

SAFETY CULTURE ASPECTS OF MANAGING FOR SAFETY

- EXPERIENCE OF A LARGE NUCLEAR REPROCESSING SITE

Helen S Rycraft Head Human Factors, BNFL, Sellafield.

INTRODUCTION

The Nuclear Industry is going through turbulent times both in terms of public acceptance and business issues. Safety is one area which impacts on whether the business is allowed to continue, and how an organisation organises itself. The need to cut costs to make nuclear power a viable energy resource, has forced the Nuclear Utilities to review manning policies, and management style, and in particular how to maintain safety standards during a period of change, and ultimately support continuing improvement of standards.

The shrinking workforce requires a new style of management, one that depends more on the people of the organisation taking responsibility for safety at all levels of the organisation. Not only personal safety but the safety of their colleagues, general public and the environment. With reduced number of people, and 'delayering' of an organisation, managers have to switch to a facilitating or co-ordinating role, as the controlling role e.g. close supervision, is no longer possible or effective. This often requires a culture change. In the case of BNFL the changes were not confined to the recent past, but began in the 1970's with the civil service culture, moving to a project culture in the 1980's with the building and commissioning of major projects, and needing to change to an business/operations culture to secure work for the company into the 21 Century.

The safety culture of an organisation is indivisible from the company culture, each aspect of a culture influences the whole and so the balance between business, safety and quality, has to be managed.

BNFL provides a full fuel cycle service to nuclear power plants, and associated services to many national and international organisations. The following notes are taken from the work carried out in the company, and mostly at the Nuclear Reprocessing and Waste storage Site at Sellafield, based in the North West of England. Following the recent re-organisation, the site now employs 6,200 people and has a further 1,500 contractors working on construction activities on the site. Activities on the site range from remote handling to hands on tasks, involving highly active materials to low level waste. These activities take place in old plant (> 30 years old) and new plant, and within the full life cycle of plants i.e. design, build, commission, operate, modify, decommission/re deploy, care and maintenance. Multiple types of tasks under many different conditions.

JUDGING IMPROVEMENT IN SAFETY CULTURE

In order to measure or judge improvement in anything, the starting point has to be determined. The two questions "What have we got?" and "Where are we?" have to be answered before sensible major programmes for improvement can be formed and implemented. Without these answers, any action will be blind and some may cause the opposite effect to that desired. Any technique(s) used for judging Safety Culture must be able to identify :

- 1 *Perceptions - What are the work force's opinions on the safety of their plant? Do they feel safe?*
- 2 *Attitudes - how do the workforce see their and others responsibility for safety? Are they proactive or are they passive? Is safety at work somebody else's job?*
- 3 *Strengths and Weaknesses - What do they do well? How do they compare with companies with 'good' safety performance?*
- 4 *Beliefs vs. Behaviours - Is what they say what they do?*

Once these factors have been identified management can then plan for change and monitor any change. At BNFL Sellafield, two methods were developed to identify "What have we got?" and "Where are we now?"

Sellafield Safety Attitude Survey

This was designed to identify the Safety Culture on the Sellafield Site and was planned in 3 stages.

1. *Focus group- 50 people were brought together as a discussion group to identify the topics and issues of main importance to safety on the Sellafield Site. A questionnaire for a much larger sample of people was developed.*
2. *Pilot Study - 161 people answered the questionnaire, and the technical validity of the questions, and the administration logistics were tested and improved.*
3. *Full Survey -During Autumn 1991, 5295 questionnaires 172 attitude questions were completed. These were analysed by Professor T Lee of St Andrews University.*

There were many detailed findings giving the strengths and weaknesses of the work force's safety attitude, and the results also gave indication where effort should be targeted. The survey also identified attitudes helping BNFL to develop its safety culture and contributing to improving safety performance, and those that were not.

Sellafield Safety Culture Review

A complementary method for judging safety culture was developed by BNFL using the foundation of IAEA's INSAG -4 (ref. 1) and the UK Government's Advisory Committee on Human Factors 3rd Report "Organising for Safety" (ref. 2). The review was developed and applied for the managers of 3 plants who were uncertain as to the true state of safety attitude on their plants, and how they influenced their workforce's safety culture.

Targeted interviews using a question framework developed from the above texts were used by the interviewers as a guideline to structure the interviews. Selection of personnel interviewed (both individuals/groups, shifts/days) were based on the role of the personnel within the plants, and included service groups, the plant's independent safety advisors and the Government Nuclear Installation (NII) inspectors directly involved in the inspection of the plant. The latter were included, as some measure of behaviour modification became apparent as the perceived result of contact with the inspectors.

The interviews identified the perceptions and attitudes associated with the plant's safety culture, which were then analysed to identify where they matched, conflicted, or were discontinuous. This process identified dominant attitudes and areas of conflict, along with the strengths and weaknesses forming their Safety Culture. From this, the plant developed a programme, building on their strengths to eliminate or neutralise their weaknesses, using participative team methods to engender ownership of plant and performance.

Attitude Survey and Safety Culture Review are complementary. They can be used selectively to address different aspects of a organisation's Safety Culture. The Safety Attitude survey, once developed, is easy to apply, and the analysis has a statistical basis so that confidence in the results can be judged readily. It gives a good overview of the dominant safety culture present in a population, and identifies the sections or profile of the workforce holding a dominant attitude. The Safety Culture Review looks at Safety Culture within a Plant's management system. Trained and experienced interviewers are required, and the analysis of the data is more complex. However it is able to follow the issues through and identify root causes of difficulties, and identify the possible root of the attitudes expressed. Judgement of behaviour is also able to be incorporated.

THE BUSINESS CASE FOR PRO-ACTIVE SAFETY MANAGEMENT

For an organisation to use resources to develop or improve their safety culture, tangible benefits must be evident. Traditional benefits of a good safety culture are : **Reduction of costs** - e.g. associated with waste, accidents, staff turnover, equipment and **Legal Imperatives**- e.g. costs of insurance, civil action, prosecution.

However, a more positive business case for a good safety culture can also be made with:

The Enhancement of Business Opportunities

A good safety culture can gain a company advantages when bidding for work. The improvement of quality and reliability, and associated gains in efficiency and effectiveness, can be directly related to having a good safety culture within an open management system.

A good safety performance is also an assisting factor for good industrial relations, and for promoting a culture of excellence. A company who wish to recruit quality personnel also require a good image. This in turn will assist the company to maintain a high public and business profile as a quality company. Potential customers prefer to do business with a non-controversial company.

The moral imperative

All industry has a responsibility to the people they employ, the general public, and the environment they can affect. Without this sense of responsibility there would be no control over actions by companies or individuals within the company. Damage due to irresponsibility cannot be totally quantified, and society places a value on morality. A good safety culture is one way of promoting and maintaining the sense of responsibility within a company's workforce, without the need for restrictive, punitive and costly management systems.

SHAPING AND CHANGING A SAFETY CULTURE

BNFL had to identify what culture they needed to develop a successful and smaller workforce for operating or decommissioning their existing plants, and for the new workforce that was to operate their new Thermal Oxide Reprocessing Plant (THORP). Workforce reorganisation required a clear statement of values and behaviours before team building could commence. The shaping action was developed and installed locally, for experience had shown that Central or HQ 'initiatives' can be forced through and led by the senior management, but eventually the initiatives can fail due to lack of local support. In a large organisation different sub-cultures require different shaping processes to move towards the desired culture. Within BNFL, the common theme was participation and involvement of all the workforce, led and supported by senior management. By promoting ownership of locally developed and installed shaping processes, the resultant improvements are normally faster and are more likely to endure.

All of the shaping processes identified to the workforce the behaviour demanded by the company. Once benefits to the individual are identified e.g. dose reduction, job security, attitudes are more likely to change. These shaped attitudes however, require commitment by management, consistency of application of behaviour demands and the benefits to individual and peer group identified and publicised.

One immediate benefit is that once an attitude change has been achieved, peer group pressure becomes a strong reinforcer i.e. "the way we do things around here" which then sustains the behaviours you require. This is a lot more effective and cost effective than continuous managerial pressure and policing.

Involving all persons in the workforce uses all the skills and ideas of the workforce, and improves communication allowing a quicker response to circumstances. There is a need to develop management to be receptive to workforce ideas, and comments, so that ideas are freely offered. Management in this environment are also more likely to be told of problems and their consequences earlier, before damage to people, plant or organisation occurs.

In summary, development of safety culture has a lot to offer an organisation in terms of safety, quality and productivity. The final step of 'empowerment' can only be achieved by trust in fellow worker's attitudes, and abilities, and sustained by continued empowerment even under difficult conditions. Improvement of the safety culture has to build on the existing strengths of the organisation and recognise the associated weaknesses. Once an improvement programme has been derived, management and workers must have patience with the process, and aim to monitor movement at regular intervals. In a large organisation progress will not be uniform across all departments, and actions successful in one sub-culture may be unsuccessful in another. Identifying visible successes and publicising them will encourage management and workers, and serve to silence persons in the organisation who wish to maintain the status quo. For an existing organisation, a step by step approach is a less painful method for change but ultimately an organisation cannot afford to carry 'passengers'. By involvement, the workforce can start to participate, by participation ownership develops, and finally by true empowerment, actions involving safety, production and quality are put in place at all levels of the organisation, naturally, efficiently and continuously.

REFERENCES

- 1 Safety Culture : IAEA Safety Series 75-INSAG-4, 1991
- 2 Organising for Safety: ACSNI Human Factors Study Group Third Report; HSC Books.