this will be the presence of suitable Key Performance Indicators (KPIs) and evidence of commitment from the leadership team to the maintenance of the integrity of plant across the site. For less complex sites this element may be incorporated into inspection of the topics that follow – but may need a separate intervention at complex sites.

- ii) **There is an Asset Register for the site.** Key to the effective management of plant ageing is the ability to identify the equipment on the site that, if it were to fail, could impact on process safety. This is normally achieved through keeping an Asset Register in which safety-critical equipment (SCE) is flagged. It is important that the process of identifying SCE is carried out effectively, and inspection of this is a key aspect of this topic. Normally, this will be addressed as part of interventions dealing with mechanical maintenance and EC&I inspection and test.
- iii) **There is a plant inspection regime** that is aimed at providing assurance of the continuing integrity of the primary containment boundary of all areas of the site handling hazardous fluids. This regime should use staff with appropriate competence and experience to both set the scope and periodicity of inspection, and to deliver those inspections.

Inspection results should be appropriately analysed and acted on prior to the equipment being approved as fit for further service. Where degradation is such that the original design basis is no longer met, there should be evidence of appropriate assessment to determine fitness for service. Roles and responsibilities should be clearly defined and understood.

It is important that the inspection regime is designed to address all potential hazards that might result from the loss of containment of process fluids, not solely that resulting from the release of stored energy. This can be a particular issue at sites employing third party inspection bodies to deliver their duties under Pressure Systems Safety Regulations (PSSR) and can result in a failure to fully discharge COMAH duties. This issue is addressed in a paper by CI's Mechanical Engineering Team (Mechanical Integrity: Use of Third Party Expertise on High Hazard Sites, Health and Safety Executive, 2010, Web: <http://www.hse.gov.uk/comah/guidance.htm>).

In addition, the inspection should confirm that this process is being effectively delivered and on schedule. At all sites, the identification of the degradation mechanisms that could threaten the integrity of the plant primary containment boundary will be fundamental to the delivery of an effective inspection regime and, other than for the simplest of sites (e.g. LPG storage), is likely to require specific assessment of individual vessels and pipework systems. Increasingly, sites are adopting risk-based inspection (RBI) to address this requirement.

Whatever approach is adopted, it is important that inspection teams carry out sufficient depth of inspection to provide assurance that the identification of active degradation mechanisms and inspection methods by which they can be monitored is being carried out effectively. These inspections will normally involve discipline specialists' input.

- iv) **There is a planned plant maintenance system which is also being delivered on schedule** by competent people, with results appropriately analysed and acted upon. The CA's interest here is restricted to the effective delivery of the maintenance of safety-critical equipment (SCE) and should address issues such as the identification of SCE (although this may be covered more generally in assessing the Asset Register), the setting of maintenance scope and interval, assessment of adverse maintenance findings, and the management of delays to SCE maintenance. In some instances (depending on the expertise of the inspector and complexity of the plant) it may be possible for this topic to be Regulatory Inspector-led.

- v) **There is an effective Electrical Inspection and Testing regime and it is being delivered.**
A good testing regime should record the values measured, rather than just pass/fail, in order to track deterioration of the plant. Testing of safety-related functions should be from end to end whenever possible, to confirm that they work as designed. Test intervals should be reviewed periodically, unless specified during the design process, to maintain the integrity of the system.
- vi) **There is a regime for management of obsolescent EC&I plant and systems in place.**
At sites where there may be instrumentation systems that are obsolete, there should be a procedure in place to identify those instruments, and either hold a stock of suitable spares or define what the instruments should be replaced with when they fail. Replacement of individual instruments will require an assessment as a modification, but replacement of a complete safety related control or protective system will require an assessment in accordance with BSEN 61511.
- vii) **There are sufficient and competent resources available to manage plant ageing issues.** The individual topics above associated with mechanical and C&I systems will provide basic information on resources which may be sufficient. However, at more complex sites or where the mechanical or C&I topic inspection indicates potential issues, there may be a need to carry out a deeper inspection of resourcing issues.

In some cases the seven topics may all be very small and the whole intervention may be done at once, whereas in very complex sites it may be further divided. How this is done will be determined by Inspection Teams through local liaison between Inspection Team Regulatory and Discipline Specialists.

The above inspections will touch on issues of control and use of third parties (contractors), competence of these and in-house staff, and management of change. If very significant and serious deficiencies are found, these elements may need to be addressed more thoroughly by follow up inspection. In other instances where the elements are found to be worthy of further inspection, but are not so seriously deficient as to demand immediate more detailed inspection, this should be recorded and fed into the intelligence gathering arrangement through which future CA strategic priority topics are identified.

- d) **Gap Analysis** to benchmark compliance with 'Managing Ageing Plant: A Summary Guide' at COMAH sites where the CA already has information on ageing plant issues but has planned no inspection activity during 2010/11.

From June 2010 – March 2011 - CI 1-3 mechanical and C&I specialist inspectors in consultation with regulatory inspectors. Where there is a history of intervention on plant integrity or C&I inspection and test at sites, RI, ME and EC&I inspectors will liaise to conduct a gap analysis against the inspection programme topics outlined in Appendix 5 to identify what is left to examine (or may need to be re-examined if the history is not considered sufficiently recent). Any topics identified as requiring examination should be added to the Intervention Plan. The operator's performance will be scored, so far as possible, on the basis of the gap analysis using the criteria set out in Table 2.

- 6.2 **Performance Recording** – dutyholders' performance against the topics listed in paragraph 6.1 (c) should be recorded on COIN IRF tab using the performance criteria set out in Table 2.

7. Success criteria for COMAH sites that have ageing plant

7.1 Site operators' performance should be judged against the following criteria:

- site operators recognise where ageing plant gives rise to a potential major accident and can demonstrate that they have adequate controls in place to prevent such an accident. Compliance with good practice as set out in 'Managing Ageing Plant: A Summary Guide' would form the basis of that demonstration.
- where self-assessment against the guidance or a CA inspection reveals that improvements are needed to meet good practice, site operators draw up and implement an appropriate improvement plan.
- site operators plan and prioritise inspections and maintenance of ageing plant, including completion of improvement actions as part of their life-cycle interventions for the site.
- site operators utilise key leading and lagging indicators to review the performance of their risk control systems in place to manage ageing plant issues.
- clear roles, responsibilities and demarcations are established for site staff and third party personnel relating to asset inspection and maintenance.
- site operators can demonstrate, when they have moved to a risk-based asset inspection regime in relation to ageing plant, that there is:
 - a rationale for the changes made;
 - ownership of the process;
 - an audit trail for the changes made; and
 - transparency in the records to show what was done, when and by whom.
- clear roles, responsibilities are established for site staff and third party personnel responsible for design, inspection and maintenance of EC&I systems (especially safety instrumented systems).
- operators have a clear policy for replacement of out-of-date or obsolescent EC&I equipment to ensure their integrity and performance (including equipment that may no longer be supported by the supplier or manufacturer).
- site operators ensure that EC&I equipment systems are tested and calibrated regularly.

8. Judging success and moving on

8.1 All sites subject to an ageing plant inspection should have their performance rated using the criteria in Table 2, and the result recorded on the COIN IRF tab. These judgments should be linked, where necessary, to the relevant enforcement action and the Enforcement Management Model (EMM) as appropriate.

8.2 It is important to understand that the Performance Rating Table only provides indicative guidance on suggested benchmark scenarios and appropriate actions to consider, taking account of the overall inspection findings. It does not offer guidance on specific issues that may arise, requiring singular action. Assessment using the EMM and local factors will be ultimately what determines appropriate action and the close-out of an inspection. Where inspection findings arise that may be in the 'Poor', 'Very Poor' or 'Unacceptable' categories, or where a specific issue warrants consideration of enforcement, it should be discussed with the relevant discipline specialist inspector(s) to help determine if and what enforcement action may be applicable.

8.3 Where ageing plant deficiencies are identified that may indicate COMAH serious deficiencies, give possible rise to matters of immediate evident concern, and/or warrant consideration of an Improvement Notice, the relevant discipline specialist inspector(s) should be consulted to confirm whether the evidence supports the service of a COMAH Prohibition Notice, a HSW Prohibition Notice or an Improvement Notice as appropriate, before enforcement action is considered.

Table 2: Performance Rating: Where there is an identified major accident risk associated with ageing plant			
Performance Rating	Description	CA action to consider	Score
Exemplary	Good practice or above in all respects. All success criteria fully met. Robust and effective ageing plant management regime in place. The rationale for the regime can be demonstrated.	No action required.	10
Good	Good practice in most respects. Most success criteria met. Effective ageing plant management regime in place, but some potential weakness. The rationale for the regime can be demonstrated. Inspections and maintenance of ageing plant are planned and prioritised. Key leading and lagging indicators are used to monitor performance. Site and third party staff have clear roles and responsibilities. Clear demarcation of site and third party responsibilities for asset inspection and maintenance including EC&I equipment. The operator has a clear policy for replacement of out-of-date or obsolescent EC&I equipment. Site operators ensure that EC&I equipment systems are tested and calibrated regularly.	Provision of advice or confirmatory letter only with no plans for followup in the short term.	20
Partially Compliant	Some success criteria not fully met. Ageing plant management regime in place with some gaps and weaknesses. Inspections and maintenance of ageing plant are planned and prioritised. Key leading and lagging indicators are known but may not be effectively used to monitor performance. Not all site and third party staff may have clear roles and responsibilities. Demarcation of site and third party responsibilities for asset inspection and maintenance may not be entirely clear. Site has unclear policy for replacement of out-of-date or obsolescent EC&I equipment. Only some EC&I equipment systems are tested and calibrated regularly. Further work to close out improvement actions.	Written confirmation of work required and agreed timetable. Short term followup action required.	30

Table 2: Performance Rating: Where there is an identified major accident risk associated with ageing plant			
Performance Rating	Description	CA action to consider	Score
Poor	Many success criteria not met/fully met. Ageing degradation mechanisms only partially identified. Ineffective ageing plant management regime in place. Inspections and maintenance of ageing plant are poorly planned and prioritised. Key leading and lagging indicators not fully understood and not used to monitor performance. Site and third party staff have no distinct roles or responsibilities. No demarcation of site and third party responsibilities for asset inspection and maintenance. The operator has no clear policy for replacement of out-of-date or obsolescent EC&I equipment. Only some EC&I equipment systems are tested and calibrated regularly but no records kept. Little progress with improvement actions. Failure to adequately manage ageing plant may have potential to give rise to major accident if improvements not sustained.	Enforcement action likely – Improvement Notice. Refer to HSE Specialist(s).	40
Very Poor	Majority of success criteria not met/fully met. Ageing degradation mechanisms only partially identified. No ageing plant management regime in place. Largely reactive inspection and maintenance of ageing plant. Key leading and lagging indicators not identified. Site and third party staff have no distinct roles and responsibilities. No demarcation of site and third party responsibilities for asset inspection and maintenance. The operator has no policy for replacement of out-of-date or obsolescent EC&I equipment. No EC&I equipment systems are tested and calibrated regularly. No progress with improvement actions. Possible matters of immediate evident concern. Failure to adequately control and manage ageing plant has potential to give rise to major accident.	Enforcement action very likely – Improvement Notice, HSW or COMAH Prohibition Notice, consider prosecution. Refer to HSE Specialist(s).	50
Unacceptable	No success criteria met. Ageing degradation mechanisms not identified. No ageing plant management regime in place. No Inspections or maintenance of ageing plant. Possible matters of immediate evidence concern. Failure to adequately control and manage ageing plant has potential to give rise to major accident.	Enforcement action inevitable – Prosecution, Improvement Notice, HSW or COMAH, Prohibition Notice. Refer to HSE Specialist(s).	60

9. COIN Inspection Report

- 9.1 It is very important that all site-related work on ageing plant is correctly recorded on the COIN Service Order.
- 9.2 For each intervention where progress with ageing plant is assessed, a keyword corresponding to the programme stage should be added in to the inspection Service Order Notes 'Summary' field relating to the intervention, as illustrated below. **Please note the keyword should contain no spaces.**

For the intelligence gathering stage for a site	AP_INTELL
Where an initial targeted inspection has been completed	AP_INSP
If follow-up of improvement actions completed	AP_FOLLOWUP
If a gap analysis is completed	AP_GAP

- 9.3 Following the completion of an initial inspection, a follow up inspection, or the completion of a gap analysis, scores from the Performance Rating Table should be entered on the Performance Data Template on COIN, as illustrated below. **Please note scores should not be entered at completion of the intelligence gathering stage.**

10. COIN Time Recording

- 10.1 In order that the Competent Authority can demonstrate the deployment of resources to strategic topics, there has been a slight alteration to the way we record time spent on these inspections on COIN:
 - for strategic topics there should be an entry made in the 'Category' box of the Time Line via a drop down menu;
 - the category selection will be restricted to the strategic topics and the relevant one should be selected when completing the timeline;
 - all other time line instructions are as before.



Business unit (BU)	Work Desc	Activity	Category	Work context	Type
COMAH	Company	INSP_COMAH	StratTop emer onsite StratTop emer off-site StratTop PSPI KPI StratTop Ageing Plant StratTop Buncefield PSLG StratTop Containment	ELSE/ OFFCO/ OFFNC/ OSITE/	Case/ Service Order

11. Review and Evaluation

11.1 Field Progress, including issues that have arisen shall be reviewed and evaluated by CI4 during Q3 of Work Year 2010/11.

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Appendix 1

Supporting information

- HSE Workstream 2h Inspection – Plant life cycle – Maintenance of integrity (Operational DG)
<http://intranet/strategy/hidci/idg2h.htm>
- Managing Ageing plant: A Summary Guide *[add web address when published]*
- Plant Ageing Study – Phase 1 Report *[add web address when published]*
- Research Report 509 Plant ageing: Management of equipment containing hazardous fluids or pressure (HSE, 2006) **<http://www.hse.gov.uk/research/rrhtm/rr509.htm>**
- SPC/Enforcement/133
http://intranet/operational/hid_circs/enforcement/spc_enf_133.htm
- SRAM Criteria 12.2.4.1 – 4 and Item 17, P70
<http://www.hse.gov.uk/comah/sram/s8-15.pdf>
- Enforcement Management Model (EMM) **<http://intranet/legal/emm/index.htm>**
- Use of the Enforcement Management Model by the COMAH Competent authority
http://intranet/comah/docs/guidance/use_EMM.pdf
- HSG254 Developing process safety indicators: A step-by-step guide for chemical and major hazard industries (HSE, 2006)