



Different types of supervision and the impact on safety in the chemical and allied industries

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Different types of supervision and the impact on safety in the chemical and allied industries

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Entec has been commissioned to research into how the delivery of supervision affects health and safety performance, and to develop a method that allows organisations to assess their current arrangements and identify opportunities for improvement. The research has identified that many organisations have changed their team structures from traditional hierarchies with a single Supervisor, to 'flatter' organisations with Team Leaders and higher levels of self-management. Supervision is not an individual's job, but a management function delivered by one or more people within and/or external to a team.

The findings from this report are presented in three documents including a research report (this document) and a literature review. The third document is the supervision assessment methodology and user guide, which has been developed through a series of site trials and has proven to be a practical and useful method of evaluating supervision. The methodology, using workshops and one-to-one interviews, addresses safety management systems, team structures, individual factors, supervision of contractors and leadership in an emergency. The conclusion from the site trials is that the methodology has identified room for improvement and this is a management responsibility.

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EXECUTIVE SUMMARY

PROJECT OVERVIEW

Entec has been commissioned to research into how the delivery of supervision in the chemical and allied industries affects health and safety performance. The findings from this project are presented in three documents:

- Research report (this document),
- Literature review,
- Supervision assessment methodology and user guide.

All documents are available from the Health and Safety Executive's website.

BACKGROUND

Various initiatives within industry have led to significant changes in the way that organisations operate. These include the introduction of Self-Managed Teams (SMTs), delayering, multi-skilling, and the increased use of contractors. One consequence is that the delivery of supervision has changed. For example, in the past a Supervisor or Foreman may have worked within a hierarchical management structure, planning and communicating daily activities. Most organisations now use 'flatter' structures, with Team Leaders, Coaches or Mentors replacing the Supervisor or Foreman; whilst in some cases, teams have no defined leader at certain times (e.g. during nights or weekends). Therefore, it is no longer possible to identify supervision as an individual role, and from the research carried out in this project it is concluded that supervision is a management function that can be delivered by one or more individuals within and/or external to a team.

LITERATURE REVIEW

Management and supervision have been identified as the most significant organisational factors affecting accidents, largely as a result of heavy workloads rather than an overt neglect of responsibility. However, most organisations fail to fully understand the relationship between supervision and health and safety.

The traditional, hierarchical approach to supervision tended to mean that roles were well defined, with clear lines of control and communication. However, the levels of employee involvement in work planning and management were generally very low, which could have a negative impact on health and safety. Conversely, Self Managed Teams increase the levels of employee involvement, increasing job satisfaction and resulting in better communication, clearer decision making and a more committed workforce. However, the result can be a lack of leadership and poor communication external to the team.

Organisations have to understand how they deliver supervision and the inherent weaknesses in their chosen approach. Management then has to implement the appropriate counter-balances to ensure those weaknesses do not introduce risk. Other factors, such as multi-skilling and use of contractors must also be considered, as they can also affect how supervision impacts on health and safety. Overall, whatever method an organisation uses to deliver supervision, it is essential that it addresses the need to plan and allocate work, make decisions, monitor performance and compliance, provide leadership, facilitate communication and teamwork and ensure workforce involvement.

METHODS OF DELIVERING SUPERVISION

Following completion of the literature review, nine site visits were carried out to establish how supervision is actually delivered to operating, maintenance and contractor teams in the UK chemical and allied industries. Of all the teams examined, only one (a contract company team) fitted very closely to the model of a traditional team structure, with all supervisory activities performed by a single individual. None of the teams were considered to be fully self-managed.

In general, operating teams were more hierarchically structured, and maintenance teams more self-managed. In most cases, long-term/core contractors were more likely to be supervised in a similar way to the teams of the operating company, whilst short-term/non-core contractors required closer supervision from the operating company.

SAFETY ASSESSMENT PRINCIPLES

The findings from the literature review and site visits were used to identify a set of safety assessment principles, which are factors associated with supervision that influence health and safety. They are:

- Supervision is a critical management function and this must be reflected in an organisation's Safety management system,
- Supervision has a key influence on the way teams perform. Therefore, the way supervision is delivered must be appropriate for the way the team functions,
- Individuals with any form of supervisory role must have the necessary competence and opportunity (including time to carry out supervisory roles, interaction with the people they are supervising and respect from those people) to fulfil their responsibilities,
- Contractors can have a significant impact on health and safety performance (positive or negative). Hence supervision of contractors must be properly managed,
- Organisational arrangements must ensure good leadership in emergency situations.

SUPERVISION ASSESSMENT METHODOLOGY

The safety assessment principles were used to develop a methodology to assist organisations in assessing their arrangements for delivering supervision. It consists of a set of questions that are answered in a series of facilitated group sessions and one-to-one interviews. Most questions have multiple-choice answers, with some 'catch-all' questions included to ensure everyone taking part has a chance to discuss the issues that most concern them. Site trials demonstrated that the methodology is comprehensive and user friendly. Key findings from the site trials included:

- All participants agreed that supervision is critical to health and safety, and some questioned whether this was adequately reflected in their safety management systems,
- Few organisations had key performance indicators that specifically addressed supervisory performance, and several felt they did not always do enough to improve arrangements when problems were identified,
- The majority of teams examined had a Team Leader, with only one having a more traditional (hierarchical) Supervisor in place. None were truly self-managed, but in many cases the team members were self-managed for much of the time,
- Senior management do not always explain to their teams how important they believe supervision is to health and safety, which can result in mixed messages being perceived,

- Communication between team members was generally very good. Communication with management was generally good, but more difficult for shift workers,
- Communication between different teams working on the same site was sometimes problematic,
- Long-term contractors were generally more highly regarded than short-term contractors, and their supervision created fewer problems,
- Supervisory arrangements for contractors were not always clearly defined,
- Leadership in emergencies was generally good at most companies visited, although training and emergency exercises were not always carried out as frequently as they should be.

COUNTERBALANCES

A sizeable list of counterbalances has been identified, related to the safety assessment principles that guide organisations to avoid the inherent weaknesses of their chosen method of delivering supervision. Key themes in the counterbalances include:

- In hierarchical organisations it is important that everyone understands the ‘bigger picture’ and their role in fulfilling it,
- In flatter organisational structures it is important to be clear about how supervisory activities are to be performed, and by whom,
- Empowered teams and individuals need to know their limits of responsibility and must have adequate supervisory and technical support,
- Organisations that are continually evolving need to have good management of organisational change procedures to ensure risks are managed,
- Bureaucratic organisations must ensure that sufficient resources are in place to carry out all supervisory activities,
- People with supervisory roles must be selected because of their skills and aptitude for supervisory activities,
- Operating companies must ensure they have enough resources to the level of supervision needed by contractors in all circumstances,
- Leadership in emergencies is critical, and organisations must make arrangements that ensure all leadership roles are fulfilled, and backed up, in all situations,
- The personality of people with supervisory and managerial roles, and whether it suits the organisation’s style is the most critical factor.

CONCLUSIONS

There is room for improvement. As organisations have evolved, how supervision is delivered, and by whom has become less clear. Subsequently methods of measuring and reviewing supervisory performance have become less effective. Senior managers do not always reinforce the importance of supervision to health and safety, with people often perceiving mixed messages.

1. INTRODUCTION

1.1 BACKGROUND

Entec was commissioned by the Hazardous Installations Directorate (HID) of the Health and Safety Executive (HSE) to research the role of supervision in ensuring health and safety for the UK chemical and allied industries. HSE recognise that various initiatives within industry, including staffing reductions, 'delaying' and the increased use of contractors, could influence the way supervision is delivered. This includes the implementation of concepts such as 'multiskilling' and 'self-managed teams'. The concern was that companies might not have considered adequately the potential impact on health and safety of these changes to the way supervision is delivered, and that there is little guidance available to assist those organisations that wish to assess their chosen approach.

1.1.1 What is supervision?

For the purposes of this study supervision has been considered as a management function that can be delivered by one or more individuals within and/or external to a team. It involves controlling, influencing and leading a team, and includes activities such as directing the work of others, allocating workload, planning and scheduling tasks, instructing and monitoring actions. People with supervisory roles are expected to maintain discipline, to take responsibility and be held accountable for the actions of the team.

1.1.2 What are the issues for chemical and allied industries?

A recent study for HSE (Bomel 2003) observed that management and supervision were considered to be the most significant organisational factors affecting accidents, yet most organisations fail to fully understand this link. In reality, poor supervision will rarely be a direct cause of an accident, but indirectly it can make a significant contribution. For low consequence accidents (e.g. slips, trips, falls etc.) the relatively high frequency of incidents means that any deficiencies in supervision are likely to be noticed relatively quickly. However, for major accidents the significantly lower frequencies mean the normal methods of measuring safety performance are rarely adequate to detect deficiency (Hopkins 2000). Therefore, companies working with major hazards need to be particularly vigilant to any degradation, including the way supervision is delivered.

The following accidents have been identified where supervision may have had an influence:

- **Explosion and Fire at Texaco Refinery, Milford Haven 1994** - During the major plant upset that preceded the explosion, personnel with supervisory roles became too involved in helping the operating team to deal with the symptoms of the problem. They failed to develop a strategic overview of what was happening, the causes of the observed problems were not analysed and the response was poorly co-ordinated (HSE 1997).
- **Fire at Hickson and Welch, Castleford 1992** - Removal of supervisory roles in the organisation meant that work planning was spread across a number of personnel. There was insufficient experience of the task and inadequate checks. The result was that an unsuitable work method was developed, which concentrated on avoiding delays not ensuring safety (HSE 1994).
- **Piper Alpha Disaster 1988** - The operating company failed to ensure the contract company's supervisor was sufficiently competent in the operation of the permit-to-work system, and did not do enough to maintain sufficient knowledge of the status of work being

carried out on the platform. This lack of co-ordination and communication meant that the operating teams did not know which equipment was in a safe state to start (Cullen 1990).

- **Explosion at Nobels, Penrhyndeudraeth 1988** - Individuals had been known to be violating procedures on a regular basis. Failure to control and discipline meant that two people were killed because they were somewhere they should not have been when the explosion occurred (Harris 2003).

1.2 AIMS AND SCOPE

This study had four main objectives:

- Identify the different methods being used to deliver supervision in the chemical and allied industries.
- Develop a method that companies could use to assess their approach to delivering supervision and its potential impact on safety. This would refer to a set of safety assessment principles that would take into account relevant individual and organisational influencing factors.
- Demonstrate the relevance and practicality of the assessment method by applying it to a number of industrial sites. The results of these trials would then be used to develop guidance for using the method.
- Identify strategies that companies could employ to counterbalance the potential weaknesses of the current methods of supervision.

The influence of supervision on the risks associated with major hazards was the primary concern for this study. However, many of the learning points captured in this report relate to all aspects of health and safety.

1.3 APPROACH

The following have been the main activities in this project:

- A literature review (this is summarised in a separate report),
- Site visits to nine companies to review delivery of supervision,
- An iterative approach to developing the supervision assessment methodology, using site visits to eight companies to test and improve.

The supervision assessment methodology has been published in a separate document, with a user guide for carrying out assessments.

1.4 OVERVIEW OF REPORT STRUCTURE

This report starts by summarising the different ways supervision is delivered. This is based on the literature review and initial site visits. Summaries of all nine site visits are included in Appendix A.

The report then discusses the basis for the assessment methodology and includes the safety assessment principles that have been established. This is followed by a description of how the methodology has been developed and tested, including an overview of the key findings in the form of benchmark results. Summaries of all eight trials of the methodology are included in Appendix B. Appendices C and D present data from using the method.

The counterbalances to overcome weaknesses in the various forms of supervision are documented in a series of tables, followed by conclusions and recommendations for future work.

1.5 TERMINOLOGY

One of the findings from this study was that different organisations use different terminology. Much of this has come about due to changes in team structures and approaches to supervision. Many of the terms used have been invented to differentiate the new from the old, although in reality the actual changes taking place have been more in the style than the fundamental goals and objectives. This can be confusing. Therefore, throughout this report, the following terminology has been used:

- Supervision – the management function, defined in section 1.1 above,
- Supervisor – any person who has a defined role that includes a significant number of supervisory activities, as defined above. In many organisations people have job descriptions such as team leader, shift manager or lead technician. However, for simplicity these are all referred to as being supervisors throughout this report,
- Leadership – a sub-set of supervision, more focussed on providing direction and support than imposing direct control,
- Operating company – the organisation that has primary control of a site or establishment, either through ownership or other arrangement,
- Contractor – someone working at a site that is not employed by the operating company,
- Contractor company – an organisation working at the site that is not the operating company,
- Sub-contractor – a person working for a contractor company that is not an employee of either the operating or contractor company,
- Self-managed – a person or team working without any person acting as a supervisor,
- Multi-skilled – a person or team performing a number of different roles that in the past would have been carried out by separate people or teams.

2. DIFFERENT WAYS OF DELIVERING SUPERVISION

2.1 RESULTS FROM THE LITERATURE REVIEW

Literature was accessed through searches of international occupational health and safety databases. Where possible, information was extracted from recent publications demonstrating the role of supervision in health safety within the UK chemical and allied industries. However, there was relatively little literature falling into this category, so a wider search was necessary. The role of self-managed teams was most widely reported, although little of this related directly to health and safety. Other forms of supervision were less well covered, especially supervision of contractors.

Key findings from the literature included:

- In traditional (hierarchical) organisations, those with a larger number of available supervisors per employee generally have fewer work injuries.
- Traditional supervision lends itself to clear leadership, roles and responsibilities. However, employee involvement is generally lower and individuals experience less variation in their roles, which may mean that levels of competence are limited. Although lines of communication tend to be clearer within organisations employing traditional types of supervision, communication between co-workers may be minimal.
- Research into the implementation of self-managed teams demonstrates either a positive or neutral effect on health and safety. Communication between, and involvement of team members in decision making often improves, whilst communication with different teams and senior management sometimes suffers. Self-managed teams can also have problems achieving sufficient levels of leadership, training and clarity of roles and responsibilities.
- Research suggests that traditional types of supervision do not compare favourably with self-managed teams, in relation to effects on health and safety performance.
- Multi-skilling lends itself to increased employee involvement, skill and competence across the organisation. However, if not properly managed, there is the potential for a lack of leadership, communication, clarity of roles and responsibilities, and support, all of which can adversely affect health and safety performance.
- For contractors, research shows that good communication, senior management commitment, competent leadership, and closer supervision have been linked with more effective health and safety practice. Competence of contractors is shown to be a particularly important factor in their health and safety performance.

The findings from the literature review confirm that different ways of delivering supervision have different inherent strengths and weaknesses with regard to health and safety. For example, traditional hierarchical team structures provide a good chain of command and control. Conversely, self-managed teams naturally achieve higher levels of employee involvement, competence and communication. In reality, these two methods of delivering supervision represent the extremes of a continuum, with most teams falling somewhere in between. Organisations need to understand the inherent weaknesses in the way they deliver supervision so that they can put counterbalances in place that minimise any potentially negative impacts on health and safety performance.

2.2 REVIEW OF EXAMPLES OF SUPERVISION USED IN INDUSTRY

In order to ensure the safety assessment principles and supervision assessment methodology would be applicable, nine organisations from the chemical and allied industries were visited to establish how they deliver supervision. Each visit was conducted by one Entec consultant, and involved a relatively small number of people from the company (between one and three). A number of standard questions were used to structure discussion.

2.2.1 Basis for the evaluation

The intention of the site visits was not to carry out a wide-ranging survey of how supervision was delivered, but simply to give a more general idea of approaches and issues. Each organisation was asked to describe how supervision was delivered with operations and maintenance teams, and for contractors.

Based on the findings of the literature review, the following 15 key supervisory activities were identified:

- Planning routine work for the team,
- Allocating routine work to team members,
- Making decisions under normal conditions,
- Making decisions under abnormal conditions,
- Monitoring the team's performance,
- Planning activities specifically related to health and safety,
- Allocating activities specifically related to health and safety,
- Monitoring health and safety performance,
- Ensuring compliance with health and safety rules and procedures,
- Leading the team during normal situations,
- Leading the team during abnormal situations,
- Facilitating communication within the team and between the team and management,
- Ensuring teamwork and developing the team,
- Facilitating workforce involvement,
- Applying disciplinary procedures.

During the site visits participants were asked how these supervisory activities were performed within different teams. In particular, did one individual perform the activity on behalf of the team, and was this individual considered to be a member of the team or external? Alternatively, was responsibility for the activity shared amongst team members, or people external to the team? The basis being that in traditional teams all supervisory activities would be performed by a single individual within the team (i.e. the Supervisor). For self-managed teams responsibility for all the activities would be shared amongst team members (i.e. some would be allocated to each individual and there would be minimal external involvement).

2.2.2 Evaluation of operating teams

12 operating teams were examined during the site visits. For one of the teams, an individual within the team performed 12 of the 15 supervisory activities, with the remainder of the activities involving individuals outside of the team. Overall, for six of the teams, an individual within the team performed the majority of the supervisory activities. Whilst these represented the most traditional approach to delivering supervision, it was clear that all had evolved in some way to allow some sharing of supervisory responsibility both within and external to the team.

For one of the teams, 12 of the 15 supervisory activities were shared amongst the team members, whilst one further team shared responsibilities for 10 of the activities. These were the closest to self-managed teams, although it was noted that in both cases the remaining activities involved people external to the team.

For one of the teams, an individual outside of the team performed seven of the 15 supervisory activities. Overall, monitoring performance was most likely to be performed by an individual external to the team, whilst decision-making during normal conditions was purely a team responsibility for all the operating teams.

In one newly formed team, allocation of responsibility was unclear for 3 of the 15 supervisory activities.

2.2.3 Evaluation of maintenance teams

Nine maintenance teams were examined. For one of the teams, an individual within the team performed 10 of the 15 supervisory activities. Overall, for three of the teams, an individual within the team performed the majority of the supervisory activities.

For one of the maintenance teams, 11 of the 15 supervisory activities were shared amongst team members. For one team, an individual outside the team performed 10 of the activities, with eight of the activities for another of the teams.

Allocating work for the team was the responsibility of an individual from the team for 8 of the nine teams examined. Communication between the team and management was not seen as the responsibility of team members for any of the teams, but rather the responsibility of people external to the team.

2.2.4 Evaluation of contractor teams

Eight contractor teams were evaluated (although it must be noted that people often reported this from the operating company). For one of the contractor teams, an individual within the team performed 14 of the 15 supervisory activities. For one team an individual within the team performed eight of the activities.

Only one of the teams shared responsibility for one of the supervisory activities amongst team members, with none of the other teams sharing any responsibilities between team members.

For three of the teams, an individual outside of the team performed the majority of supervisory activities. For one for the teams, 10 of the 15 supervisory activities were shared amongst individuals external to the team.

2.2.5 Summary of findings from site visits

Of all the teams examined, only one of the contractor teams fitted very closely to the model of a traditional team structure, with all supervisory activities performed by a single individual. However, in general contractor teams were given less responsibility for supervision, with more external input being provided than operating or maintenance teams.

Operating teams were more traditionally structured and maintenance teams more self-managed. However, none of those examined fulfilled either of the extremes on the continuum identified from the literature review. In particular, it is noted that there was very little evidence of genuine self-managed teams, despite the large amount of literature available on the subject. However, there was significantly more self-management identified than there would have been in the past with the hierarchical structures that most organisations used.

In most cases long-term/core contractors were more likely to be supervised in a similar way to the teams of the operating company, whilst short-term/non-core contractors required closer supervision from the operating company. In most cases the health and safety performance of contractors was similar to that of the operating company, except in one case where it was considered that contractors experienced up to three times the number of accidents of the employees of operating companies.

3. DEVELOPING SAFETY ASSESSMENT PRINCIPLES

3.1 OBJECTIVE

The objective of developing safety assessment principles was to identify the factors associated with supervision that influence health and safety. It was expected that they would be related to organisational and individual factors, including the way supervisory responsibilities are defined. An important aspect of the principles was that they must be suitable for all types of team and methods of delivering supervision.

The safety assessment principles were developed, based on the findings from the literature review and site visits. They formed the basis for the supervision assessment methodology.

3.2 THE SAFETY ASSESSMENT PRINCIPLES

The following five factors were identified as the primary safety assessment principles relating to supervision:

- Supervision is a critical management function and this must be reflected in an organisation's Safety management system,
- Supervision has a key influence on the way teams perform. Therefore, the way supervision is delivered must be appropriate for the way the team functions,
- Any individual with a supervisory role must have the necessary competence and opportunity (including time to carry out supervisory roles, interaction with the people they are supervising and respect from those people) to fulfil their responsibilities,
- Contractors can have a significant impact on health and safety performance (positive and negative). Hence supervision of contractors must be properly managed,
- Organisational arrangements must ensure good leadership in emergency situations.

3.2.1 Safety management systems

The most important principle where management of health safety is concerned is that arrangements are made that are commensurate with the risks posed. It has been demonstrated that supervision is a key factor in health and safety performance, and therefore it is important that the priority given to supervision in an organisation's safety management system reflects the risk. In absolute terms, this means that supervisory arrangements should be described in more detail at major hazard establishments, when compared to those with a lower hazard. Also, in relative terms, supervision should be treated with the same rigor as other factors that have a similar influence on risk.

Wherever supervision is identified as a significant factor then this should be reflected in policy, organising and planning and implementation elements of an organisation's safety management system. Also, supervisory performance should be measured and audited, and reviews of performance should be carried out so that any need or opportunity for improvement can be identified and implemented.

3.2.2 Team arrangements for supervision

It is important for organisation's to understand how supervision is delivered to each of its teams (e.g. hierarchical traditional approach or self-managed), and whether the way it is formally defined is also the way it works in practice. Supervision is a management function involving a number of activities. All of these activities must be performed, no matter how the team is

organised. In some respects, this is easier to achieve with traditional structures because one person in each team has full responsibility. It is more of a challenge, but equally important for teams where responsibilities are shared amongst a number of individuals (e.g. self-managed teams).

It is important that everyone understands how different teams function and how supervision is delivered. This includes team members, management and other teams that may interact. Misunderstanding can hinder communication. Also, priorities should reflect the importance of supervision to the team's performance.

3.2.3 Individuals with supervisory roles

It is essential that individuals have sufficient time and opportunity to fulfil their supervisory responsibilities. This will be easier where work is well planned, and the plans include provision for supervision activities.

Everyone with a supervisory role must understand what is expected of them, and be competent to fulfil that role. Experience in performing supervisory activities makes the largest contribution to competence, but obviously takes time to develop. Therefore people with less experience should receive suitable training before taking on a supervisory role, and have higher levels of support from others until they are sufficiently experienced and competent.

Continual improvement should be an objective, both in terms of the performance of individuals with supervisory roles and of the teams they supervise. Communication and workforce involvement is a key element of monitoring and improving performance.

It is important to appreciate the level of understanding a person with supervisory responsibility needs for the jobs they supervise. Lower levels of understanding (e.g. supervising jobs they have never performed themselves) may result in them making inappropriate or counterproductive decisions, or issuing instructions that do not take account of operational conditions or constraints.

3.2.4 Supervision of contractors

Organisations need to understand when and why they use contractors, as this will affect the risk posed and the way in which they are perceived by the operating company and its employees. Wherever contractors are used, arrangements for supervision should be in place to ensure that new hazards are not introduced or risks increased. Systems should reflect that circumstances in which contractors are used vary (e.g. short and long-term contractors, general labour and specialist services) and that supervisory arrangements should be flexible enough to ensure that they cater for all which can arise.

Individuals from both the contracting and operating companies need to understand their respective roles in supervising contractors and the work they carry out. This includes recognising differing requirements for different contractors; the nature of relationship between the companies and the work carried out (i.e. it is unlikely that one approach to supervising contractors will be appropriate for all circumstances).

3.2.5 Leadership in emergencies

Emergency situations occur relatively infrequently, but when they do it is particularly critical that responses are efficient and effective. For this reason leadership is more important than supervision and it is important that roles are clearly defined and understood.

Arrangements must ensure emergency procedures will work in practice when needed, as there will be little opportunity to recover from any errors and the consequences can be great. It is inevitable that this level of assurance can only be achieved through a high level of training,

refresher training and emergency exercises. As well as being competent in the role, effective leadership also requires individuals to be confident.

4. DEVELOPING THE SUPERVISION ASSESSMENT METHODOLOGY

4.1 OBJECTIVE

The objective was to develop a methodology that organisations could use to assess their arrangements for delivering supervision and its effectiveness for ensuring health and safety performance. The methodology was to assist organisations in developing safer forms of supervision and making arrangements to combat the inherent weaknesses of their chosen approach. It was to be user friendly in its application (concise and not unnecessarily laborious to use) and appropriate for use by a non-expert. Although appropriate for assessing an organisation at any time, the methodology was expected to be of particular value when changes were being made that might impact on the way supervision is delivered. Also, the methodology would assist HSE inspectors in carrying out their inspections.

4.2 METHODOLOGY OF DEVELOPMENT

The safety assessment principles described in section 3 above identify key factors associated with supervision that influence health and safety. To develop an assessment methodology it was decided that converting them into a set of questions that would encourage structured discussion about supervision would be most appropriate. Therefore, the assessment could be conducted in a similar fashion to a HAZOP.

In developing the question set for the methodology there were two potentially conflicting objectives. The first required that the question set be fully comprehensive and flexible enough to address all possible scenarios regarding supervision. This was likely to result in a relatively large and complex question set. However, the second objective was to develop a user-friendly methodology, which would require a relatively small number of simple questions.

To achieve the optimum question set for the methodology, an iterative approach was taken using site trials to test and improve. In the first iteration, a rather large number of questions were collated, with a method answering the questions that would account for the potential variability in answers. This question set worked reasonably well in the first three site trials, but relied on a high level of knowledge from the people asking the questions to interpret the key points and capture a suitable response. Also, these site trials involved group discussions to answer all questions. Whilst largely effective it was recognised that the logistics required to bring groups together for a number of hours would be difficult for many organisations, and the need for this should be avoided wherever possible.

The second iteration of the question set was developed by identifying which questions had elicited the most relevant and useful information from the site trials. The result was a reduced and simplified question set. Also, the questions were arranged so that the time individuals spent in group sessions was reduced, and individuals alone could answer some. This set of questions was used during two site trials, which demonstrated that they were much improved, whilst addressing the main issues. However, some questions required refinement and some omissions were identified. Also, the need for less group sessions proved to be easier to organise, with little impact on the information collected.

The third iteration of the question set, based on the two prior series of site trials, was considered to be the 'final draft.' It was used at a further four site trials. To ensure the questions were fully refined, the consultants who asked the questions had not been involved in their development (i.e. they were more likely to read the question exactly as written, rather than adding further

interpretation). Also, as well as noting further refinements to these questions, notes were taken during these site trials to input into the user guide, which would assist people to use the methodology and interpret the results.

4.3 FINAL VERSION OF THE METHODOLOGY

The final version of the methodology is contained in a separate document. It includes the full question set, as well as a summary of the background to the methodology, suggestions about how it is to be used and an assessor's guide that provides guidance to anyone asking the questions and interpreting the results.

As a summary, the methodology has three sections:

- An assessment of how the Safety management system deals with supervision. This question set is to be used in a group session attended by people familiar with the organisation's Safety management system. During the later site trials the duration of these group sessions was between 60 and 90 minutes,
- Team assessments to be used for every team, including operations, maintenance and contractors. This is another question set to be used in a group session attended by members of the team being assessed. Again, during the later site trials the duration of these group sessions was between 60 and 90 minutes,
- Individual assessments for a selection of individuals from the teams assessed. This question set is to be used during 'one-to-one' type interviews. During the later site trials the duration of these interviews was between 30 and 45 minutes.

All questions provide a selection of four possible answers, with space to record the topics of discussions. Questions are provided at the end of each of the three sections as a 'catch all' that allow assessment participants to record any comments they feel have not been covered by the question set.

5. SUMMARY OF FINDINGS FROM APPLYING THE SUPERVISION METHODOLOGY

5.1 GENERAL FINDINGS

A total of eight companies were involved in the site trials, with one being visited twice. Two Entec consultants attended each trial, with one acting as facilitator and the other as scribe for group sessions, working separately to conduct one-to-one interviews. This approach worked well, providing both a good trial of the methodology and resulting in sufficient information to provide the companies with some feedback regarding their approaches to supervision (summaries of feedback are shown in Appendix B).

The site trials provided further insight into how supervision is delivered in the chemical and allied industries. Key findings are summarised below, with more detail provided in Appendices C and D.

5.2 KEY FINDINGS

Six of the sites visited were engaged in chemical manufacture, with the remaining two being involved in oil and/or gas processing. Seven considered themselves to be major hazard sites (covered by COMAH regulations) with one involving a lower level of hazard but still involving flammable and toxic materials. All involved 24-hour operation, requiring the use of shift work, and all used long and short-term contractors in different capacities.

The overall results from the site trials are summarised below. References to multiple-choice options from the question set are included in ‘quotes.’ Question numbers are shown in brackets.

5.2.1 Supervision within safety management systems

All participants considered supervision to be ‘critical’ to health and safety (Q1.2), and answering this question often sparked some debate about how well this was covered by the SMS (safety management system). Only one of the eight organisations felt supervision was ‘specifically defined’ in their SMS (Q1.3), although six claimed it was ‘referred to in general teams.’ Two ‘strongly agreed,’ and five ‘agreed’ that their current approach was proportionate to the hazard or risk (Q1.4).

Four of the eight companies felt job descriptions ‘covered all jobs with supervisory responsibility’ and three felt the descriptions covered ‘some of the jobs’ (Q1.5). Only one ‘strongly agreed,’ and six ‘agreed’ that people understand their supervisory responsibilities (Q1.6). One company had key performance indicators that ‘directly addressed supervisory performance’ and six felt it was ‘included as part of other indicators’ (Q1.7). Three companies ‘regularly’ considered and formally reported supervisory performance, but two did this ‘very rarely’ (Q1.8), but only one ‘strongly agreed’ and three ‘agreed’ that they did enough to improve supervision when problems were identified.

Company 5 scored most highly, with answers to eight of the nine questions achieving the benchmarks. Company 4 achieved the lowest number of benchmark results, although companies 2 and 8 scored lower results overall (i.e. they had some good and some poor areas).

5.2.2 Team arrangements for supervision

Ten of the eleven teams assessed (across six companies¹) claimed to have a ‘team leader in place appointed by management,’ with the remaining one having a ‘traditional supervisor’ (Q2.1). However, five of the teams felt that in practice the individuals were more self-managed than this would suggest (Q2.2). For all the teams, the majority of supervisory activities were carried out, at least in the first instance, within the team (Q2.8), with most indicating that matters would be referred up the chain if more critical or complex.

Teams were asked how often senior management talk to them about the importance of supervision (Q2.9). Two of the 15 teams felt this happened frequently with ‘all members of the team’ whilst five felt it happened frequently with ‘only team members with supervisory responsibility.’ Four felt it happened ‘only occasionally’ and four ‘rarely.’ Of these fifteen, five ‘strongly agreed’ and seven ‘agreed’ that everyone shared the same view of how important supervision is to health and safety (Q2.10).

For 14 of the 15 teams, people were selected for supervisory roles ‘by management,’ although for four of them there was ‘input from the team.’ Only one team felt that all members ‘have supervisory responsibility by default’ (Q2.11).

Five of the 15 teams felt they had ‘a comprehensive set of procedures and instructions covering supervisory activities’ and six felt procedures and instructions covered ‘some of the supervisory activities.’ Four teams felt that they had ‘no procedures of instructions covering supervisory activities’ (Q2.12).

Six of the fifteen teams ‘strongly agreed’ and seven ‘agreed’ that everyone in the team understood how supervision was delivered (Q2.13). Ten of the teams ‘strongly agreed’ that company and team objectives were reflected in the way individuals carry out their tasks, but four ‘disagreed’ (Q2.14).

13 of the 15 teams ‘strongly agreed’ and the remaining two ‘agreed’ that communication was good between team members (Q2.15). Six ‘strongly agreed’ and eight ‘agreed’ that communication was good between the team and management, although one ‘disagreed’ (Q2.16). Only three teams were asked about communication between different teams, with one ‘agreeing,’ one ‘disagreeing’ and one ‘strongly disagreeing’ that this was good (Q2.17).

Company 3 scored most highly, with answers to seven of the eight questions achieving the benchmarks for their maintenance team and six of the eight achieving the benchmark for their operations team. Company 7 showed the biggest difference between teams, with their operations team scoring more highly than their maintenance team.

Overall, there was little difference between operations and maintenance teams, with the exception of communication between the team and management (Q2.16). In general, communication was worse for the operating teams, with the most likely explanation being that they worked shifts, effectively limiting their opportunity to communicate with day staff.

5.2.3 Individual assessments

Individuals with supervisory roles

15 of the 26 individuals interviewed felt they had a ‘relatively high’ position in their team (Q3.1). For the purposes of this assessment these have been considered to have a defined supervisory role.

¹ Questions relating specifically to general team structure (Q2.1 and Q2.2) were only included in later versions of the methodology, hence they were not covered at all the site trials.

Of the 15 individuals with supervisory roles, seven ‘planned all their own work,’ five had ‘some work’ planned by someone else and two had ‘most of their work’ planned by someone else (Q3.2). Two felt their work was ‘mostly proactive and well planned’ and 12 thought it was a ‘mixture of proactive and reactive, but well planned’ (Q3.3).

Nine of the 15 individuals had supervisory responsibilities ‘specifically defined and included in their appraisal,’ four had it ‘specifically defined but not included in their appraisal’ and two felt it was ‘not defined, but they felt they performed a supervisory role’ (Q3.4). Ten ‘strongly agreed’ that they understood their supervisory responsibilities, whilst the remaining five ‘agreed’ (Q3.5).

Nine of the 15 individuals felt they were ‘ultimately responsible for all aspects performance and compliance’ of their team, five were responsible for ‘some aspects’ and one felt they were ‘only responsible for their own performance’ (Q3.6). Six felt they were formally appointed as coach or mentor ‘for the whole team,’ two were coach or mentor ‘for some of the team,’ six felt they performed the role although ‘not formally appointed’ and one ‘did not act as coach or mentor’ (Q3.7).

13 of the 15 individuals were able to communicate with all their team members ‘almost all of the time’ (Q3.8) and 13 felt they had ‘frequent’ opportunities to communicate with management (Q3.9). Six of the 15 individuals were ‘ultimately responsible’ for making decisions on behalf of the team and seven were responsible for ‘some specific decisions’ (Q3.10).

Five of seven² individuals ‘strongly agreed’ and the remaining two agreed that they were adequately supervised (Q3.11). However, only three of the 15 individuals ‘strongly agreed’ and four ‘agreed’ they had enough time to fulfil their supervisory responsibilities, whilst five ‘disagreed’ and three ‘strongly disagreed’ (Q3.12).

Eight of the 15 individuals felt they had received ‘extensive’ supervisory training and experience, whilst the remaining seven felt they were ‘experienced, but had not received much training’ (Q3.13). However, 12 ‘strongly agreed’ and the remaining three ‘agreed’ that they were sufficiently competent to fulfil their supervisory responsibilities (Q3.14).

Six of the 15 individuals ‘strongly agreed’ and seven ‘agreed’ they received enough support from others to fulfil their supervisory responsibilities, although two ‘disagreed’ (Q3.15). Six were ‘fully competent’ in the areas they supervised, whilst five had only ‘worked briefly’ in some of the areas. Three had not worked in all the areas they supervise, and one felt they did not directly supervise other individuals (Q3.16). 12 ‘strongly agreed’ and two ‘agreed’ that they were able to give sufficient consideration to operational conditions and constraints in all the areas they supervised (Q3.17).

Individuals without supervisory roles

10 individuals felt their position within their team was ‘equal to the majority of the team,’ whilst one felt they worked within a team where all members were ‘at the same level’ (Q3.1). For the purposes of this analysis these 11 people were considered to be team members who did not have defined supervisory roles.

Of the 11 individuals without supervisory roles, five ‘planned all their own work.’ However, two had ‘some work’, three had ‘most of their work’ and one had ‘all of their work’ planned by someone else (Q3.2). One felt their work was ‘mostly proactive and well planned,’ eight

² The question relating to how well people felt they were supervised (Q3.11) was only included in later versions of the methodology, hence they were not covered at all the site trials.

thought it was a ‘mixture of proactive and reactive, but well planned’ and two thought it was a ‘mixture of proactive and reactive, but not well planned’ (Q3.3).

Four of the 11 individuals had supervisory responsibilities ‘specifically defined and included in their appraisal,’ two had it ‘specifically defined but not included in their appraisal’ and four felt it was ‘not defined, but they felt they performed a supervisory role’ (Q3.4). Five ‘strongly agreed’ that they understood their supervisory responsibilities, whilst the remaining six ‘agreed’ (Q3.5).

Four of the 15 individuals felt they were ‘ultimately responsible for all aspects performance and compliance’ of their team, four were responsible for ‘some aspects,’ two were ‘involved in monitoring’ and one felt they were ‘only responsible for their own performance’ (Q3.6). One felt they were formally appointed as coach or mentor ‘for the whole team,’ three were coach or mentor ‘for some of the team,’ six felt they performed the role although ‘not formally appointed’ and one ‘did not act as coach or mentor’ (Q3.7).

10 of the 11 individuals were able to communicate with all their team members ‘almost all of the time’ (Q3.8). However, only five they had ‘frequent’ opportunities to communicate with management, three had ‘infrequent’ opportunities and the remaining three were able to ‘but rarely took the opportunity’ (Q3.9). Two of the 11 individuals were ‘ultimately responsible’ for making decisions on behalf of the team, seven were responsible for ‘some specific decisions’ and the remaining two ‘contributed to decision making’ (Q3.10).

Three of the six³ individuals ‘strongly agreed’ and the remaining three agreed that they were adequately supervised (Q3.11).

10 of the 11 individuals felt they had a supervisory role. None ‘strongly agreed’ and eight ‘agreed’ they had enough time to fulfil their supervisory responsibilities, whilst two ‘disagreed’ (Q3.12). Two of the 10 individuals felt they had received ‘extensive’ supervisory training and experience, whilst five felt they were ‘experienced, but had not received much training’ and three felt they had ‘little training or experience’ (Q3.13). However, six ‘strongly agreed’ and the remaining four ‘agreed’ that they were sufficiently competent to fulfil their supervisory responsibilities (Q3.14). Five ‘strongly agreed’ and the remaining five ‘agreed’ that they received enough support from others to fulfil their supervisory responsibilities (Q3.15).

Eight individuals felt they had direct responsibility for supervising others. Six were ‘fully competent’ in the areas they supervised, whilst one had only ‘worked briefly’ in some of the areas (Q3.16). Seven ‘strongly agree’ and the remaining one ‘agreed’ that they were able to give sufficient consideration to operational conditions and constraints in all the areas they supervised (Q3.17).

Comparing individual with and without defined supervisory roles

It is interesting to note that the majority of individuals without a defined supervisory role (typically process operators and maintenance technicians) acknowledged that they did have some supervisory responsibilities. Most acknowledged that in the past, with more traditional teams this would not have been the case.

Individuals without defined supervisory roles were generally less clear of their responsibilities. They contributed to activities such as decision making and monitoring performance and compliance, rather than taking responsibility. They were happier with the time they had available to fulfil their supervisory responsibilities, than individuals with defined roles, but had

³ The question relating to how well people felt they were supervised (Q3.11) was only included in later versions of the methodology, hence they were not covered at all the site trials.

received much less training. Individuals without defined supervisory roles had relatively little opportunity to communicate with management.

General observations

Individuals working for company 7 scored most highly and consistently, followed by companies 3, 4 and 6. Individuals at the other companies generally scored lower results.

5.2.4 Supervision of contractors

All eight companies used long and short-term contractors. As table 1 shows, the long-term contractors were generally regarded more highly than short-term.

Table 1 – Views of contractors

<i>Staff View of:</i>	<i>Long-term contractors</i>	<i>Short-term contractors</i>
Another team, competent and trusted	2	0
Technically competent, but not always achieving necessary health and safety standard	3	2
Require close supervision of both technical work and attitude to safety	3	6
Unreliable and untrustworthy	0	0

Five of the eight companies had ‘specifically described’ arrangements for supervising contractors, whilst for one this was only described in ‘general terms’ and for two they were only ‘implied’ (Q1.12). Four implemented ‘specific arrangements’ of each contractor company and three put the ‘same arrangements’ in place for all (Q1.13).

For sub-contractors, arrangements were not so well defined. Two out of four⁴ companies only ‘implied’ arrangements (Q1.14), although two out of four claimed to put in ‘specific arrangements’ to supervise all sub-contractors (Q1.15).

Two of the eight companies ‘strongly agreed’ that contractors and sub-contractors were properly supervised, but four ‘disagreed’ (Q1.16). Four claimed to evaluate supervisory performance, but ‘not with key performance indicators’ and for three it was ‘not evaluated directly’ (Q1.17). Six considered and formally reported supervisory performance of contractors and sub-contractors ‘only when there were problems’ (Q1.18), although two ‘strongly agreed’ and four ‘agreed’ that enough was done to improve supervision of contractors and sub-contractors where problems or opportunities were identified.

12 individuals interviewed in the individual assessments felt they had some role in supervising contractors and sub-contractors (Q3.18). Seven ‘strongly agreed’ and the remaining five ‘agreed’ that they understood what was expected of them in this role. Four ‘strongly agreed’ and five ‘agreed’ that contractors and sub-contractors were adequately supervised, but three ‘disagreed’ (Q3.20).

⁴ Questions relating specifically to sub-contractors (Q1.14 and Q1.15) were only included in later versions of the methodology, hence they were not covered at all the site trials.

From a systems point of view, Company 5 scored most highly, with answers to six of the eight questions achieving benchmark results. Company 2 achieved the lowest number of benchmark results. Company 6 achieved very mixed results, with a reasonable number of benchmarks but quite a high number of responses appearing to fall short. No particular trends were picked up from the individual assessments.

5.2.5 Leadership in emergencies

Six of the eight companies had allocated leadership roles for emergencies to 'specific individuals with arrangements in place if they were not available,' but one had 'not allocated roles to specific individuals' (Q1.20). Four 'strongly agreed' and three 'agreed' that individuals with leadership roles had received enough training (Q1.21), and four 'strongly agreed' and three 'agreed' that there was good leadership and teamwork in emergencies (Q1.22).

16 individuals interviewed in the individual assessments had a leadership role in an emergency (Q3.21). 11 received refresher training and took part in emergency exercises 'at least annually' whilst for two this was 'less than annually.' Three had 'received training in the past, but not had this refreshed' (Q3.22). Ten 'strongly agreed' and five 'agreed' they were confident to perform their role in an emergency, whilst one 'disagreed' (Q3.23).

From a systems point of view, company 8 scored much lower than the other companies. No particular trends were picked up from the individual assessments.

6. DEVELOPING COUNTERBALANCES

6.1 OBJECTIVE

The objective of identifying counterbalances was to provide organisations with solutions to overcome the inherent weaknesses in the way they deliver supervision. They have been developed from information gathered in the literature review, site visits and trials of the supervision assessment methodology. They are structured around the safety assessment principles, and have been used in the development of the supervision assessment methodology assessor's guide.

6.2 THE COUNTERBALANCES

Different forms of supervision are appropriate in different circumstances, depending on the nature of operations carried out, the structure and culture of the organisation, and the nature of the teams. Therefore, it is not appropriate to suggest that one form of supervision is safer or more effective than another. Rather, by establishing how supervision is delivered it is possible to identify potential inherent weaknesses, and hence appropriate counterbalances.

6.2.1 Safety management systems

The purpose of establishing a safety management system is to eliminate or minimise the risk from an activity. This is achieved by identifying hazards and implementing appropriate controls. In this context, supervision should be considered as a procedural or administrative control that supports or reinforces other human factors controls including procedures, training and incident response.

Table 2 – Safety management system counterbalances

<i>Possible Outcome</i>	<i>Counterbalance</i>
In situations where major hazards are present supervision may not provide sufficient priority because lesser hazards, with potential for personal injury, are easier to observe and hence supervise.	SMS to provide direction so that supervision activity covers all risks appropriately.
Flat organisational structures have more general role descriptions, which can mean supervision does not feature highly.	SMS to define how elements making up the supervisory function are to be identified and allocated to individuals or job roles. Use responsibility matrices and include supervisory activities in task procedures.
Hierarchical organisations can have demarcation of responsibilities.	SMS to document that all individuals are responsible for their own behaviour and for monitoring others to prevent them performing unsafe acts. To be reinforced through training, appraisal and review.
Empowered and multi-skilled teams may be more inclined to deal with problems locally than refer to higher authority.	SMS to define chain of command and identify the tiers of responsibility (i.e. when to refer up the chain).

<i>Possible Outcome</i>	<i>Counterbalance</i>
Different types of organisation require different styles of supervision.	SMS to reflect that supervisors, team members and management must all have a personality that fits with the organisation's style.
Ever changing and evolving organisations make it difficult to ensure all elements of the supervisory function are delivered successfully all of the time.	SMS to include arrangements for managing organisational change that can handle discrete and multiple minor (evolutionary) changes.
An organisation's culture has a great impact on communication, and subsequently on how supervision is delivered.	SMS to reflect the importance of generating an open culture.
Devolved supervision makes it difficult to review supervisory performance as it involves a relatively large number of people (i.e. cannot be covered through an individual's appraisal).	SMS to define company and team Key Performance Indicators (KPIs) that address the supervisory function, to an extent that reflects its importance in managing the organisation's risks.
On sites where more than one team is working and no single person is in charge, conflict between teams can occur and be difficult to resolve.	Ensure priorities and responsibilities are clearly defined and understood. Consider having a single person on site at all times (e.g. shift manager) who has overall responsibility.

6.2.2 Team arrangements for supervision

A team is a group of people with a shared purpose. The success of a team depends on how well the purpose is understood by the individuals, and how well they work together to achieve it. The purpose will be influenced by many external factors (e.g. the organisation, management and other teams); therefore the effectiveness of a team cannot be judged purely on internal criteria.

Table 3 – Team Counterbalances

<i>Possible outcome</i>	<i>Counterbalance</i>
A supervisor can be seen as the point of contact with the team, meaning management rarely communicates directly with team members.	Make arrangements for management to meet team members. Develop an open culture where everyone is happy to communicate. Ensure the supervisor is an effective channel of communication (i.e. messages are communicated accurately and people know where they originated).
Managers remote from the team will find it difficult to understand how the team functions, including the role of supervision.	Ensure high levels of involvement from team members in analysing situations, making decisions and implementing change.
Flat organisational structure can provide individuals with more autonomy and freedom, but may result in personal agendas being followed instead of company or team objectives.	Develop clear objectives and cascade them through the organisation. They must be well communicated and reviewed regularly.

<i>Possible outcome</i>	<i>Counterbalance</i>
Large numbers of procedures make it difficult for individuals to find the information they need, increasing the chances of carrying out tasks without reference to the procedure.	Identify where procedures are necessary, make sure they are in an appropriate format for the end user and are easy to find and navigate.
Teams working shifts can find it difficult to relate to and communicate with day workers, including management.	Arrangements must reflect that day workers are present for less than 25% of the total time and have the responsibility to make sure they engage with shift workers.
Teams that do not have an immediately recognisable supervisor can perceive that the supervision function has been devalued.	The organisation must have a clear idea of the importance of supervision. This should be reflected in systems and communicated well.
A dictatorial approach to supervision results in poor communication and lack of ownership.	The personality of supervisors is critical. They need to be able to engage with their team members, whilst knowing when and how to provide leadership.
Bureaucratic industries and organisations can result in individuals being overloaded with paperwork and not being able to perform other supervisory activities.	Set criteria for the proportion of time to be spent on the different aspects of supervision. Continually review to ensure criteria remain appropriate and all activities are performed as required.
Hierarchical organisations encourage individuals to restrict their activity to a relatively small part of the total work carried out.	Encourage teamwork so that individuals appreciate the common goals of the team (rather than their own) and are flexible in their approach.
Selection of supervisors from existing team members can result in people being selected because of their ability in their current job rather than potential for the supervisory role.	Identify abilities, competencies and personality factors necessary to be a good supervisor. Establish selection techniques that assess those factors. Involve people who will be supervised by the selected individual (i.e. team members).
Teams of largely self-managed individuals can mean that supervisors or managers perceive they no longer have the same responsibility for the actions or behaviours of those individuals.	Make sure responsibility and accountability is clearly defined and fully understood. Reinforce through appraisals (e.g. '360° appraisal') and training.
Small teams are less able to maintain technical expertise in all aspects of the work undertaken.	Ensure technical support is readily available, and provided by people able to communicate information in a form that the team members need.
Multi-skilled teams are less able to maintain a depth of technical knowledge in all aspects of the work undertaken.	Ensure technical support is readily available, and provided by people able to communicate information in a form that the team members need.
When work is planned by people external to the team, the plans are impractical, not accounting for resources required and available.	Ensure resource requirements for activities are assessed and the planners know the resources available. This might be best achieved through higher levels of involvement of the team in planning.

6.2.3 Individuals with supervisory roles

Individuals have a key role in the way supervision is delivered. This includes, not only supervisors, but also the people they supervise and their managers. As well as being competent in their role, the personality of individuals at all levels in an organisation impacts on the effectiveness of supervision.

Table 4 – Individual Counterbalances

<i>Possible outcome</i>	<i>Counterbalance</i>
Individuals who have multiple roles do not always know how much time they are expected to spend on supervisory activities.	Provide guidance on how much time an individual should devote to each of their roles. Ensure appraisals evaluate the effectiveness of the approach and update guidance or reorganise in light of experience.
Individuals who have a combined supervisory and operational role may be restricted in the amount of interaction they have with their team members when carrying out certain operational tasks.	Identify the operational tasks carried out by people with supervisory responsibility, ensuring that they do not have a detrimental impact on their role as supervisor.
Individuals working in flat organisational structures may perceive they are in a relatively weak position, unable to respond appropriately to pressure from management.	Ensure personality and behaviour of managers is open and receptive, so that they do not put undue pressure on individuals.
Individuals supervising multi-skilled teams are unlikely to have competency in all aspects of the job they supervise.	Ensure team competence is sufficient in all areas and that technical support is readily available.
Individuals working in multi-skilled teams may feel their supervisors are unable to answer technical questions, and may be more inclined to make decisions for which they are not authorised.	Ensure tiers of responsibility are clearly defined, and when people do have questions that they are responded to appropriately.
There may be unrealistic expectations for individuals supervising hierarchical teams to achieve behavioural change and continuous improvement alone.	Ensure everyone in the organisation understands what is needed to achieve behavioural change, and that they all have a role in developing a culture of continuous improvement.
For flat organisational structures there may be an unrealistic expectation that ‘evolution’ will always improve team performance in all areas.	Ensure direction is being set for the team, and monitor all aspects of performance to ensure improvement is being achieved.
Individuals being promoted to a supervisory role are unlikely to be experienced in the role.	As well as selecting people on their suitability to be a supervisor, ensure training is provided before taking on the role and that extra support is provided when individuals first take the role.

6.2.4 Supervision of contractors

Contractors can have a major impact on health and safety performance. Therefore, the way they are supervised is critical. The challenge is to make arrangements that suit both the contractor and the operating companies. Given the number of variables, it is unlikely that one set of arrangements will suit every situation.

Table 5 – Contractor Counterbalances

<i>Possible outcome</i>	<i>Counterbalance</i>
Long-term contractor companies are likely to have their own supervisory structures, which may clash with the operating company's arrangements or culture.	Where possible, select contractors that have similar structures. Where this is not possible, ensure contract companies have good supervisory arrangements, identify where conflicts may arise and manage to avoid them.
Short-term contractor companies are less likely to make arrangements to supervise themselves, and will be unfamiliar with hazards, rules and procedures.	Ensure sufficient resources are always available to provide necessary supervision at all times, including during nights (i.e. more contractors on site will require more people to supervise them).
Contract companies may not carry out appraisals of their staff or not consider the operating company's requirements during appraisal.	Ensure arrangements are in place for the operating company to input into contractor appraisals, and also know the outcome of the appraisal.
Where contractor and operating company personnel work side-by-side, responsibilities for supervision are often unclear.	Ensure responsibilities are clearly defined and understood by all individuals involved. This is likely to need to be tailored for each situation (e.g. number of contractors involved, work being carried out, hazards involved and other activities taking place on site).
If contractors and employees of the operating company are working together in the same team, the contractors may not be subject to the same systems and organisational arrangements.	Ensure systems accommodate contractors in this position, or that the contractor's employer has adequate systems (e.g. job descriptions, appraisal, disciplinary).
Use of sub-contractors can exacerbate all issues related to use of contractors.	Ensure systems address sub-contractors with equal rigour to contractors.

6.2.5 Leadership in emergencies

Emergencies are critical situations requiring effective and efficient response. Leadership is critical to make sure emergency plans are implemented as required.

Table 6 – Emergency Leadership Counterbalances

<i>Possible outcome</i>	<i>Counterbalance</i>
Where individuals are allocated a specific role in an emergency, if they are unavailable the emergency plan may not operate effectively.	Ensure arrangements are made to cover unavailability (e.g. absence) and for deputies to be available at all times.
Where a number of people are able to fulfil a particular emergency role (e.g. all trained to act as incident controller), some are likely to be more able and have had more experience than others.	Specify minimum requirements for all emergency roles, (e.g. aptitude, experience and training) and ensure all individuals fulfil the requirements.
When people work shifts it can be difficult to make sure they receive sufficient refresher training in emergency response.	Ensure emergency exercises are arranged to give all shifts equal opportunity to take part, and ensure all individuals with a role attend the required number every year.
When day staff perform leadership roles for emergencies occurring during normal working hours, the plan may be less effective for emergencies occurring outside normal working hours.	Ensure emergency plans are appropriate for all times of day and identify the leadership roles required. Carry out emergency exercises to test how the plan would work at different times (e.g. only using the staff that would be available during the night).
With small teams the resources available to deal with emergencies is limited.	Ensure good plans are in place that reflect a realistic view of the resources likely to be available.
With flat organisational structures, team members may not be used to having direct leadership that is necessary in an emergency situation.	Ensure arrangements are in place to allocate someone to a leadership role and that all people involved understand what is expected of them (i.e. they know whether they are a leader or to be led).

7. CONCLUSIONS

7.1 OVERALL CONCLUSIONS

This project has examined the way supervision is delivered in the chemical and allied industries, and identified a set of factors that are associated with supervision that influence health and safety. These ‘safety assessment principles’ have been used to develop a supervision assessment method that, through site trials has been shown to be a comprehensive, yet user-friendly approach that will assist organisations in assessing their supervisory arrangements.

Different methods of delivering supervision have different strengths and weaknesses. This study suggests that few teams working within the UK chemical and allied industries are can be considered to have either a traditional, hierarchical structure or to be fully self-managed. Rather, most have Team Leaders in place, with team members being self-managed to a greater or lesser extent. This clearly demonstrates a change in approach to supervision over recent years, but this has not been nearly as significant as much of the literature on the subject would suggest (i.e. a lot has been written about self-managed-teams, but few exist in these industries).

There is room for improvement. As organisations have evolved, how supervision is delivered, and by whom has become less clear. Subsequently methods of measuring and reviewing supervisory performance have become less effective. Senior managers do not always reinforce the importance of supervision to health and safety, with people often perceiving mixed messages. Also, increased use of contractors means that their supervision is a critical issue.

Arguably, the most critical factor is the personalities of the people involved. Many participants in the site trials expressed this opinion, and often quoted examples of where individuals’ had contributed to good or poor supervision. These individuals are not only those with defined supervisory roles, but also management and team members. The key message was that personalities have to suit team and company cultures so that they contribute positively, rather acting as a barrier. It is recognised that this is a difficult factor to manage, especially if an organisation is changing its culture. However, it cannot be overlooked. As one participant said, “things have got better around here, now that the ‘old school’ have gone.”

7.2 IMPACT OF THE FINDINGS FROM THIS RESEARCH

Remarkably little has been written about the relationship between supervision and health and safety. The identification of safety assessment principles should help to redress this. Also, many recent studies have tended to focus on self-managed teams yet this study has shown that these are relatively rare in the UK chemical and allied industries.

Organisations are clear that supervision is critical to health and safety. However, most have not had access to methods that assist them in assessing the way they deliver supervision, to identify problems and possible solutions. This work has provided such a method, and site trials suggest that it is effective. Overall, this study should ensure that supervision is given a higher priority, to better reflect the significant impact it has on health and safety.

7.3 RECOMMENDATIONS FOR FURTHER WORK

This is a complete piece of work, and the supervision assessment methodology has been shown to work in site trials. However, it must be recognised that the site trials have been carried out by consultants on behalf of companies and that full studies have not been carried out (i.e. a full study would need to involve more people and more teams on each site). Therefore, it important

that the methodology is now put into practice and that feedback is gathered. This would have two objectives:

1. To learn more about the practical aspects of using the methodology, in order to update the user guide,
2. To learn more about the strengths and weaknesses of different approaches to supervision, in order to update the assessor's guide.

Therefore, it is important for HSE to publicise this work, to encourage companies to use it and make arrangements to collate feedback.

This study has also highlighted that relatively little has been written about the way that most companies in the UK chemical and allied industries actually deliver supervision (i.e. use of Team Leaders, with team members being to some extent self-managed). This suggests that there is a gap in current knowledge that may require further research. In particular, how people without defined supervisory roles participate in supervisory activities, and the arrangements required (e.g. training, time, procedures) to make sure they fulfil the role successfully.

Finally, it is noted that, whilst most people agree that supervision is critical to health and safety, this is not always recognised in incident reports. The reason for this is that supervision will rarely be a cause of an incident, but can be a very significant influencing factor. Therefore, the way incidents are currently investigated may not given sufficient consideration to the role of supervision, and this may be an area requiring further development.

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Appendices

Appendix A – Overview of Site Visits Undertaken to Determine the Methods used to Deliver Supervision in the Chemical and Allied Industries

Company A

Within the operations teams, there was a high and consistent amount of team interaction and self-supervision mainly due to a good balance of experience and competence between team members. Supervisory responsibilities were shared between the Process Team Leader and Process Technicians, whilst responsibilities for teamwork development and workforce involvement was with the Production Manager. The maintenance teams were less ‘empowered’ than the operations teams, with additional layers of management providing a more traditional structure to the supervisory arrangements. Supervisory responsibilities were largely shared between the Maintenance Supervisors and the Foremen.

Long-term contractors were treated as an additional team working on site and supervised in the same way as the maintenance teams. Short-term contractors required higher levels of supervision as they often achieved lower health and safety standards when compared to the company personnel. It is generally felt that the supervision of these short-term contractors was not adequate, either with respect to health and safety or the quality of the work being conducted.

Company B

Until recently, supervision of the operations teams at this company had primarily been the responsibility of the Shift Manager. However, for one department the company had recently changed the arrangements to allow for more local and shared supervision, which was achieved by introducing multi-skilling. The majority of supervisory responsibilities for the maintenance teams lay with the Team Leaders, shared with the Plant Engineer. The maintenance teams were small, therefore allowing for tighter supervision and use of local knowledge.

Contractor teams had a different supervisory structure, with responsibilities shared between the company’s Technical Projects Manager and the contractors’ own Project Manager. It was reported that most communication involved these two groups of people, with less directly with the contractor personnel doing the work.

Company C

Supervision of both operations and maintenance teams had a fairly traditional structure. Within the operations teams, the supervisory responsibilities were shared between the Shift Manager and Process Leader on shift. Under abnormal conditions, the Shift Manager would have had more responsibility. Maintenance teams had a similar structure to that of operations teams, with each shift having a supervisor (various disciplines). The Principal Technician with each team also took some supervisory responsibilities under normal conditions.

The majority of contractors were from one ‘core’ company and are part of the day-to-day maintenance structure. They had their own supervisors who reported to the company’s maintenance supervisors. The contractor company had good supervisory arrangements and achieved comparable or better health and safety performance than the operating company. For certain specialist, high-risk activities contractors were employed on a short-term basis. In these cases company personnel tended to take a larger role in supervision because the contractors tended to have a poorer safety record.

Company D

Operations and maintenance teams had similar, traditional supervisory structures. Within the operations teams, supervisory responsibilities were shared between the Supervisors and Line

Leaders, although had become more multi-skilled over recent years. It was reported that communication between shift teams was not good, so that the company tried to 'mix' personnel from different shifts from time to time to ensure good practices were shared. Within the maintenance teams, the majority of supervisory responsibilities lay with the Shift Team Leaders, although the Maintenance Manager had responsibility for the teamwork development and workforce involvement aspects of supervision.

The supervision of contractors was shared between company Project Managers and Discipline Engineers. Supervisory responsibility for the teamwork development and workforce involvement of contractors, lay with the contractors' own supervisors. The company had a monthly league table of contractors, which detailed their health and safety performance. Contractors had to achieve their own standards, regarding health and safety, prior to working on site although there was the potential for subcontractors to not have the same standards.

Company E

Operations teams were supervised by Workstation Managers during the day under normal circumstances. At night, shift operators were largely self-managed, although a Shift Manager was always available to provide leadership during abnormal situations. Under normal conditions supervision of the maintenance teams was shared between the Maintenance Managers, Support Engineers and Engineering Management, although Lead Technicians had some responsibility in terms of the day-to-day allocation of work. All of the maintenance technicians were multi-skilled to various degrees, which allowed for greater flexibility.

Engineering Contractors were supervised by one of the Maintenance Managers, in conjunction with the contractor's own supervisor who had responsibility for teamwork development and workforce involvement issues. The contractors had a slightly poorer safety record than the company personnel, although accident rates were very low.

Company F

The operations and maintenance teams both employed a similar, self-managed structure. Both Operators and Maintenance Technicians received some supervisory support from the Production Leader. However, this one person had responsibility for a relatively large number of people. This approach had resulted in the operations and maintenance teams having a much higher level of general knowledge of the process and its hazards, being more aware of the health and safety issues, and willing to take more responsibility. It was reported that people who had formerly been supervisors had initially been demotivated by the introduction of self-managed teams.

The core contractors fitted into the self-managed teams' structure and were largely supervised by the Operators, as they had a better knowledge of the requirements than the contractor supervisors and foremen. Core contractors had a marginally better health and safety performance than the company personnel. However, short-term contractors were felt to be reluctant to adopt the concept of self-managed teams, which represented a potential weakness in the overall system.

Company G

Supervision of Operators and shift Maintenance Technicians was shared between the Shift Plant Managers (who were viewed as senior managers) and Shift Supervisors (who work more closely with team members). The Shift Plant Managers work a different shift cycle to the Shift Supervisors and operators, which meant they remained more distant from team members. During days the Engineering Department largely supervised the shift Maintenance Technicians.

Much of the maintenance and engineering work was carried out by a number of core-contractors who had worked on the site for many years. They had their own supervision, worked to the same rules and standards as company personnel, and essentially operated as another department

on site. Core-contractors had a better safety record than company personnel. Non-core contractors were also used quite regularly but they do not have their own supervision. As a result the company provides the supervision, which sometimes caused problems at times of high activity when resources were not always available to fulfil all supervisory requirements.

Company H

Operations and maintenance teams had very similar structures and were supervised in a similar way. Shift Manager's fulfilled the majority of supervision activities. Team Leaders were in place within larger teams to provide assistance. Although they had very little supervisory responsibility, the Team Leader role was seen as a useful 'stepping stone' for operators in the progression towards becoming Shift Manager.

Contractors were supervised differently. Although contractors may have a supervisor, they were given very little responsibility. The company's view was that they should maintain responsibility for supervising contractors. However, it was observed that contractors experienced three times as many accidents as did company personnel, which may call into question the current approach to supervision.

Company I

The maintenance team was supervised according to a 'matrix' management approach, with the Engineering Manager providing a technical lead and departmental managers providing functional support. The Engineering Manager and departmental managers all had responsibility for a relatively large number of people, which sometimes resulted in practical difficulties because of a lack of flexibility. The operations teams had a similar supervisory structure to maintenance. During the day a Team Leader was onsite, but at night this role was supposed to be fulfilled by the Production Manager on a call-out basis. In practice, informal support structures had evolved so that different team of operators would support each other, and even the security team would be involved in some abnormal situations.

Individuals from the company were allocated responsibility to supervise contractors and provide technical expertise. This was partly to address issues arising temporary workers were often employed for short-term work, who had very little knowledge of the site, its hazards and procedures.

Appendix B – Summary of Findings from Applying Supervision Assessment Methodology

COMPANY 1

Safety management system

The SMS demonstrated a commitment to supervision, although most people found this quite inaccessible. It was felt that the management's visibility to the workforce had decreased recently. Although there was no suggestion that this was because of less interest in health and safety, it did raise concerns that management may be less aware of the realities of work 'at the sharp end'.

People were usually promoted to roles with supervisory responsibilities from the workforce, by management. They usually maintained a good relationship with team members, but sometimes found it hard to relate to management. It was recognised that all individuals respond differently to supervisory roles, and that it was difficult to predict how well they were going to perform.

Operations

People moving into a supervisory role from Operations were not always fully aware of what was expected of them. This was partly because role descriptions were not always available and/or did not cover all responsibilities. It typically took a year or more for people to fully understand the expectations of their role.

The perception was that the company placed a lot of emphasis on leadership, and hence most people had received leadership training in one form and another. There seemed to be less emphasis on other aspects of supervision, especially the day-to-day activities. Individuals felt they had received little guidance on the amount of contact supervisors they should have with their team members. Also, it was that some individuals had responsibility for larger teams than others.

Supervisory performance at team and individual level was only considered infrequently and/or when there was a problem. Action was taken to deal with problems, although this could sometimes be addressed as a short-term initiative, instead of a more long lasting solution.

Maintenance

Role descriptions were in place for maintenance jobs with supervisory responsibility, although they may have been out of date. Recent appointments to those roles had been made via a rigorous selection process, which was viewed favourably by most. However, it was not clear whether this was a 'one off' or a new policy.

The appraisal system was seen as a good route by which people with supervisory responsibility got to understand their role, although this did take time. It was noted that people can sometimes be in 'temporary' supervision roles for some time, and they may not have been included in the appraisal process.

Supervisory performance was only considered in an ad-hoc fashion. This was seen as a deterioration as historically more effort had been put into team based evaluation, for example questionnaire surveys. The adoption of National Vocational Qualification (NVQ) for supervisory roles was seen as potentially useful.

Maintenance teams had a fairly relaxed approach to work, and acted in a fairly 'self managed' way, with individuals looking out for each other. Communication was generally good within

the team, but team members felt quite remote from management, relying on supervisors as the channel of communication.

Contractors

The way contractors were supervised varied. For example, the construction department had very robust systems in place, but other departments did not use these. Also, supervision during large pieces of work (e.g. plant shut downs) was usually better planned than for smaller, ad-hoc jobs. There was a concern that the company did not always learn from problems encountered with supervision of contractors.

Emergency response

Leadership in emergencies was seen to be good, due largely to frequent practice through emergency exercises. A weakness in existing arrangements was that there were no designated deputies should someone not be immediately available to respond (for example if they are incapacitated by the event itself). Whilst, in such situations it was felt others would be able to take up the role, they may not have been so competent and/or confident.

Additional comments

Company A clearly had an open and communicative culture, and was committed to health and safety. However, there were many competing priorities, which sometimes resulted in things being overlooked. Also, there were often a lot of initiatives, and concern was raised that these did not always result in updates to established systems. This meant that the results from past initiatives were sometimes forgotten, or not passed on to people starting new jobs.

COMPANY 2

Safety management system

Supervision was recognised as having a significant role in ensuring health and safety. People perceived that the delivery of supervision was generally satisfactory, but this was more because individuals and teams were highly experienced, rather than because of any underlying management system or process. The effectiveness of existing arrangements was further enhanced by an open culture with good communication, particularly on the shop floor.

Operations

Most supervisors had operational roles, and this could cause them to feel overloaded with work, especially when other team members were absent. There were concerns that this meant that the supervisory elements of the job were not always carried out fully. There may also have been potential weaknesses in current arrangements because not all supervisors had operational experience of all areas for which they were responsible.

Maintenance

People with supervisory roles within the Maintenance team were very visible, and tended to check how things were going several times a day. This meant that individuals generally felt they were able to communicate well with their supervisors, and that the supervisors also acted as a good channel of communication (both ways) with senior management. There was a perception that production pressure could sometimes lead to conflict with other business objectives.

Contractors

It was recognised that different contractors needed different levels of supervision. However, the pragmatic approach taken was more based more on individuals' experience and judgement, rather than the safety management system.

Emergency response

Leadership in emergencies appeared to be well managed. This was largely due to regular practice during emergency exercises.

Additional comments

Although supervision was working reasonably well, a lack of role definitions or job descriptions could cause problems in the future, especially if there were significant personnel or organisational changes. It was noted that the supervisory role was continually evolving, with individuals perceiving a general increase in responsibility. However, those who did not have supervisory roles also felt they had responsibility to monitor others' work and advise/assist as necessary.

COMPANY 3

Safety management system

It was recognised that supervision is critical to health and safety performance. Therefore, on reflection it was felt that the SMS did not make sufficient reference to supervision. Also, the lack of specific key performance indicators was seen as a potential weakness, especially regarding supervision of contractors.

Management is very visible to all team members, and there is good communication. A system was in place for carrying out performance appraisals, but these were not happening at the pre-defined frequency.

Operations

Senior management commitment to supervision was rarely demonstrated visibly to the operations team. Although, the importance of health and safety was fully understood by all, the role of supervision in achieving this is not so clear.

Maintenance

The maintenance teams had a very clear line of command. This appeared to achieve a good balance between flexible self-management and direction from management. It also provided good communication throughout the organisation.

Contractors

Contractors were viewed as competent and familiar with the site emergency procedures, and properly supervised. People held this view from both contractor and operating companies.

The personal development mechanisms used by contractors may not have been as sophisticated as those used by the operating company. There may have been some need to update arrangements to ensure supervision of sub-contractors was robust.

Emergency response

Emergency response roles were clearly defined and understood by all employees, supervision and management. However, frequency of training and emergency exercises was not always as good as it should be.

Additional comments

Many improvements had occurred over recent years. All appreciated the involvement of team members in the selection of supervisors. Supervisory responsibilities were generally accounted for in day-to-day working, but if more time was allocated for this role, improvements could have been made and safety may be increased.

A recent organisational change had resulted in the shift manager position being removed from the site. Whilst this had resulted in improvement to local supervision, there were concerns that a site overview had been lost. It was not clear if this was because of an inherent weakness in the new arrangements or a failure in managing the change.

COMPANY 4

Safety management system

Company 4 is a continually evolving company and the changes in responsibilities, including supervision, have been historically passed down from one role to another, or by gaining experience while 'on the job'. However, supervisory roles and responsibilities are currently being reviewed and descriptions written, which is a positive step towards improving health and safety on site. Consideration should have been given to including supervision in the site's KPI's to a greater extent.

There is an open culture at Company 4, which allows operations personnel to not feel pressured to cover up any mistakes and errors. This type of culture is the ideal formula to allow for good communication and to stop minor incidents evolving into more critical situations.

Supervision has generally improved over the recent years and formal procedures and other documentation has improved the knowledge, understanding and professionalism of the workforce. However, this inevitably has created more 'red-tape' that can slow the process down more than before.

Operations

In the Operations area of Company 4, supervision is not necessarily explicit in the job descriptions of those within the team with supervisory responsibilities or used in the selection of individuals with supervisory responsibilities. This was not necessarily seen as a weakness because the supervisory elements of most team members' roles are minimal.

There is a high level of informal and on-going assessment of team members including those with more supervisory responsibilities. However, there is no formal assessment. There is a high and consistent amount of team interaction and self-supervision within the teams mainly due to a good balance of experience and competence between teams.

Individuals in the Operations area of Company 4 feel comfortable in the supervisory aspects of their roles and have suitable experience to appreciate the limits of the operations and the practical realities of tasks and plans, mainly due to the high amount of operational responsibilities and relatively low supervision responsibilities placed upon them.

Maintenance

The Maintenance team is less 'empowered' than the Operations team with additional layers of management and several long-term contractors. It appears that health and safety supervision is not given as much priority in the team's tasks because they are under a lot of pressure to complete reactive maintenance activities to support manufacturing activities and minimise down-time on the plant.

Again, there is limited, formal definition of supervisory roles and responsibilities. Job descriptions are generally out of date and would not have taken the health and safety and supervisory responsibilities into account they now have. The supervisory aspects of their roles are mainly inferred from job titles.

There is a feeling that the level of supervisory and/or technical training may not be sufficient. In the Electrical & Instrumentation function in particular, the supervisory element of the job was higher than in the Operations team. Previously, the supervision of individuals has relied upon a good appreciation of the tasks involved.

Contractors

Long-term contractors are supervised in a similar way to staff as they are generally treated as equal team members. There are formal arrangements in place for the supervision of 'short-

term' and 'one-off' contractors, however, what happens in practice may not actually reflect what is written/expected of them. Generally it is felt that supervision is not adequate, either with respect to health and safety or the quality of the work being conducted. New or less 'trustworthy' contractors require higher levels of supervision.

Supervision and health and safety issues are not formally included in the KPIs for contractor selection and appraisal. Other considerations such as cost, availability and lack of alternatives may take priority over supervision.

Emergency response

There is a high amount of clear and well understood definition of team roles in the event of an emergency and regular testing and drilling of the emergency response team members.

Generally it is felt that all individuals are competent, comfortable and well supported in their defined emergency roles. However, this may not be the case if one or more key personnel were unavailable. It is recognised that measures are being taken by Company 4 to address this.

Additional comments

The interaction between management and the teams in Company 4 appears to be good and there are open and clear lines of communication and high visibility of management. There is generally little formality in the specification of job roles and job descriptions (with the notable exception of the emergency team plans). It is recognised that there are advantages in having a flexible approach to organising the supervision by many informal, unwritten arrangements. This is especially true when there is a low staff turnover and team members are well established and experienced in their roles. However, if key supervisory staff leave or move within the company, it would be difficult to establish all the roles that they would have performed.

COMPANY 5

Safety management system

The SMS provided a comprehensive approach to supervision, with key responsibilities defined for all roles from top management to technicians. Supervisory performance was reviewed on a frequent basis, although specific KPI for supervision were not used. Company culture ensured that everyone understood health and safety was their responsibility, and this had addressed many of the 'softer' issues.

Operations

Supervisor workload was very high, especially during office hours. It was felt there was too much paperwork and it was difficult to find procedures and other documents.

Operations teams were concerned that recent talk about self-managed teams meant that supervision was no longer seen as critical by management. This was further reinforced by the feeling that the supervisor job had become more of an administrative role over recent years.

Maintenance team

The maintenance teams were effective at self-management on a day-to-day basis, but have a clear line of command via supervision to senior management. Senior management did demonstrate their commitment to supervision quite frequently, but there may have been some room for improvement, especially in responding more quickly to issues raised. The 360° appraisal system seemed to provide an effective method of appraisal for all.

Training for supervisors was good, but took time to complete meaning individuals often felt vulnerable in the first year more in a supervisor role. There was some disagreement about whether team leaders also needed technical skills to do their job effectively.

Contractors

There were good controls regarding supervision of contractors, especially those with a long-term presence on site. However, not enough effort was put into ensuring contract companies always had good supervisors working on the site. Also, personnel are not always clear about their responsibilities in supervising contractors.

Emergency response

People are reasonably comfortable with their roles in emergencies. However, it was felt the frequency of training and emergency exercises was not always sufficient.

COMPANY 6

Safety management system

Supervision was dealt with reasonably well by the SMS. Supervisory performance was formally evaluated quite frequently with specific key performance indicators being used in some instances. However, there were sometimes delays in dealing with problems identified.

It was felt that the quality of supervision was largely related to the skills and aptitude of the individuals in those roles, which may not always be reflected in the selection process.

Management had become more aware of the critical nature of supervision in ensuring health and safety over recent years. However, a particular concern for the organisation was that bureaucracy, much of it driven by the Health and Safety Executive, was overloading supervisors. This had become highly counter-productive as supervisors ended up 'driving their desk' for much of the time, which made it difficult for them to fulfil all of their supervisory responsibilities.

Operations

The operations teams were relatively well supervised, all team members knew their responsibilities and the chain of command beyond the team was clear.

The team feels there are some barriers to communication between themselves and senior management. Much of this is because they work shifts. Also, they felt that management sometimes overreacted to relatively minor events.

All team members recognised that they performed some activities that would be considered to be part of a supervision function. This included taking responsibility for their areas, and intervening if they saw people acting unsafely. Given this, there may have been some issues that people in roles that were not specifically defined as supervision (e.g. process operators) may not have received enough training in supervisory skills.

Maintenance

Maintenance teams were largely self-managed, with Technicians fulfilling a lot of supervisory roles, particularly to long-term contractors who are an integral part of the team. The team structure was very fluid, adapting according to workload, which made it difficult for people to describe how the team functioned including supervision.

All of the maintenance teams worked well together, including contractors. Over recent years the implementation of the computerised maintenance management system had helped in planning work and was useful to the teams as it provided an objective assessment of workload, which made it easier for teams to secure the necessary resources.

Contractors

Good systems were in place to deal with supervision of long-term contractors, and in general there were no issues. Short-term contractors and sub-contractors were more problematic, especially during times of high workload when personnel were not always available to provide the supervision required. There were also concerns that not enough was done to monitor supervisory performance of contractors and sub-contractors, and that not enough was done to deal with any problems identified.

Leadership in an emergency

The arrangements in place ensured good leadership in emergency situations. However, it was difficult to make emergency exercises realistic enough to give everyone the confidence about what would happen for real.

Additional comments

Everyone had no doubt that health and safety was the highest priority for the company, and recognised that this has become more imbedded in the culture over recent years. Communication could be an issue, including regarding the importance of supervision. It was suggested that this was a cultural issue with middle management being very technically, rather than people driven. People shared the concerns about the amount of paperwork that supervisors have to deal with and observed that the permit to work system caused some problems.

COMPANY 7

Safety management system

The site had its own SMS system that included specific reference to supervision. However, this was not reflected in corporate policy, which also applied to the site.

Supervisory responsibilities were well defined, and people generally understood them. Although there were no specific key performance indicators, supervisory performance and its role in health and safety performance was considered regularly. Senior managers did not often communicate directly with teams, but information was channelled via supervision.

Operations team

The chain of command for operating teams was clearly defined. Although supervisors were in place their role had changed of recent years.

There was some confusion about who was responsible for what from the management team with one particular 'grey area' being who implemented first-line discipline. In general, supervision of the operations team was considered to be good, although people new into supervisory roles did not always receive enough training at first.

Maintenance team

Individual disciplines tended to operate as self-managed teams, with supervisors available to assist as required. This approach reflected changes that have occurred over recent years to provide a more integrated approach to maintenance across the whole site, with contractors working within the teams. New technology, in the form of maintenance scheduling software had made a contribution to how the maintenance teams function.

Supervision of contractors

Systems were in place to ensure adequate supervision of contractors. These worked especially well for longer-term contractors, but supervising short-term contractors was sometimes more difficult. Evidence suggested that some long-term contractors did carry out formal appraisals of their supervisors, but the operating company had no involvement in the process.

Leadership in an emergency

There were good systems in place to ensure adequate leadership in emergencies, and these were demonstrated for all foreseeable events. One potential weakness was that all members of the operating team were trained to act as incident controller, but experience in the role was very varied, suggesting some would be more effective than other during an emergency.

Additional comments

The company had recently reorganised to put a shift manager into place with overall responsibility for the site. This was seen as a significant improvement to achieving coordination of cross-site activities.

COMPANY 8

Safety management system

Supervision was perceived as critical to the health and safety but only referred to in general terms in the SMS. However, there was general failure to demonstrate this from the SMS, through supervisory personnel to team members. The result was a poorly defined approach to supervision that caused some confusion.

Supervision was considered as part of other and wider ranging Key Performance Indicators (KPIs), but tended to only address activities carried out by management personnel. Some potentially serious deficiencies had been identified, but the company was struggling to identify and implement appropriate solutions.

Operations

Operating teams felt they understood what was expected of them with regard to supervision, and were regularly appraised. There was a reasonably 'flat' organisational structure, which resulted in good communication within the teams. However, communication between different operating teams was often difficult. Work planning was performed by a separate function, which appears to cause some problems, perceived to be caused by a lack of practical understanding of the operating constraints.

Team Leaders were usually chosen because of their operating experience, rather than ability to supervise, and relatively little training in supervisors skills was provided. However, there was a comprehensive set of procedures and instructions to assist, which were continuously reinforced by management. Team leaders found it difficult at times to fulfil both their operating and supervisory responsibilities.

Maintenance

The maintenance team operated on a largely self-managed basis, with the team leader providing support and assistance when required. Communication between team members was very good and this led to good appreciation and understanding of everybody's roles. There were some issues with work planning, with production pressures being perceived as having too much influence on the way maintenance was performed.

Communication between team members and management was considered to be good, but supervision was rarely the topic of conversation. Generally, it was felt the working environment had become more relaxed over recent years, due in part to the fact that nobody was looking over anyone's shoulder.

Contractors

Performance of long-term contractors had been found to be generally good at first, but to get worse the longer they spend on site. Short-term contractors and sub-contractors required closer supervision, mainly due to their attitude to health and safety. The systems defining supervisory arrangements for contractors needed to be reviewed, including provision for more frequent review of performance.

Emergency response

As a Top Tier COMAH site, the emergency response procedures were probably not sufficiently well defined, and individuals with specific responsibilities did not receive sufficient training and experience through emergency exercises. The result was that leadership during emergencies was generally good during 'normal' work days, but worse at other times.

Additional comments

Middle management at this company felt there were significant problems with supervision. Much of this was the result of a high amount of change that had occurred in the company over the previous few years, driven from the corporate centre, which had meant company objectives and approaches to all aspects of the business had continuously changed. The managers felt they had ended up with too many responsibilities, and had not had enough time to implement suitable arrangements. This meant that teams on site were not clear of their responsibilities. However, the teams did not always perceive this the same way, although this may further confirm the views of management about the existing arrangements.

Appendix C – Results from Site Trials of the Supervision Assessment Methodology

Table 7 – Supervision in safety management systems

	<i>Integrated Management System</i>									<i>Supervision of Contractors</i>									<i>Emergency Response</i>			
	Q1.1	Q1.2	Q1.3	Q1.4	Q1.5	Q1.6	Q1.7	Q1.8	Q1.9	Q1.10	Q1.11	Q1.12	Q1.13	Q1.14	Q1.15	Q1.16	Q1.17	Q1.18	Q1.19	Q1.20	Q1.21	Q1.22
Company 1	a	a	b	b	b	b	b	b	c	c	c	a	a			c	d	b	b	b	a	b
Company 2	b	a	c	b	c	b	d	d	c	c	c	c	c			c	d	c	c	a	a	b
Company 3	a	a	b	a	b	b	b	b	b	b	b	a	b			a	c	c	a	a	b	a
Company 4	a	a	b	b	b	b	b	d	b	b	b	c	a	b	a	b	c	c	b	a	b	b
Company 5	a	a	a	a	a	a	b	a	a	a	c	b	a			a	b	a	a	a	a	a
Company 6	a	a	b	b	a	b	a	a	c	a	c	a	a	c	a	c	c	c	c	a	a	a
Company 7	a	a	b	b	a	b	b	a	b	b	c	a	b	c	b	c	c	c	b	a	b	a
Company 8	a	a	b	c	a	c	b	b	d	c	c	a	b	a	b	b	d	c	b	c	d	c

Table 8 – Team assessments

	<i>Type of team</i>	<i>Q2.9</i>	<i>Q2.10</i>	<i>Q2.11</i>	<i>Q2.12</i>	<i>Q2.13</i>	<i>Q2.14</i>	<i>Q2.15</i>	<i>Q2.16</i>	<i>Q2.17</i>
Company 1	Maintenance	c	a	a	b	c	b	a	a	
Company 1	Operations	c	b	a	d	c	c	a	b	
Company 2	Maintenance	b	a	a	d	b	c	a	b	
Company 2	Operations	c	b	a	d	b	a	a	b	
Company 3	Maintenance	a	a	b	b	b	a	a	a	
Company 3	Operations	d	a	b	b	a	a	a	b	
Company 4	Operations	b	b	b	a	a	a	a	b	b
Company 5	Maintenance	b	b	d	b	b	a	b	b	
Company 5	Operations	b	c	a	a	b	c	a	b	
Company 6	Maintenance	c	b	a	b	a	c	a	a	
Company 6	Operations	a	b	a	b	a	a	a	c	
Company 7	Maintenance	d	c	a	d	b	a	a	a	
Company 7	Operations	b	a	a	a	a	a	a	a	
Company 8	Maintenance	d	c	b	a	a	a	a	a	d
Company 8	Operations	d	b	a	a	b	a	b	b	c

Table 9 – Individual assessments

			<i>Individual Assessment</i>																
	<i>Type of team</i>	<i>Job Title</i>	Q3.1	Q3.2	Q3.3	Q3.4	Q3.5	Q3.6	Q3.7	Q3.8	Q3.9	Q3.10	Q3.11	Q3.12	Q3.13	Q3.14	Q3.15	Q3.16	Q3.17
Company 1	Maintenance	Team leader	a	c	b	c	a	a	a	b	a	a		c	c	b	b	b	b
Company 1	Operations	Team leader	a	b	b	b	a	b	d	a	d	c		d	c	a	b	c	a
Company 2	Maintenance	Technician	b	d	b	c	b	d	c	a	c	b		b	c	a	b	a	a
Company 2	Maintenance	Supervisor	a	c	b	a	b	b	b	a	b	b		d	a	a	a	a	a
Company 3	Contractor	Contracts manager	a	a	b	a	a	a	a	a	a	b		a	a	a	a	b	a
Company 3	Contractor	Supervisor	a	a	a	b	a	b	b	a	a	b		a	c	a	a	a	a
Company 3	Maintenance	Senior technician	a	a	b	b	a	b	a	a	a	b		c	a	a	b	a	a
Company 3	Maintenance	Technician	b	c	b	d	b	c	d	a	a	c		N/A	N/A	N/A	N/A	N/A	N/A
Company 3	Operations	Team Leader	b	a	b	b	b	a	a	b	a	a		b	c	b	b	a	a
Company 4	Operations	Operator	a	c	b	c	b	d	a	a	a	b	b	c	a	a	b	N/A	b
Company 4	Operations	Operator	b	a	b	c	a	a	b	a	a	b	a	b	c	a	a	a	a
Company 5	Maintenance	Team leader	a	a	b	a	b	a	c	a	a	a		c	a	a	b	a	a
Company 5	Maintenance	Technician	d	a	a	a	b	b	c	a	c	b		b	d	b	b	c	a
Company 5	Operations	Ops - control room	b	a	b	c	b	c	c	a	b	b		b	d	a	a	a	a
Company 5	Operations	Shift supervisor	a	b	b	a	b	b	c	c	a	b		c	a	b	c	a	c

	<i>Type of team</i>	<i>Job title</i>	<i>Individual Assessment</i>																
Company 6	Maintenance	Technician	b	c	b	a	a	b	b	a	c	b	a	c	c	a	b	a	a
Company 6	Maintenance	Team leader	a	a	b	a	a	a	c	a	a	a	a	b	a	a	b	b	a
Company 6	Operations	Shift Engineer	a	b	b	a	b	a	c	a	a	a	a	b	c	b	b	b	a
Company 6	Operations	Operator	b	b	b	a	a	a	b	a	b	b	b	b	a	a	a	N/A	N/A
Company 7	Maintenance	Works manager	a	a	a	a	a	a	a	a	a	c	a	b	c	a	a	a	a
Company 7	Operations	Working Team Leader	a	b	b	a	a	a	a	a	a	b	a	a	c	a	a	b	a
Company 7	Operations	Works manager	a	a	b	b	a	a	c	a	a	a	a	b	a	a	a	c	a
Company 8	Maintenance	Technician	b	c	b	c	a	b	c	a	a	b	a	b	d	a	a	N/A	N/A
Company 8	Maintenance	Team leader	b	a	c	a	a	b	c	a	a	a	b	c	a	b	a	b	b
Company 8	Operations	Team leader	a	b	c	a	a	a	c	a	a	a	b	d	c	a	c	c	a
Company 8	Operations	Operator	b	b	c	b	b	a	c	a	b	c	b	b	c	b	b	a	a

Table 10 – Individual assessment - contractors and emergencies

			<i>Supervision of contractors</i>			<i>Leadership in an emergency</i>		
	<i>Type of team</i>	<i>Job Title</i>	Q3.18	Q3.19	Q3.20	Q3.21	Q3.22	Q3.23
Company 1	Maintenance	Team leader	d	N/A	N/A	d	N/A	N/A
Company 1	Operations	Team leader	d	N/A	N/A	a	a	b
Company 2	Maintenance	Technician	d	N/A	N/A	d	N/A	N/A
Company 2	Maintenance	Supervisor	d	N/A	N/A	a	a	a
Company 3	Contractor	Contracts manager	c	a	b	c	c	a
Company 3	Contractor	Supervisor	c	a	b	c	a	a
Company 3	Maintenance	Senior technician	a	a	b	a	a	a
Company 3	Maintenance	Technician	d	N/A	N/A	d	N/A	N/A
Company 3	Operations	Team Leader	d	N/A	N/A	a	c	b
Company 4	Operations	Operator	d	N/A	c	a	a	a
Company 4	Operations	Operator	d	N/A	b	a	a	a
Company 5	Maintenance	Team leader	b	b	c	a	b	a
Company 5	Maintenance	Technician	d	N/A	N/A	d	N/A	N/A
Company 5	Operations	Ops - control room	d	N/A	N/A	a	b	b
Company 5	Operations	Shift supervisor	c	b	B	a	a	a

			<i>Supervision of contractors</i>			<i>Leadership in an emergency</i>		
	Type of team	Job Title	Q3.18	Q3.19	Q3.20	Q3.21	Q3.22	Q3.23
Company 6	Maintenance	Team leader	b	a	A	a	a	a
Company 6	Operations	Shift Engineer	a	a	b	a	c	b
Company 6	Operations	Operator	b	b	b	a	a	b
Company 7	Maintenance	Works manager	a	a	c	d	N/A	N/A
Company 7	Operations	Working Team Leader	b	b	b	a	a	a
Company 7	Operations	Works manager	a	a	a	d	N/A	N/A
Company 8	Maintenance	Technician	d	N/A	N/A	d	N/A	N/A
Company 8	Maintenance	Team leader	a	b	c	a	a	a
Company 8	Operations	Team leader	a	a	a	a	c	c
Company 8	Operations	Operator	d	N/A	b	d	N/A	N/A

Appendix D – Good Practices and Problems in Delivering Supervision

Table 11 - Safety management systems

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q1.1 How would you rate the level of hazard being controlled by the safety management system?	7	1	0	0		COMAH referred to as indication of level of hazard.	
Q1.2 How important do you believe supervision is to health and safety?	8	0	0	0	100%	For major hazards, supervision provides a 'procedural' control to reinforce built-in controls.	
Q1.3 How is supervision addressed in the safety management system?	1	6	1	0	13%	Procedures include specific, supervisory responsibilities. Senior management also included as having supervisory role.	Although an SMS exists and individuals have job descriptions, it is not possible to see how they link. Not clear if supervision is health and safety or human resources issue.
Q1.4 Do you believe the way supervision is defined in the safety management system is proportionate to the hazard or risk?	2	5	1	0	25%	Arrangements ensure issues dealt with at an appropriate level in the organisation, with tiers of responsibility defined.	Written descriptions do not always reflect reality.
Q1.5 How are supervisory responsibilities defined?	4	3	1	0	50%	Job descriptions for all roles.	Supervisory aspects of job are increasing all the time, but job descriptions are not keeping up. People don't read or review their own job descriptions.
Q1.6 Do you believe people understand their supervisory responsibilities?	1	6	1	0	13%	Training and coaching provided to achieve consistency. All receive annual review, which includes supervisory functions.	Variations between individuals with different personalities. Some are easily distracted by the operational side of their job.

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q1.7 How is supervisory performance evaluated?	1	6	0	1	13%	Frequency of audits, team meetings and appraisals give indication of interaction between supervisor and team members. Supervision KPIs should be related to strategic aims of the company.	Reliance on the fact that teams and individuals have been in place for many years, rather than any formal evaluation.
Q1.8 When is supervisory performance considered and formally reported?	3	3	0	2	75%	Quarterly appraisal for supervisors. Open culture means formal review is not the only time supervision is considered. Questionnaires and '360o appraisal' used to capture team members' views of their supervisors.	Even though general, wide-ranging problems are known about they have not been documented, hence action to improve has not been implemented.
Q1.9 Do you believe enough is done to improve supervision when problems or opportunities are identified?	1	3	3	1	13%		General problems are dealt with but problems with individuals are not.
The following questions relate to supervision of contractors							
Q1.10 Do you use long-term contractors? If yes, how are long-term contractors viewed by company personnel?	2	3	3	0	25%	Making contractors more welcome and part of the team has led to significant improvements.	Contractors may be too reliant on 'traditional' supervisors. Sometimes more 'brutal' on their staff than the operating company would like.
Q1.11 Do you use short-term contractors? If yes, how are short-term contractors viewed by company personnel?	0	2	6	0	100%	Permit-to-work makes a contribution to supervision of contractors.	Variations between companies, but with a limited labour pool using only the best is not always an option.
Q1.12 How are supervision arrangements for contractors defined?	5	1	2	0	63%		

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q1.13 How are contractors supervised?	4	3	1	0	50%	Contracting companies work within a single 'alliance.'	
Q1.14 How are supervision arrangements for sub-contractors defined?	1	1	2	0	25%		
Q1.15 How are sub-contractors supervised?	2	2	0	0	50%		
Q1.16 Do you believe contractors and sub-contractors are properly supervised?	2	2	4	0	25%		Not always enough resources available to supervise all contractors working on site.
Q1.17 How is performance of contractor and sub-contractor supervision evaluated?	0	1	4	3	0%	Interface meetings with contractors. Contractor performance considered as part of the operating company's KPIs and incidents investigated the same way for all.	
Q1.18 When is performance of contractor and sub-contractor supervision considered and formally reported?	1	1	6	0	13%		Contractor performance considered, but not supervision directly.
Q1.19 Do you believe enough is done to improve supervision of contractors and sub-contractors when problems or opportunities are identified?	2	4	2	0	25%		
The following questions relate to emergency response							

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q1.20 How are leadership roles for emergency response defined?	6	1	1	0	88%		
Q1.21 Do you believe all individuals who have a leadership role in an emergency have received enough training and experience?	4	3	0	1	50%		
Q1.22 Do you believe that good leadership and teamwork occurs during emergencies?	4	3	1	0	50%		Poor when day workers are not present.
Q1.23 How does the current approach to supervision differ from your previous experience?					N/A	People promoted to supervision irrespective of people skills.	
Q1.24 In what ways has supervision improved over recent years?					N/A	Line of reporting has become clearer. Shift manager role for the site means one person has overall responsibility. Incidents provide good learning about the role of supervision. People more aware and knowledgeable of safety.	
Q1.25 In what ways has supervision got worse over recent years?					N/A	Loss of shift manager has meant no-one takes the overview. Bureaucracy, often driven by HSE means supervisors have too much paperwork, and not enough time for critical aspects of the role.	

Table 12 -Operating Teams

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q2.9 How does senior management (external to the team) communicate their views regarding the importance of supervision?	1	3	2	2	50%	Supervisors act as good channel of communication.	Senior managers rarely talk directly to team members, relying on communication to filter through from others. When they do talk, supervisors are sometimes bypassed.
Q2.10 Do you believe everyone has the same view about how important supervision is to health and safety performance?	2	5	1	0	25%	Continuously drilled into people that health and safety is important and that you should keep an eye out for others.	Some over react to minor events and have 'strange ideas' leading people to question knowledge and motivation. Others assume supervision just happens.
Q2.11 How are people selected for supervisory roles for your team?	6	2	0	0	25%		Selection process focussed on leadership, overlooking the day-to-day, technical requirements. Perception that wrong people are sometimes chosen.
Q2.12 How is supervision of the team defined?	4	2	0	2	75%	Prompt sheets to assist supervisors in their specific roles.	Lots of procedures making it difficult to find the right one.
Q2.13 Do you believe everyone in the team understands how supervision is delivered?	4	3	1	0	50%		
Q2.14 Do you believe company and team objectives are reflected in the way individuals carry out their tasks?	6	0	2	0	75%	People understand the expectations on them.	The way plans are developed can encourage people to rush the job. Individuals do sometimes have their own agenda.

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q2.15 Do you believe there is good communication between members of this team?	7	1	0	0	88%	Everyone understands each others role and how their actions can affect others.	
Q2.16 Do you believe there is good communication between the team and management?	1	6	1	0	13%	Personalities have changed, and this has improved communication.	Managers have little idea of what happens on the plant, and rely on information from one or two individuals only. Often choose a bad time to talk to team members.
Q2.17 Do you believe there is good communication between different team and shifts?	0	1	1	0	0%		Some barriers between teams working shift and management working days. Complicated shift patterns mean people don't know who to communicate with and information gets lost.
Q2.18 How does the current approach to supervision differ from your previous experience? This includes previous experience in this company and in other companies or situations.					N/A	Traditional industries were more dictatorial, resulting in poorer communication and ownership. Now have an open approach and people are happy to talk. Supervision has been devalued in recent years. Middle managers in American companies have shown more people skills than in UK.	
Q2.19 In what ways has supervision improved over recent years?					N/A	Common aims across site meaning teams can resolve their own problems. Less pressure from management, and more accepting if production held up for safety reasons.	
Q2.20 In what ways has supervision got worse over recent years?					N/A	Amount of paperwork supervisor has to deal with means they are less visible to their team members. Greater use of contractors, and they need more supervision than own staff.	

Table 13 - Maintenance Teams

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q2.9 How does senior management (external to the team) communicate their views regarding the importance of supervision?	1	2	2	2	43%	Flat structures means information is cascaded well.	Senior managers talk more about production than health and safety.
Q2.10 Do you believe everyone has the same view about how important supervision is to health and safety performance?	3	2	2	0	43%	There is a very open culture and everyone looks after everyone else.	Locally there is good understanding, but beyond the site corporate systems take a long time to update.
Q2.11 How are people selected for supervisory roles for your team?	4	2	0	1	29%	Two-day selection system used when selecting supervisors. Wherever possible team members are asked for their comments regarding supervisor candidates.	Overtime technicians take on a greater supervisory role but are not originally selected with this in mind. There can be personality clashes between supervisors and team members.
Q2.12 How is supervision of the team defined?	1	4	0	2	71%	It is not possible to have procedures for everything, but the important thing is that there are no critical gaps.	Too much reliance on intranet, so people cannot find the information they need.
Q2.13 Do you believe everyone in the team understands how supervision is delivered?	2	4	1	0	29%	Chain of command very clear, allowing individuals to self-manage effectively.	Understanding has taken a long time to evolve, with everyone having to work it out for themselves.
Q2.14 Do you believe company and team objectives are reflected in the way individuals carry out their tasks?	4	1	2	0	57%	Everyone understands the health and safety and production priorities. Team members are all involved in decision-making, risk assessments etc.	Communication can be slow meaning people are working to out-of-date company aims.

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q2.15 Do you believe there is good communication between members of this team?	6	1	0	0	86%	Team members work very closely together, and communicate continuously. Everyone seems to have the information they need and effort is made to make sure only relevant information is communicated.	
Q2.16 Do you believe there is good communication between the team and management?	5	2	0	0	71%	Monthly meetings for safety representative, quarterly meetings for all. Team members all have lots of opportunities to talk to management on an informal basis.	Depends on personalities, with some individuals (both employees and management) finding it difficult to communicate with different groups.
Q2.17 Do you believe there is good communication between different team and shifts?	0	0	0	1	0%	No barriers between teams, and they all help each other.	Production seems to override all other priorities, so information from maintenance team is often ignored.
Q2.18 How does the current approach to supervision differ from your previous experience? This includes previous experience in this company and in other companies or situations.					N/A	Teams are more empowered and subsequently take more ownership. More flexible and willing to work together.	
Q2.19 In what ways has supervision improved over recent years?					N/A	Computer based maintenance management systems help with planning work and justifying the resources needed by the team. People are more eager to work, and complain when there are delays.	
Q2.20 In what ways has supervision got worse over recent years?					N/A	More self-management meaning supervisors take less responsibility for their team members. Team leaders have less opportunity to communicate with their team. Smaller teams put higher reliance on external technical support, which is not always available.	

Table 14 - Operations Individuals Assessments

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q3.1 How do you perceive your position in the team?	7	5	0	0	N/A		
Q3.2 Who allocates and plans your work?	4	7	1	0	N/A		
Q3.3 How would you describe the way your work is planned?	0	10	2	0	83%	Plans produced by people who do not understand the realities of the job.	Can be a conflict between what the plans say and what the supervisory feels can be achieved safely and effectively.
Q3.4 How are your supervisory responsibilities defined?	5	4	3	0	42%	All members of team have a role in directing others who can have an influence on their area. Management will support any decision made by anyone in the team.	
Q3.5 Do you understand what is expected of you with regard to supervision?	6	6	0	0	50%		Varying pressures from different managers, largely related to their personality. Appraisal does not always happen. Need better guidance about how much time should be spent on each aspect of the job (e.g. 20% face to face with team members)
Q3.6 What responsibility do you have for the team's health and safety performance and compliance with rules and procedures?	8	2	1	1	67%	Everyone has an equal responsibility for health and safety. Anyone seeing someone doing something wrong will intervene, no matter who they are.	Managing organisational changes not always as good as it should be, causing confusion regarding supervision.

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q3.7 What role do you have in leading continuous improvement?	3	2	6	1	25%	All team members have a role in continuous improvement.	Some people have higher expectations of supervisor to change behaviours of individuals than is possible.
Q3.8 What opportunity do you have to communicate with the team?	10	1	1	0	83%	Supervisor communicates with team at start of shift, but team members are then largely self-managing.	
Q3.9 What opportunity do you have to communicate with management?	8	3	0	1	67%	Although they may not communicate often, there are no barriers to any member of the team talking with any manager.	Senior managers have lots of roles that frequently take them away from site, making communication difficult.
Q3.10 What role do you have in decision making?	4	6	2	0	N/A	Boundaries are clearly defined so that people know when to refer decisions up the chain.	Team leader makes most of the decisions, others could be involved but they don't know the bigger picture plans.
Q3.11 Do you feel you are adequately supervised?	4	4	0	0	50%		Management do not have enough appreciation of what the supervisor role entails and the pressure they are under.
Q3.12 Do you believe you have enough time to fulfil your supervisory responsibilities?	1	7	2	2	8%		Depends on priorities, some make time to do the face-to-face aspects of the role at the expense of the paperwork, whilst others achieve the opposite. Some end up working extra hours to cover the whole job. Some operational job tie the supervisor to one location, so cannot interact with team members.
Q3.13 What supervisory training and experience have you received?	4	0	7	1	33%		
Q3.14 Do you feel sufficiently competent to fulfil your supervisory responsibilities?	8	4	0	0	67%	Good training and experience, but realistic enough to recognise new situations will always be encountered.	Competence based on experience, which would be difficult to prove or demonstrate.

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q3.15 Do you feel you receive enough support from others in fulfilling your supervisory role?	5	5	2	0	42%	Developed own network of people to provide mutual support.	Lack of technical support available at times.
Q3.16 Do you have direct responsibility for supervising other people? If yes, how much operational experience do you have?	5	2	3	0	N/A		
Q3.17 Do you believe you are able to give sufficient consideration to operational conditions and constraints when performing your supervisory responsibilities?	9	1	1	0	82%	With an open culture and competent team members that can be trusted, it is not necessary to have experience in all the jobs an individual supervises.	
The following questions relate to the supervision of contractors or sub-contractors							
Q3.18 What role do you have in supervising contractors or sub-contractors?	3	2	1	6	N/A		
Q3.19 Do you understand what is expected of you in the supervision of contractors or sub-contractors?	3	3	0	0	50%		
Q3.20 Do you believe contractors and sub-contractors are adequately supervised?	2	6	1	0	22%	Contractors have their own supervisory structures in place and these work well, requiring little input from the operating company.	Supervising contractors working on nights can be very difficult.

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
The following questions relate to leadership in an emergency							
Q3.21 Do you have a leadership role in an emergency?	10	0	0	2	N/A		
Q3.22 What training and practice do you receive for your role in an emergency?	6	1	3	0	60%		Although training exercises occur quite frequently, shift pattern means some individual may be involved in only 1 per year. It is easy for refresher training to slip.
Q3.23 Do you feel confident to perform your role in an emergency?	4	5	1	0	40%	Having been involved in emergencies in the past gives individuals the confidence that they can cope.	With small teams, it is difficult to be confident that all emergencies can be dealt with. With no single individual with overall charge it may be difficult to implement an effective response to large, site-wide incidents.
The following questions are an opportunity for you to record any further comments about supervision.							
Q3.24 How does the current approach to supervision differ from your previous experience? This includes previous experience in this company and in other companies or situations.						More opportunities to get involved. More autonomy and less demarcation. Better structure.	
Q3.25 In what ways has supervision improved over recent years?						Multi skilling provides more freedom within roles and responsibility lower down the chain. Managers happier to delegate to supervisors and team.	

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q3.26 In what ways has supervision got worse over recent years?							

Table 15 - Maintenance Individual Assessments

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q3.1 How do you perceive your position in the team?	6	5	0	1	N/A	Supervisors do have a higher position in the team, but expect to get involved and take a hands on role when necessary.	
Q3.2 Who allocates and plans your work?	6	0	5	1	N/A		
Q3.3 How would you describe the way your work is planned?	2	9	1	0	92%		Plans are produced by people who do not understand the job, so they are often impractical. Work can be well planned, but it does not take much to revert to 'fire-fighting.'
Q3.4 How are your supervisory responsibilities defined?	7	1	3	1	58%	Appraisals consider individual's objectives, which include supervision.	Everyone has a responsibility, but this is not defined for all roles. Appraisals don't happen as frequently as they should.
Q3.5 Do you understand what is expected of you with regard to supervision?	7	5	0	0	58%	Well documented, including legislative requirements and COMAH. 360o appraisal can be effective for improving supervisors' performance.	New approaches can cause confusion about who does what.
Q3.6 What responsibility do you have for the team's health and safety performance and compliance with rules and procedures?	4	6	1	1	33%	Accept that an individual with a supervisory role is ultimately accountable for the team's performance, even when they are not directly involved.	

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q3.7 What role do you have in leading continuous improvement?	3	2	6	1	25%	Everyone accepts they have a role in improving practices. Chain of command is well defined and everyone understands how continuous improvement is to be achieved.	
Q3.8 What opportunity do you have to communicate with the team?	11	1	0	0	92%	Informal approach works better than lots of meetings.	
Q3.9 What opportunity do you have to communicate with management?	8	1	3	0	67%		
Q3.10 What role do you have in decision making?	4	6	2	0	N/A	Routine decisions the supervisor is never involved, unusual situations the supervisor always is.	No guidance provided about when to refer decision up the chain of command.
Q3.11 Do you feel you are adequately supervised?	4	1	0	0	80%		
Q3.12 Do you believe you have enough time to fulfil your supervisory responsibilities?	0	5	5	1	0%		Delayed organisation has created more work for the supervisor. Have to work overtime to get the paperwork done.
Q3.13 What supervisory training and experience have you received?	5	0	4	2	45%	Certificate of management. Having had formal training allows individuals to have better discussions with management, and avoids the supervision role being devalued or squeezed out. Investors in People has meant training has been well considered.	People new to supervision receive training sometime after taking the role, leaving them very exposed in the early months.
Q3.14 Do you feel sufficiently competent to fulfil your supervisory responsibilities?	8	3	0	0	73%		

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
Q3.15 Do you feel you receive enough support from others in fulfilling your supervisory role?	4	7	0	0	36%		Not enough technical support available to support the supervisor.
Q3.16 Do you have direct responsibility for supervising other people? If yes, how much operational experience do you have?	6	3	1	0	N/A		With multi-skilled teams it is very difficult for a supervisor to have experience of every job. Even though have worked in a job in the past does not mean they can maintain their competence when become a supervisor.
Q3.17 Do you believe you are able to give sufficient consideration to operational conditions and constraints when performing your supervisory responsibilities?	8	2	0	0	80%	Technicians are self-motivated and can be trusted. If supervisor has done the job they can envisage what impact their decisions and instructions will have.	The supervisor cannot provide all the technical support sometimes needed.
The following questions relate to the supervision of contractors or sub-contractors							
Q3.18 What role do you have in supervising contractors or sub-contractors?	4	2	0	6	N/A		
Q3.19 Do you understand what is expected of you in the supervision of contractors or sub-contractors?	4	2	0	0	67%	Even though no direct supervision of contractors, important to know what contractors are doing.	Responsibility for supervising contractors never properly explained, learnt over time.
Q3.20 Do you believe contractors and sub-contractors are adequately supervised?	2	1	3	0	33%		Not enough supervision provided to counteract situation where contractor lacks technical competence. Can be personality and culture clashes between contractor and company.

<i>Question</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>Proportion achieving benchmark</i>	<i>Examples of good practice</i>	<i>Examples of problems</i>
The following questions relate to leadership in an emergency							
Q3.21 Do you have a leadership role in an emergency?	5	0	0	7	N/A		
Q3.22 What training and practice do you receive for your role in an emergency?	4	1	0	0	80%		Variable quality of training. Refreshers can lapse.
Q3.23 Do you feel confident to perform your role in an emergency?	5	0	0	0	100%	Response system has been made as simple as possible, giving confidence that it will work in practice.	
The following questions are an opportunity for you to record any further comments about supervision.							
Q3.24 How does the current approach to supervision differ from your previous experience?					N/A	The lower level, specific aspects of the supervisors job have been devolved to team members. Technicians would not have considered themselves to have a supervisory role in the past, but this is now clear.	
Q3.25 In what ways has supervision improved over recent years?					N/A	Knowledge has become 'systems based' so that supervisor is not so key and hence cannot act as a barrier. 'Old school' has left so people remaining are far more comfortable with current arrangements. Fully aware of human and emotional factors.	
Q3.26 In what ways has supervision got worse over recent years?					N/A	Management does not make it clear to employees how important they think supervision is, and this is reflected in weaknesses within systems, procedures and communication.	



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