

Analysis of inspection reports from Asset Integrity Key Programme 3

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Key Programme 3 was a three year inspection project carried out by HSE Offshore Division between 2004 and 2007. Inspections were recorded using standard templates both Onshore (Appendix A) and Offshore (Appendix B). Topics were scored: Red (Non-compliance/Major Failing), Amber (Isolated Failure/Incomplete system), Green (In compliance/OK) or White (Not tested/No evidence). A team of three inspectors, comprising of two specialists (generally from different disciplines) and a regulatory inspector (IMT), would award the traffic lights depending on the duty holder's responses to the questions provided in the Appendices and their own comments and required actions. Some topics would have both an onshore and offshore template. Other topics would have only one template. The OSD KP3 committee would later examine the completed inspection reports and award, for each topic and platform, one overall traffic light. Inspections of system tests of individual safety-critical elements (eg ESD Valves or HVAC dampers) and the condition of the plant were also recorded using traffic lights (see Appendix B).

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EXECUTIVE SUMMARY

Objectives

Key Programme 3 was a three year inspection project carried out by HSE Offshore Division between 2004 and 2007. Inspections were recorded using standard templates for both Onshore (Appendix A) and Offshore (Appendix B). Topics were scored: Red (Non-compliance/Major Failing), Amber (Isolated Failure/Incomplete system), Green (In compliance/OK) or White (Not tested/No evidence). A team of three inspectors, comprising two specialists (generally from different disciplines) and a regulatory inspector (IMT), would award the traffic lights depending on the duty holder's responses to the questions provided in the Appendices and their own comments and required actions. Some topics would have both an onshore and offshore template. Other topics would have only one template. The OSD KP3 committee would later examine the completed inspection reports and award, for each topic and platform, one overall traffic light. Inspections of system tests of individual safety-critical elements (e.g. ESD Valves or HVAC dampers) and the condition of the plant were also recorded using traffic lights (see Appendix B).

Previous work done by HSL helped with the OSD3 input to the internet report 'Key Programme 3: Asset Integrity Programme' published by HSE in November 2007.

This HSL report provides a detailed analysis of the KP3 data relating to maintenance activities. The detailed objectives for this report were analysis of the following aspects:

- Template elements where poor performance is evident in terms of large numbers of reds/ambers;
- Areas of good performance;
- Common themes – reasons for good and poor performance;
- Change of performance over time in relation to identified areas of poor performance i.e. better, worse, no change;
- Consistency of approach by the teams;
- Information sharing across/between companies;
- Levels of backlog (in relation to obtaining an industry standard definition and the issue of 'acceptable' levels);
- Temporary repairs (in relation to comparison of KP3 results to SN4/2005 Weldless repair of safety critical piping systems, July 2005);
- Data on planned and corrective backlog/ratio issues;
- Two safety-critical elements, namely ESD Valves and HVAC dampers;
- Physical state of plant.

Main Findings

The worst performing topics (percentage of red traffic lights) were maintenance of SCEs, backlogs, deferrals, and measuring compliance with performance standards. Maintenance of SCEs, backlogs and deferrals are of most concern (number of reds).

The best performing topics (percentage of green traffic lights) were key indicators for maintenance effectiveness, reporting to senior management on integrity status, defined life repairs and communication onshore/offshore. Maintenance effectiveness indicators, reporting to senior management, and defined life repairs are of least concern (number of greens).

Mobile installations appear to be the best performing type of installation in terms of maintenance topics. Floating production installations appear to have a problem with backlogs.

In terms of the percentage of greens, it appears that 2005/06 is the best year, followed by 2006/07, with 2004/05 worst. The situation has not improved. Re-inspected installations showed no significant changes over three years. Most inspections, however, were of platforms which had not previously had a KP3 inspection. In the first year, installations considered “not bad” were selected, in the second year mobile installations were introduced, followed by the remainder of installations in the third year. In the third year, the inspectors may have expected improvement and were marking slightly more harshly. Consistency of approach is also an issue. Some amber installations can be ‘nearly’ green or ‘nearly’ red. The distinction between ambers and greens is also subjective.

There were seven better performing companies with more than 80% green. There were three poor performing companies with less than 40% green. There does not seem to be a correlation between the number of platforms (related to company size) and the percentages of each traffic light type. Observations on companies with fewer platforms will be more subjective as they are based on a smaller sample of traffic lights.

In terms of consistency of approach, inspection teams have different expertise and will be more concerned over some inspection topics or issues than others. Some topics are more contentious than others in terms of changes in traffic light made by the KP3 committee. Reds are easier to identify, as generally there is associated enforcement action. No platform is perfect; some minor non-compliance may not influence the traffic light allocation, so there will be some overlap between green and amber. Red traffic lights demonstrate stronger consistency than ambers/greens. Differences are moderated by questions set and final analysis by the same team on the KP3 committee.

Management System Topics:

The poor performing topics were found to be:

- Technician / Supervisor competence (42% amber);
- Maintenance recording (51% amber);
- Maintenance system evaluation (36% amber);
- Measuring compliance with performance standards (25% amber 11% red).

The better performing topics were:

- Maintenance basics (64% green);
- Communication onshore/offshore (71% green);
- Supervision (68% green);
- Measuring quality of maintenance work (59% green);
- Review of ICP Recommendations/Verification (62% green);
- Reporting to senior management on integrity status (77% green);
- Key indicators for maintenance effectiveness (77%).

Engineering Topics:

The very poor performing topics were:

- Maintenance of safety-critical elements (48% amber, 22% red);
- Backlogs (42% amber, 19% red);
- Deferrals (28% amber, 13% red);
- Physical state of plant (37% amber, 14% red);
- HVAC damper tests (19% amber, 25% red);

The poor performing topics were:

- Corrective maintenance (36% amber);
- ESD valve tests (37% amber).

The better performing topic was:

- Defined life repairs (68% green).

Recommendations

If future traffic light based inspection programmes are planned, then the original markings and any changes suggested by any overseeing committee need to be carefully recorded. The reasons for the change also need to be recorded. Topics with both onshore and offshore templates inevitably involve an overall compromise marking. Thus the recommendation is that a single spreadsheet be used to record onshore, offshore and overseeing committee traffic light activity and changes.

1 INTRODUCTION

Key Programme 3 was a three year inspection project carried out by HSE Offshore Division between 2004 and 2007. Inspections were recorded using standard templates both Onshore (Appendix A) and Offshore (Appendix B). Topics were scored: Red (Non-compliance/Major Failing), Amber (Isolated Failure/Incomplete system), Green (In compliance/OK) or White (Not tested/No evidence). A team of three inspectors, comprising of two specialists (generally from different disciplines) and a regulatory inspector (IMT), would award the traffic lights depending on the duty holder's responses to the questions provided in the Appendices and their own comments and required actions. Some topics would have both an onshore and offshore template. Other topics would have only one template. The OSD KP3 committee would later examine the completed inspection reports and award, for each topic and platform, one overall traffic light. Inspections of system tests of individual safety-critical elements (e.g. ESD Valves or HVAC dampers) and the condition of the plant were also recorded using traffic lights (see Appendix B).

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- Template elements where poor performance is evident in terms of large numbers of reds /ambers;
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- Common themes – reasons for good and poor performance;
- Change of performance over time in relation to identified areas of poor performance i.e. better, worse, no change;
- Consistency of approach by the teams;
- Information sharing across/between companies;
- Levels of backlog (in relation to obtaining an industry standard definition and the issue of 'acceptable' levels);
- Temporary repairs (in relation to comparison of KP3 results to SN4/2005 Weldless repair of safety critical piping systems, July 2005);
- Data on planned and corrective backlog/ratio issues;
- Two safety-critical elements, namely ESD Valves and HVAC dampers;
- Physical state of plant.

Figure 1 shows the percentage of each traffic light for maintenance activities only.

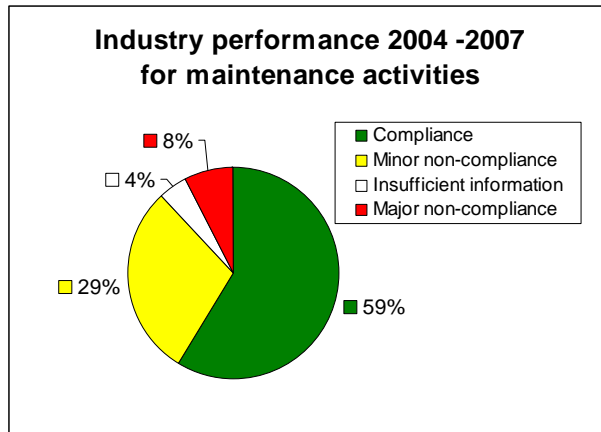


Figure 1 Maintenance only Traffic Light %

2 GENERAL OVERVIEW

This section includes a report on the following detailed project objectives:

- Template elements where poor performance is evident in terms of large numbers of reds /ambers;
- Areas of good performance;
- Change of performance over time in relation to identified areas of poor performance i.e. better, worse, no change;
- Consistency of approach by the teams;
- Information sharing across/between companies;

2.1 POOR AND GOOD PERFORMANCE

Table 1 shows the number of each traffic light for each of the maintenance topics recorded during the period 04/07. Topics with many reds are poor performers and those with many greens are good performers.

Table 1 Poor and Good Performance

Topic	No of reds	No of ambers	No of greens
A - Maintenance basics	6	19	53
B - Communication onshore/offshore	5	19	59
C – Technician /Supervisor Competence	1	35	47
D - Maintenance of SCEs	18	40	24
E - Supervision	2	24	56
F - Maintenance recording	1	42	38
G - Backlogs	16	35	32
H - Deferrals	11	23	47
I - Corrective maintenance	7	30	42
J - Defined life repairs	3	20	57
K - Maintenance system evaluation	2	30	50
L - Measuring compliance with performance standards	9	21	45
M - Measuring quality of maintenance work	6	19	49
O/N -Review of ICP recommendations/ Verification	7	18	51
P - Reporting to senior management on integrity status	3	11	64
Q - Key indicators for maintenance effectiveness	3	5	64

Figure 2 shows red topics for the period 2004-07. The poorest performing topics were maintenance of SCEs, backlogs, deferrals, and measuring compliance with performance standards. Figure 3 shows green topics for the period 2004-07. The best performing topics were key indicators for maintenance effectiveness, reporting to senior management on integrity status, defined life repairs, and communication onshore/offshore. Figure 2 and 3 highlight poor and good performance respectively on the left of the graph. Figure 4 shows all three traffic lights for the same period. The graphs show the percentage of each traffic light for each topic. Particular topics showed the same trends in traffic light colours through each of the three years of the KP3 programme.

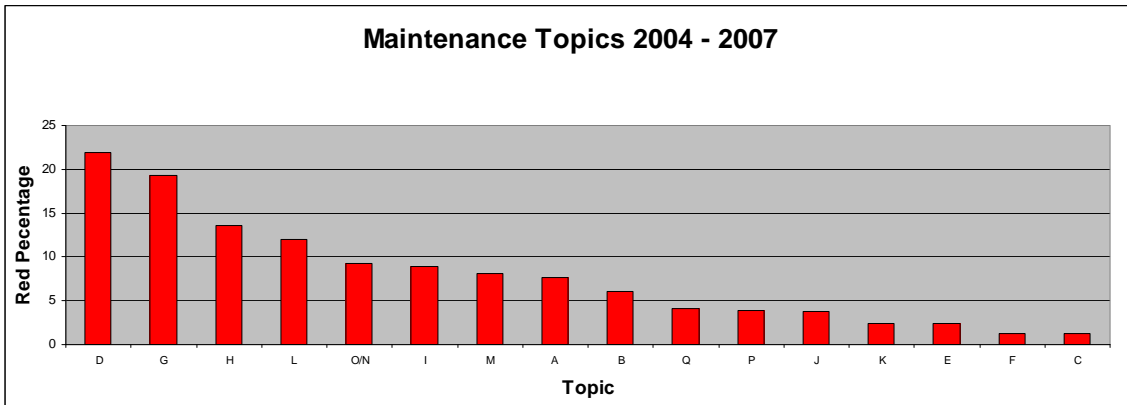


Figure 2 Red Traffic Lights

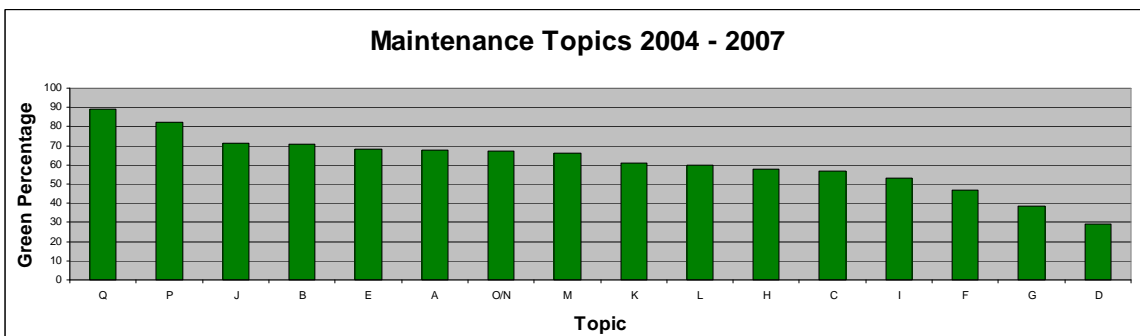


Figure 3 Green Traffic Lights

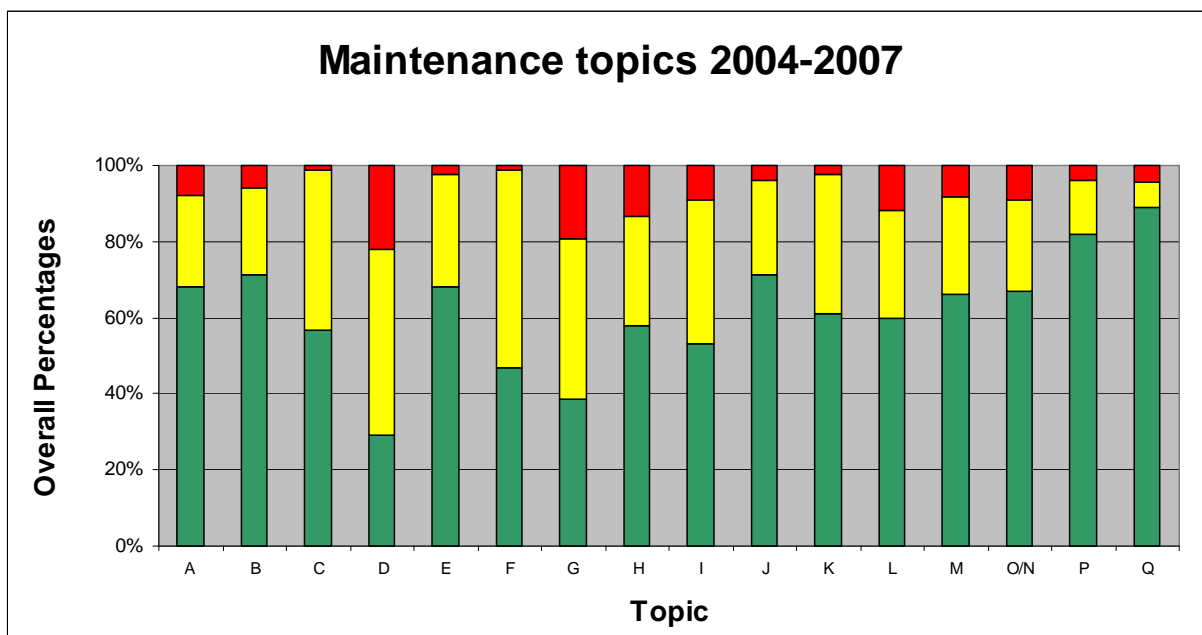


Figure 4 All Traffic Lights

Table 2 is the sorted matrix for maintenance topics for the period 04-07. Maintenance of SCEs, backlogs and deferrals are of most concern (number of reds). Maintenance effectiveness indicators, reporting to senior management and defined life repairs are of least concern (number of greens). Mobile installations appear to be the best performing type of installation in terms of maintenance topics. Floating production installations appear to have a problem with backlogs. During the course of KP3, some installations changed duty holder and others changed installation type. Any information in this report reflects duty holder and type at the time of inspection. Table 2 shows an anonymous installation number, the installation type and the inspection year as grey (2004/05), turquoise (2005/06) and lavender (2006/07). Figure 5 shows the effect of installation type on the percentage of each traffic light.

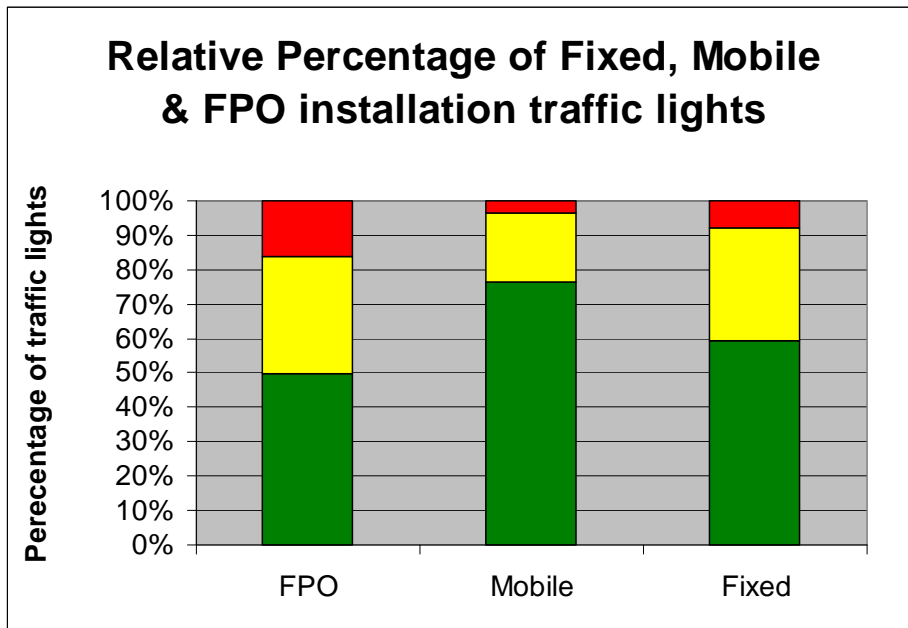


Figure 5 Traffic Lights by Installation Type (Floating Production, Mobile and Fixed Installations)

