MULTISKILLING: IMPLICATIONS FOR SAFE OPERATIONS

Dr Caroline Horbury & Michael Wright
Greenstreet Berman Ltd

Recent research funded by the Health and Safety Executive has produced a characterisation of “good practice” in the introduction of multi-skilling. The work was commissioned following the fire and explosion at the Texaco Refinery, where concerns were raised about the impact of multiskilling on the adequacy of the emergency response in the control room. The study included a review of published audits and of the causes of major accidents to identify the impact of multiskilling. The study reports on six case studies from high risk industry, including a rail control centre, nuclear power generation and chemical manufacture. A life cycle model was developed which provides practical advice to all those involved in the conception, planning and assessment, implementation and audit of multiskilling, and the ongoing skills maintenance and review. This paper covers research based on six industrial case studies, and describes the subsequent findings that will assist companies during the implementation of multiskilling. The practical guidelines and life cycle model provide a sound basis to aid companies undergoing these types of changes in terms of planning and implementing.

Multiskilling, organisational change, life cycle model.

INTRODUCTION
Multiskilling is part of a raft of changes that organisations may introduce with the aim of improving efficiency and competitiveness, reducing costs, improving quality, increasing production and so on. Research was commissioned by the Hazardous Installations Directorate
• Vertical multiskilling—where supervisory support tasks are learned by individuals;
• Horizontal multiskilling—where skills from another discipline are learned;
• Depth multiskilling—where more complex, specific skills within a trade are acquired.

Some organisations multiskill to ensure that incident management is adequate and appropriate. In these situations individuals are equipped with the skills, knowledge and expertise to competently handle an abnormal or emergency situation. This type of multiskilling is used in incident management scenarios, where it is imperative that there are appropriate skills to manage an incident or event at all times. This means that there must be flexibility within the team to ensure competent cover for lunch and other breaks, as well as for training and holidays. For incident management multiskilling can involve all forms of multiskilling.

ACCIDENTS & HSE AUDIT REPORTS – LESSONS FOR MULTISKILLING
A sample of major accident reports and public domain HSE Audit Reports were reviewed to identify if and how multiskilling contributed. The following accidents were reviewed where multiskilling had a role in the causation:

• Southall Rail Accident
• Fire at the Texaco Refinery
• Collision of mv Sand Kite with the Thames Flood Barrier
• Hickson and Welsh fire and explosion.

The review of these accidents indicates that the introduction of multiskilling has been
The outcome of this review of accidents and audit reports suggests that the introduction of multiskilling per se does not create a risk. Rather it is the manner in which multiskilling is implemented.

POTENTIAL IMPACTS OF MULTISKILLING ON HEALTH AND SAFETY
Potential health and safety impacts of multiskilling from previous research, along with past incidents and audit reports include:

- the job scope exceeding the credible ability of an individual to learn and carry out tasks – leading to error and omission;
- failure to retrain staff adequately means they lack competence;
- overloaded staff can not manage workload so make errors and violations or omit tasks, especially during periods of high workload, emergent work and staff absence;
- vertical multiskilling in crisis management situations can lead to a loss of independent oversight.
- no one stands back to have an overview of an event during emergencies, which could lead to mindset and groupthink;
- insufficient exposure to a task to maintain adequate skills leads to error, lack of competent staff, and overload of those individuals who have maintained their skills.

CASE STUDIES: GOOD PRACTICE IN MULTISKILLING
The aim of the case studies was to identify how contemporary organisations have implemented multiskilling. Six case studies were carried out from the following industrial sectors:
and identical competency criteria, as for the single skill. Rigorous training, refreshers and re-certification are the chief mechanisms to achieve this, with competence being assured through on and off-the-job testing and demonstration of both skills and knowledge. As the multiskilled person provides cover for the team, crucial to the continued safety of the concession is the quality of this handover. This is recognised and a formal mechanism is used to ensure that handovers are properly carried out. During the survey the importance of handovers and the critical role of the log to document all issues was emphasised.

CHEMICAL PLANT CONTROL OPERATION
This case study studied multiskilling at a company that operates a main production site, and a number of unstaffed satellite sites. The company employs 80 people. In light of their high profile customers, continuity of supply and high quality products are their primary objectives. The majority of their staff are multiskilled, and the central control room on site monitors the process both on the main site and on the satellites.

The company originally started multiskilling about 20 years ago with the aim being to equip engineers with sufficient all-round skills to be able to address most of the issues arising at the satellite sites. Out of normal hours a single engineer is responsible for all on-site needs. Hence they need to be multiskilled to identify early indications from the control room, diagnose the problem, locate the problem and tackle it (either remotely or on site). The role of engineers has gradually evolved with the role being predominantly control room based with on-site activities being coordinated and carried out by multiskilled control room staff. Multiskilling is being pushed forward now within the main site to improve organisational efficiency and responsiveness, in part this is linked to the increase in organisational demands and a recruitment ban.

A matrix has been developed for all posts and roles on site. This is based on a task
The site recognised the importance of workforce ownership and involvement in nuclear power generation, to achieve this they:

- Ran a suggestion scheme to identify appropriate tasks
- The whole process was coordinated by a steering group who reviewed the appropriateness of multiskilling certain tasks;
- Negotiated with the trade unions and provided a monetary carrot to aid workforce buy-in.

Three distinct maintenance disciplines are maintained and follow the 80/20 rule to avoid the loss of core skills. The principle adopted is that only those jobs where less than 20% of the task is carried out by another discipline will be multiskilled. Training is thorough; an exam has to be passed following completion of formal training. Competency is then assessed following several weeks on the job, and involves observation and a decision is made jointly between the individual and their manager. The organisation has monitored the radiological cleanliness and contamination reports to ensure that health and safety has not suffered as a result of multiskilling.

**MULTISKILLING LIFE CYCLE MODEL**

Many of the issues which emerged from the case studies and the review of audit reports and major accidents, were linked to reduction in headcount, staff not being competent to carry out their requisite activities, an organisational culture which supported risk taking, and potentially ‘macho’ and ‘can do’ cultures. A life cycle is described which was developed based on information from the case studies, a review of accidents and audits, as well as published material to describe the features that need to be considered at each stage of the multiskilling life cycle. Due to the findings from the accident review and the case studies the life cycle
- ensure that suitable and sufficient risk assessments are completed, and;
- ensure changes are developed in a planned and systematic manner, including identification of all actions necessary to enable change to be made successfully.
IMPLEMENTATION CHECK
This is the stage following the implementation process, where changes have been completed, or are well underway. The objectives are to ensure planned training, supervision, etc has been carried out as intended and has achieved its required performance objectives. This stage provides an opportunity to modify implementation, and to take into consideration feedback and issues arising.

Ongoing skills maintenance & review - In the period following implementation it is important to:
- ensure that skills are maintained at both an organisational and individual level;
- detect any latent problems, and;
- seek opportunities to improve safety performance amongst multiskilled staff.

The lifecycle therefore provides a framework in which to consider multiskilling, as well as the different elements that need to be considered at the different stages.

CONCLUSIONS
The research found:
- the potential adverse impact of asking people to work outside of their limits is clear and recognised;
- that on the whole the case study companies recognised the importance of this and imposed clear boundaries on the extent of multiskilling;
- problems with multiskilling appeared to be linked to allied issues such as ‘workload’ and supervision. As such multiskilling guidelines should focus on the management of change issues and ensure that in ‘business-driven’ reorganisations that multiskilling is not overlooked.
KEY DO’S AND DON’T OF MULTISKILLING

- Do develop and implement a company wide policy to the management of health and safety aspects of multiskilling;
- Do give staff a role in the planning and implementing change process;
- Do ensure you have an accurate estimate of peak and emergency workloads, as well as normal when determining how many posts can be eliminated by multiskilling;
- Do think about the necessary skills and experiences to ensure the relevant mix of expertise is still available within the company;
- Do ensure that staff competencies cover the full range of tasks within their remit by an appropriate mix of training, assessment and coaching, as well as refresher training;
- Do ensure that someone has the role of ‘standing back’ and taking the wider perspective, especially in emergency management;
- Do schedule hands-on experience, job rotation, refresher training and competence assessment;
- Don’t ignore the valuable insights from those who actually do the work;
- Don’t multiskill without considering the impact on succession management;
- Don’t let the standard of health and safety management become the victim of local business/safety management haggling;
- Don’t base resource estimates solely on ‘normal’ workloads;
- Don’t forget that ‘groupthink’ and ‘tunnel vision’ can blind people to their mistakes, especially under stress & in emergencies;
- Don’t ignore or forget the need for people to practice their skills.

EXAMPLES FROM CHECKLIST FOR IMPLEMENTING MULTISKILLING