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**NUCLEAR ENERGY AGENCY
COMMITTEE ON THE SAFETY OF NUCLEAR INSTALLATIONS**

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**REGULATORY ASPECTS OF MANAGEMENT OF CHANGE
SUMMARY AND CONCLUSIONS**

Held from 10th to 12th September 2001, Chester, UK

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The mission of the NEA is:

- to assist its Member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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COMMITTEE ON THE SAFETY OF NUCLEAR INSTALLATIONS

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The CSNI constitutes a forum for the exchange of technical information and for collaboration between organisations, which can contribute, from their respective backgrounds in research, development, engineering or regulation, to these activities and to the definition of the programme of work. It also reviews the state of knowledge on selected topics on nuclear safety technology and safety assessment, including operating experience. It initiates and conducts programmes identified by these reviews and assessments in order to overcome discrepancies, develop improvements and reach international consensus on technical issues of common interest. It promotes the co-ordination of work in different Member countries including the establishment of co-operative research projects and assists in the feedback of the results to participating organisations. Full use is also made of traditional methods of co-operation, such as information exchanges, establishment of working groups, and organisation of conferences and specialist meetings.

The greater part of the CSNI's current programme is concerned with the technology of water reactors. The principal areas covered are operating experience and the human factor, reactor coolant system behaviour, various aspects of reactor component integrity, the phenomenology of radioactive releases in reactor accidents and their confinement, containment performance, risk assessment, and severe accidents. The Committee also studies the safety of the nuclear fuel cycle, conducts periodic surveys of the reactor safety research programmes and operates an international mechanism for exchanging reports on safety related nuclear power plant accidents.

In implementing its programme, the CSNI establishes co-operative mechanisms with NEA's Committee on Nuclear Regulatory Activities (CNRA), responsible for the activities of the Agency concerning the regulation, licensing and inspection of nuclear installations with regard to safety. It also co-operates with NEA's Committee on Radiation Protection and Public Health and NEA's Radioactive Waste Management Committee on matters of common interest.

* * * * *

The opinions expressed and the arguments employed in this document are the responsibility of the authors and do not necessarily represent those of the OECD.

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EXECUTIVE SUMMARY

Nuclear licensees are increasingly required to adapt to a more challenging commercial environment as moves to deregulate electricity markets gather pace. One of the costs that is often perceived as being amenable to control is staffing, and hence there is significant exploration of new strategies for managing staffing levels.

This report presents the outputs from a Workshop convened by the Special Experts' Group in Human and Organisational Factors (SEGHOF) of the Committee for the Safety of Nuclear Installations (CSNI) and organised by the UK Nuclear Installations Inspectorate (NII). The purpose of the workshop was to facilitate the exchange of views on, and approaches towards, the regulation of organisational change.

The major risks associated with organisational change were discussed, and a range of regulatory challenges was identified for detailed discussion. There was agreement that the licensee must retain the responsibility to manage its own business but that organisational issues should be subject to regulatory scrutiny if they have the potential to impact on safety. The regulator should be able to demonstrate an approach to oversight of organisational change which is valid, transparent and consistent, and should inform the licensee of its expectations in terms of information supplied, communication and timing.

The workshop confirmed that there is significant agreement between regulators concerning the need for licensees to put in place arrangements to manage organisational change. There was also broad consensus on what should constitute the elements of a licensee's management of change process. Differing views were evident about the balance between regulatory scrutiny of the *process*, as opposed to the *outcomes* of change, which largely represents differing regulatory regimes and philosophies. However, it was acknowledged that the regulator must be capable of taking an early view of the adequacy of proposed changes, rather than monitoring outcomes alone, since related problems may have a long latency period and may be difficult to rectify.

The workshop noted that effective regulation of organisational change has many elements, requires constructive and early dialogue between regulator and licensee and must take account of the drivers for the specific change. Areas warranting further research and development were identified.

1. INTRODUCTION AND OBJECTIVES

Most organisations undergo a process of continuous evolution as they adapt to changing market conditions or seek to improve their efficiency. The nuclear industry is not immune to these changes, and moves to deregulate electricity markets across the world have increased the pressure on nuclear generators to compete commercially. There is limited scope to increase the output of nuclear plants, and recent attention has focused on reducing production costs. In an industry which employs a high skill workforce, and which needs to maintain a wide technical base, one of the major production costs is staff wages. Proposals to reduce the number of staff directly employed by the licensees have been a recurring feature of many nuclear licensees' business activities in recent years.

It is clearly a nuclear licensee's prerogative to manage its own affairs and to seek to operate a cost-effective business. It is also the licensee's responsibility to ensure that the means by which this is achieved do not compromise nuclear safety. It can be argued that if changes to staffing levels or organisational structure are inadequately conceived or executed they have the potential to affect the way in which safety is achieved and managed. Therefore, it is appropriate for nuclear regulators to consider, and to adopt a formal stance on, the way in which nuclear licensees manage change. The regulator will wish to have confidence that change is being managed and controlled in such a way that it does not compromise nuclear safety.

Within the nuclear industry, all regulators share the challenge of determining effective methods for regulating a changing industry. Although the philosophy of minimising the potential for organisational change to adversely affect nuclear safety is shared, the detailed approaches and methods which are used are likely to depend upon the overall regulatory regime which is in place. It is clearly of benefit for nuclear regulators to share experiences and approaches to dealing with organisational change. In order to facilitate this exchange, the Special Experts' Group in Human and Organisational Factors (SEGHOF) of the CSNI convened a workshop in September 2001. This report presents the discussions which took place at that workshop, and its findings.

1.1 Workshop - Aims

This report presents the outputs from a Workshop convened by the Committee for the Safety of Nuclear Installations (CSNI) and organised by Dr Craig Reiersen from the UK Nuclear Installations Inspectorate (NII). It was held in Chester from 10th – 12th September 2001. The purpose of the workshop was to allow nuclear regulators from different countries to exchange views and approaches concerning the issues associated with management of organisational change, and the ensuing challenge for regulation of the nuclear industry. Twenty five participants from 12 countries attended the workshop. The participants are listed in Annex 3.

This document provides a record of the Workshop. The views expressed, and issues debated, by the participants were many and varied. There were several areas of agreement, although the report does not seek to set out only those aspects upon which consensus was reached or to present definitive and integrated guidance for regulating change. Nor does it pretend to describe and consider all the issues and challenges which face the regulators and the nuclear licensees. It should be viewed as a summary of the discussions that took place and should stimulate readers to consider the approach to organisational change which is taken by their own organisations.

2. BACKGROUND AND CONTEXT

Nuclear licensees, like any organisation, are undergoing change. They are increasingly required to adapt to a more challenging commercial environment as moves to deregulate the electricity markets gather pace. One of the costs that is often perceived as being amenable to control is staffing, and hence there is significant exploration of new strategies for managing staffing levels – for example, by reducing staffing levels, revising organisational structures, adopting new shift strategies or increasing the use of external contractors. Such changes do not necessarily present a threat to the safe operation of nuclear plants, and may indeed enhance safety. However, inasmuch as the potential for an impact on safety exists, it is appropriate for nuclear regulators to have a clear position which:

- Recognises the need for organisational change to be subject to regulatory scrutiny;
- Sets out the approach to organisational change which will be taken by the regulator;
- Defines the expectations which are placed on nuclear licensees.

Information exists to guide and support organisations that are undergoing change. For example, IAEA TECDOC 1226 – Managing change in nuclear utilities – provides nuclear industry-specific guidance. However, there is less information that addresses the particular issues for the regulator. The challenge for regulators is to identify an approach that acknowledges the licensee's responsibility for managing its own organisation whilst enabling the regulator to form an early and accurate view of the acceptability of proposed changes and change management processes.

The workshop provided an opportunity for regulators to consider the issues associated with management of change and to exchange views on approaches, challenges and issues for further research. This report provides a summary of the discussions and conclusions reached during the workshop. Inevitably it cannot properly represent the extent of those discussions, and should not be interpreted as representing the views of any one regulator or individual.

3. STRUCTURE OF WORKSHOP

The Workshop was entitled “Regulatory Aspects of Management of Change”. The objective was to provide a forum for open discussion of the challenges facing regulators. It was proposed and organised by NII, and the format was discussed and agreed at the CSNI’s Special Experts’ Group on Human and Organisational Factors (SEGHOF).

3.1 Day One

An opening address by the UK’s Chief Inspector of Nuclear Installations set the context for the workshop, and this was followed by syndicate and plenary sessions.

The first day was devoted to brainstorming sessions, in five syndicate groups, to identify the drivers for change and the problem areas and issues. The first syndicate session considered three questions:

- What is driving organisational change in each country?
- What are the principal forms of organisational change?
- What formal regulatory positions are adopted?

The second syndicate session on Day 1 considered current regulatory issues and concerns:

- Definition of issues and problem areas
- Overview of risks
- Overview of potential solutions

3.2 Day Two

A second presented paper on Day Two by Canada’s CNSC described an approach to assessing the adequacy of staffing levels in NPPs (Annex 1). Four generic issues identified following the previous day’s discussions were each then addressed by one syndicate:

- Elements of the licensee’s change management process;
- Competencies to manage change;
- Legitimacy of regulatory interest in ‘Human Resources’ matters;
- Dialogue between Regulator and Licensee during change.

The syndicates then reorganised to consider a total of six more specific issues arising from the previous day’s sessions. These six items were combined into three “headline” groups:

- Contractorisation and ‘Intelligent Customer’ Capability
- Resources, Succession Management and Corporate Memory
- Organisational Structure

During the final morning of the meeting, these three syndicate sessions reported back to the full group. Each participant was also asked to provide feedback on the workshop, and on the key messages which they had identified over the previous two days. The feedback is presented in Annex 2 without attribution.

4. SUMMARY OF DISCUSSIONS

The issues which were raised and discussed at the workshop are summarised below. A more detailed breakdown of the discussions which took place during each of the syndicate sessions is presented in Annex 1.

4.1 Syndicate Session 1- Overview of Organisational Change

4.1.1 *Drivers for Organisational Change*

There was broad consistency across regulators concerning the drivers for change: no-one identified drivers that were unique to their country. Drivers for organisational change included the following

- Deregulation and changes in the commercial market which have increased the commercial pressures on utilities, and hence the pressure to reduce costs and increase efficiency. This has also led to greater focus on short-term issues and returns for shareholders, and a reduction in activities that are perceived by utilities as ‘non-core’ activities.
- Changes in ownership, globalisation and international pressures have changed the way that utilities organise themselves, and how they secure essential services.
- Changes to technology and technical operations impact on management and organisational practices. These changes include ageing plant issues and decommissioning. They also include the introduction of new technology, particularly for support operations, and changing demands on the way that stations are operated (e.g. load-following).
- Labour issues have become significant, including contractorisation, centralisation, ageing staff, competence and organisational memory, attitudes towards working hours and work-life balance.
- Changes in public perception of the industry have had an impact on the manner in which the industry represents itself and how it operates.

4.1.2 *Forms of Organisational Change*

These mirrored the drivers summarised above and included:

- Cost reduction measures (increased efficiency, etc.)
- Changes in the way work is undertaken (multiskilling, contractorisation, outsourcing)
- Reduction in off-line services (safety support, shared services)
- Changes in management style
- Changes in staffing levels
- There was more variation in the experience of regulators concerning the forms of change than the drivers for change – utilities respond to the drivers in slightly different ways (e.g. some utilities have moved towards an increasingly devolved site-based structure whereas others have increased centralisation and common services). Generally, however, there was a consistent view that all

utilities were undergoing significant change in their organisational and management arrangements, and that these changes had the potential to impact on safety if not managed effectively.

4.1.3 Formal Regulatory Position

Common themes were identified including:

- Requiring the reporting of changes by licensees
- Reviewing the change process as well as the outcome (differences between regulators in terms of primary focus)
- Increased attention to organisational change
- Need for guidance on criteria, tools, etc.
- Identifying a 'baseline' (a justified statement of the adequacy of current organisational structure, competencies and resource - see Annex 1) is challenging, but important
- All regulators acknowledged the importance and validity of regulatory oversight of management of change.
- Some divergence in regulatory positions was apparent:
- Some regulators made submission of management of change information mandatory (e.g., through a licence condition) whilst for others it was voluntary or non-formalised – although regulatory interest remained common.
- Some regulators focused on the process of change, and the need for prior notification and analysis, whilst other focused on monitoring the outcomes and ongoing inspection.

4.2 Syndicate Session 2 – Defining Regulatory Issues & Concerns

4.2.1 Regulatory Issues and Concerns

An extensive list of potential areas of concern was produced. The issues included:

- Lack (or loss) of control by licensee (for example, through contractorisation, outsourcing)
- Staff issues (not enough relevant, competent, experienced staff; unclear roles/responsibilities/accountabilities, unmanaged or excessive workload)
- Succession management and corporate memory
- Management of change expertise within licensee (including importance of self- assessment)
- Regulatory remit and powers
- Need for indicators, standards, guidelines and criteria to assess organisational change

4.2.2 Overview of Risks

Immediate risks – failure to manage the change process such that nuclear safety is impaired (work backlogs, inadequate resources, loss of management control, etc.)

Delayed risks – failure to take actions now that would prevent erosion of safety in the future (succession management, training issues, loss of security of services, etc.)

Regulators perceived a risk that their failure to regulate the change process effectively could lead to inadequate licensee performance. They perceived the danger of a breakdown in licensee/regulator

relationships and loss of public confidence. They also recognised that failure effectively to regulate the process could lead to commercial failure of a licensee, or of the industry within a particular country.

4.2.3 *Overview of Potential Solutions*

There was agreement that the solutions to licensee issues should come from the licensees themselves. However, the regulator must take responsibility for ensuring the adequacy and transparency of its own assessment processes.

There was consensus about the regulator's role in influencing and promoting the appropriate licensee behaviours, and the importance of maintaining an effective dialogue. However, there were differing views on the extent to which the regulator could or should try to influence process as opposed to monitoring outcomes.

4.3 *Syndicate Session 3 - Generic Regulatory Challenges*

In Syndicate Session 3, four generic items distilled from the issues raised during Sessions 1 and 2 were further developed:

4.3.1 *Elements of the licensee's change management process*

The key elements comprised establishment of a baseline and clear statement of proposed change, followed by categorisation of safety significance, justification/evaluation, planning, implementation and review (including independent review where appropriate). There was discussion about the need to allow the licensee freedom to act, and to apply a pragmatic approach. Regulatory scrutiny should cover all aspects of the process, although as noted above there were different views about where the primary focus should be.

4.3.2 *Competencies to apply change management*

It was considered that licensee and regulator understanding of the issues was imperfect. There is much knowledge and experience, but it is not always formalised. The level of analysis of change proposals is not always adequate and 'early warning systems' about impending problems caused by inadequate change management are scarce.

There was no clear consensus on the manner in which these issues should be addressed. It was implied that development of Management of Change processes should be 'evolutionary', and pragmatic.

4.3.3 *Regulatory interest in the 'HR' aspects of change management*

Human Resources (HR) issues relating to morale, attitudes, motivation etc. were considered to be central to the process of organisational change, but it was difficult to establish their precise safety impact. Methods for assessing these impacts are starting to develop, and the provision of valid and reliable measures may change the relationship between licensee and regulator. The regulator must be aware of the impact of its actions on licensee behaviour. It is important not to lose sight of the need to assess outcomes as well as the change process.

The selection and use of tools is important – and the regulator must be careful not to constrain unnecessarily the licensee’s choice, or to impose inappropriate demands. However, the regulator should be prepared to offer some guidance.

4.3.4 *Dialogue between Regulator and Licensee*

The importance of the dialogue was recognised. There was concern that licensees and regulators did not always have a clear focus for the dialogue. Dialogue would help ensure a common perception of the importance of specific issues, and hence avoid perceived unnecessary regulatory burden.

The change management programme must be clear and visible, and should acknowledge the regulator’s role, and the timing of its interactions with the licensee. The regulator must express its own views clearly, and there must be an agreed end-point to the change process.

4.4 *Syndicate Session 4 - Specific Issues*

In Syndicate Session 4, six specific items identified during Sessions 1 and 2 were further developed. These were combined into three topics as follows:

4.4.1 *Regulator awareness and assessment of licensee approach to contractorisation*

The regulator must be able to form a judgement of the licensee’s ability to act as an intelligent customer. The licensee should have a clear policy, which sets the boundaries of contractorisation and includes a statement of what will not be contracted out. The licensee must retain its competence and capability to assess the quality of work, and to apply the same standards to contractors as to its own staff. The licensee must retain supervisory and management powers.

The regulator should consider all elements of the contract lifecycle, but must form a judgement about the level of scrutiny demanded by particular proposals.

4.4.2 *Resources, succession management and corporate memory*

Resourcing is seen as an issue both at workforce level and middle management. The regulator needs to see the licensee use an established baseline which sets out and justifies its resource levels. Informal data from site inspectors is valuable. The regulator’s judgement will be influenced by the adequacy of the baseline and the change management process. These factors could help the regulator to make predictive judgements about specific change proposals rather than to react to observed deficiencies which may be difficult to rectify (e.g. when staff have left the organisation).

Licensees must adopt a proactive approach to succession management. There was limited agreement as to whether the regulator should be concerned only with contingency arrangements for short-notice replacement of safety critical activities, or whether it should also be concerned with long-term arrangements and planning. Some regulators considered the latter to be merely a business management issue. Others held that the utilities must be able to show how they anticipate and plan for staffing needs several years ahead because issues such as staff retention and recruitment of suitably trained personnel can require longer-term strategic action.

4.4.3 *Organisational structure*

In order for the regulator to understand and make judgements about the adequacy of organisational structure, the regulator/licensee dialogue must be timely, relevant and involve the right people. Concerns were raised about inadvertently reducing the licensee's freedom to operate, and it was observed that agreed, relevant and practical criteria are required. These must be agreed in advance such that both parties understand how success will be monitored.

5. CONCLUSIONS

A number of conclusions can be drawn from this workshop.

1. There was general agreement that:

- Organisational change can be positive, and change should not always be perceived as posing a threat to nuclear safety. However, inadequate change management has the potential to impact on nuclear safety.
- Licensees should set out formal management of change arrangements which describe their processes for specifying and controlling organisational change.
- Regulators have a legitimate interest in licensees' management of change arrangements.
- The drivers for change are common across countries & the pace of change is increasing.
- The manner in which change is implemented differs within and between licensees.
- Various models and approaches to change management exist and can be drawn upon.

2. There were differing views on:

- The balance between regulatory scrutiny of the process, or of the outcomes of change.
- The extent to which the regulator should provide guidance, or determine the process.

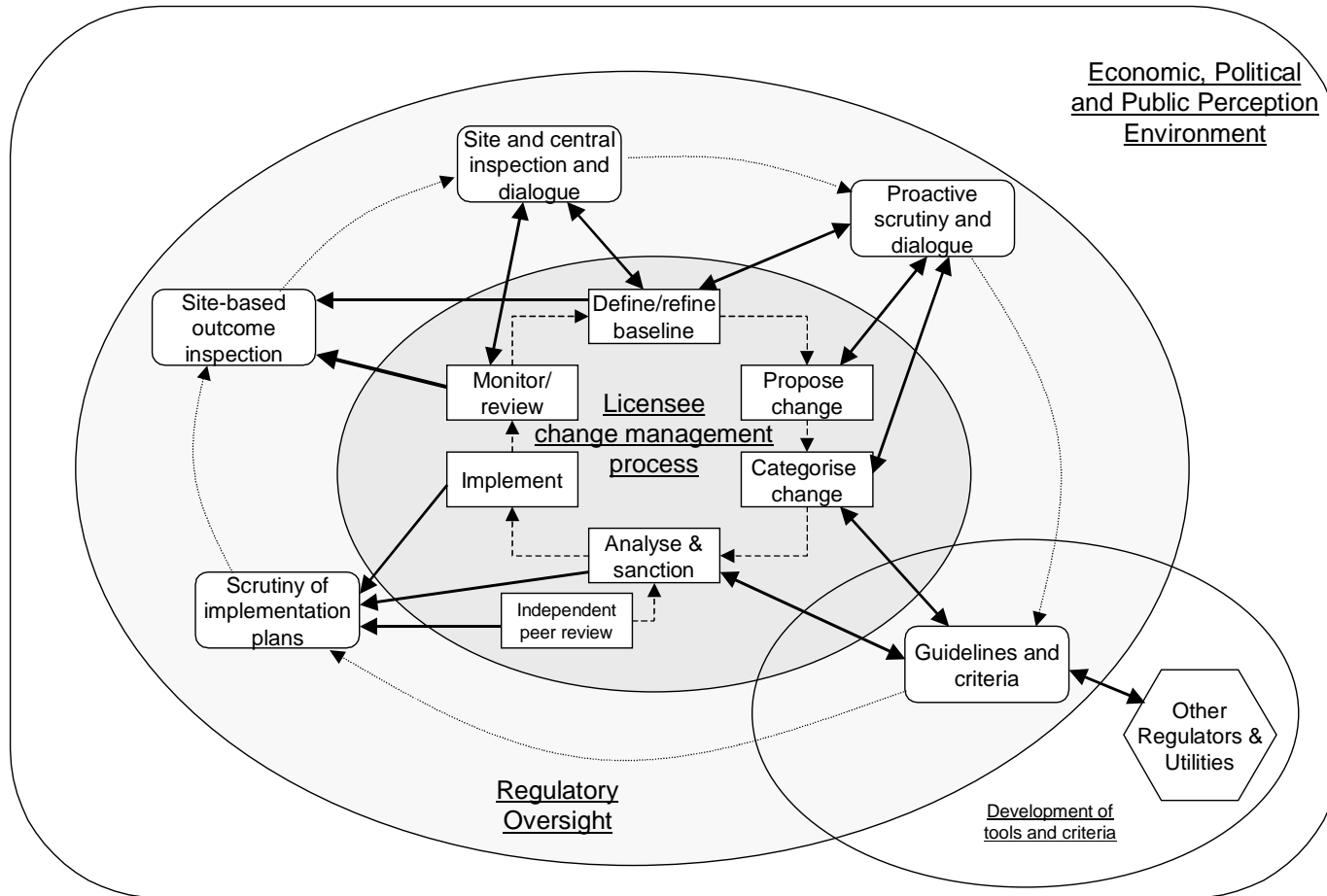
3. The challenges:

- Organisational change takes many forms, and management of change arrangements should be able to recognise and accommodate these different forms.
- Licensees must retain the responsibility to manage their business.
- The regulator must be capable of taking an early view of the adequacy of proposed changes, rather than waiting for inappropriate outcomes.
- Organisational issues should be subject to regulatory scrutiny where those changes have the potential to impact on safety, but there must be agreement on how that impact is assessed.
- The regulator should be able to demonstrate a valid approach to oversight of management of change, and to communicate to the licensee its expectations in terms of information supplied, communication and timing.
- The regulator must be able to demonstrate how the approach that it adopts is consistent with robust oversight of the process employed by the licensee.
- Short-term pressures within the licensees may tend to reduce their commitment to long-term arrangements (e.g. succession management, maintenance of corporate memory, securing essential services, etc).

4. Regulatory approaches:

- Close review/scrutiny of the process of management of change. This approach is focused on the activities deployed by the licensee to manage change. It is potentially proactive, but less amenable to specific criteria for performance assessment.
- Close review of the outcomes of change. This approach provides robust data concerning beneficial or adverse impacts on safety, and can use methods and criteria that are widely accepted. However, it is less capable of providing early warning of actual or potential deterioration in safety performance, and the process may not be easily reversible. It may also be difficult to disentangle the influences of separate changes.
- Guidance and standard setting. This approach encourages licensees to adopt particular methods and guidelines. It is potentially helpful, but risks imposing inappropriate constraints on licensees' business management, and may compromise the regulator's independence.
- Passive monitoring by exception. This requires the licensee to notify changes, but the regulator will not always scrutinise. Adverse impacts are picked up through routine inspection.
- In practice a mix of approaches appears to be adopted by most regulators. The regulator needs to be able to defend its decision about which approach (or approaches) it applies in a given situation.
- The complexity of the licensee/regulator interactions that are required for effective and appropriate regulation of organisational change is represented in Figure 1 (derived from discussions at the workshop). It suggests that effective regulation of management of change has many elements, requires dialogue with between regulator and licensee and must take account of the drivers for the specific change.

Figure 1: Regulatory Oversight



6. RECOMMENDATIONS

The following recommendations are distilled from the discussions throughout the workshop. They do not represent the views of any one participant, nor do they necessarily represent the majority view. They comprise a list of potential actions derived from the outputs of the workshop.

Regulators should:

- 1) Make explicit the regulatory interest in management of change.
- 2) Clarify regulatory expectations and objectives concerning management of change.
- 3) Adopt a pragmatic approach & not impede legitimate business practices.
- 4) Adopt a flexible approach to change, recognising the diverse drivers for change and the alternative business strategies that can be adopted by licensees.
- 5) Seek and combine information from a variety of sources.
- 6) Ensure the licensee develops and uses an effective baseline.
- 7) Consider how to obtain early indicators of the adequacy of the change process (e.g. by examination of the steps in the process).
- 8) Ensure that proper oversight is maintained of the outcome of the change process, and of the monitoring and review processes applied by the licensee.
- 9) Encourage licensee self assessment.
- 10) Scrutinise 'soft' issues such as morale, working practices, culture, etc.
- 11) Focus on the steps taken to retain effective control, and to maintain knowledge, competence and the ability to act as an intelligent customer.
- 12) Consider how to develop and resource its own expertise in management of change processes
- 13) Develop criteria and tools for regulatory judgement.
- 14) Maintain dialogue with other regulators to share experience (recognising appropriate national differences).
- 15) Maintain dialogue with licensees to ensure timely and effective scrutiny without imposing an unnecessary burden.
- 16) Maintain the licensee's focus on safety during change and seek evidence that this focus is in place.
- 17) Maintain the licensee's focus on long-term safety issues.

7. ANNEX 1 - DETAILED SESSION OUTPUTS

7.1 Introduction

This section provides a summary of the presentations and discussions throughout the workshop. The comments made following presentations from syndicate groups have been reported without being attributed to any one country or speaker. Furthermore, the comments have themselves been summarised and hence it should not be assumed that they represent only the view of one speaker. Many contributions were made during syndicate sessions, or in response to other comments, and therefore may not be reported separately in this document.

7.2 UK NII Position – Keynote Address by NII Chief Inspector

The background to the workshop, and its orientation, was set out by Laurence Williams (UK Chief Inspector of Nuclear Installations) when he introduced the workshop. He noted the ever-increasing pace of change within the industry, including cost-reduction initiatives, new ways of working, and extensive use of contractorisation.

He described the background and effect of the introduction within the UK regulatory regime of Licence Condition 36 – Arrangements to Control Change (LC36). He noted that the NII had recognised, in retrospect, that there had been some adverse effects of change within licensees, such as the loss of expertise, which had not been recognised initially. Whilst fully acknowledging that it was the licensee's prerogative to manage its own activities, it remained the regulator's responsibility to ensure that change is managed and implemented safely.

The principles that underpin LC36 include the provision of a Baseline Assessment that indicates where the organisation is initially, followed by a demonstration based on formal analysis, operational experience, or management systems.

The extent of the analysis should span all staff, departments and systems that are relevant to the maintenance of nuclear safety – and hence includes headquarters and central functions as well as site-based activities. As with other safety-related assessments, changes should be classified according to safety significance, to assist both the regulator and the licensee. It facilitates the proportionate application of change management processes, and provides for regulatory intervention.

It was noted that the change process continues, and that the development of baseline assessments also continues, with better substantiation being required. The value of LC36 continues to be demonstrated. Other required features of licensee's arrangements are:

- Prevents deliberate “salami slicing” – where a series of cumulative changes is presented which individually may not appear to be significant but which, when taken together, comprise a more significant change which should be subject to more rigorous change control
- Provides a conservative approach for borderline issues

- Provides a documented process for review.
- Gives the regulator the power to:
 - Direct the licensee to halt change.
 - Consent to specific changes.

A number of particular change management issues which had been identified by NII were highlighted:

Licensability – clarification of who is the licensee: the user of the site who is responsible for day-to-day control of operations; the provider of resources: the need for the licensee to maintain the competence to understand and control hazards

Contractorisation – there is no objection in principle, provided that the licensee can demonstrate a continued capability as an ‘intelligent customer’ for contracted services, and that it can demonstrate appropriate management of contractorisation and control of the process (monitoring, performance indicators). The LC36 baseline assessment should include the use of contractor resources, and should deal with the controls which the licensee has put in place.

Intelligent Customer Capability – this must be maintained. There must be an understanding of nuclear safety requirements, and the licensee must take responsibility for ensuring standards and adherence to Operating Procedures. This responsibility cannot be discharged through the contractor. The licensee must continue to take decisions which have the potential to impact on nuclear safety.

7.2.1 Discussion

How does the regulator become aware of salami slicing? NII suggested that some changes were clearly significant, but reliance is also placed on site inspectors to monitor a register of proposed changes which licensees are required to maintain.

The availability of competent people was important.

There can be difficulty in foreseeing some of the implications of change. Where should the defences in the system be.

Should the regulator evaluate the proposed change, or the process of analysis? NII view is that it is important to do both.

The baseline covers the licensee – does it also cover contractors’ own organisations? NII view is that it should only cover the licensee, but this should make explicit where contractors are used.

What is the impact of globalisation? NII view is that globalisation is increasingly becoming an issue. Within the UK the parent organisation British Energy is not a licensee, and BNFL now has UK sites that are managed from the US. This trend demands liaison between regulators.

7.2.2 CNSC Presentation on Development of a Staffing Review Method for Nuclear Power Plants

The text below is taken from the Executive Summary of a report prepared for the CNSC by Sheri Williams, and presented at this workshop.

This project was undertaken to provide the Canadian Nuclear Safety Commission (CNSC) with information that it can use in 1) reviewing nuclear power plant current staffing levels as part of the CNSC Compliance Program and 2) reviewing nuclear power plant proposals for staffing level changes, i.e., downsizing. The information can also be used to advise licensees of the factors which they will be expected to consider with regard to staffing and it will prompt them to perform suitable analyses. The

purpose of the data compilation was to identify the safety-critical groups that exist within NPPs and the criteria which the CNSC will use when reviewing the adequacy of current staffing levels and licensee proposals for downsizing staffing levels. To accompany this, the CNSC methods and performance indicators in use which monitor (to some degree) staffing levels were reviewed. The methods and performance indicators currently *not* in use at the CNSC were also identified. Recommendations were made regarding the methods and performance indicators which CNSC staff could incorporate on a more regular basis to assess staffing adequacy into the ones already employ.

7.3 Syndicate Session 1 – Overview of Organisational Change

Participants divided into five syndicate groups, each of which considered the following questions:

- What is driving organisational change (in each country)?
- What are the principal forms of organisational change?
- What formal regulatory positions are adopted?

Outputs from each Syndicate have been combined to provide a synthesised overview.

7.3.1 Drivers for Organisational Change

The following drivers for change were identified by the syndicate groups:

- Global electricity market
- Deregulation and privatisation
- Consolidation and ownership (national and international)
- ‘Kyoto’
- Economic pressures – short-term optimisation, shareholder returns
- International Pressures
- Accidents
- Decommissioning and end-of-life issues, plant aging
- Political issues
- New technology – automation
- New approaches to operations
- Labour issues
- Contractorisation
- Centralisation
- Ageing staff
- Competence and organisational memory
- Mobility
- Public perception (safety, environment)
- Energy demand
- Attitudes
- Working hours
- Working styles
- These drivers can be grouped under generic headings:
- Deregulation
- Commercial environment
- Public perception and expectation
- Ageing industry (plant and workforce)
- Technology changes

There was broad consistency across the groups, and across the countries represented. Particular concerns for specific countries included:

- Environmental issues/impacts – Canada
- Respect for public/others – Canada
- National Legislation changes – Germany, Canada, South Africa
- Economic competition – Belgium
- Economic deregulation – Spain
- Social/Political influences – Spain
- Ageing industry – GB
- Trades Unionism – South Africa, Canada.

7.3.2 *Forms of Organisational Change*

- Contraction/Consolidation
- Downsizing
- Expansion
- Re-engineering
- Outsourcing
- Multiskilling
- Privatisation
- Partnering
- Production-focused safety
- New business models/values/mission
- Reduction in safety support
- Shared services
- Business structure (holding companies etc)
- Globalisation of suppliers
- Changes in working practices (hours etc)
- Short-term optimisation (stopping some activities)
- Management style (eg ‘management by stealth’; ‘salami-slicing’)
- Consolidation – combining duties and workloads
- Structural streamlining – management simplification.

The forms of change follow similar groupings to the Drivers:

- Deregulation/commercial environment – new business models, production focus
- Staffing changes – downsizing, multiskilling, shared services
- Use of external resources – outsourcing, partnering
- Management style – production-focused safety, short-term goals
- Technology and ageing plant are drivers for change, but the organisational change issues of concern to regulators are manifest through methods of working and changes in staffing structures etc.
- There were differences between licensees in terms of the ‘direction’ of change. Some licensees were pursuing a policy of ‘centralisation’, with functions previously provided at site now being provided as common services across sites – or even across licensees. Others were pursuing a policy of ‘decentralisation’, with services being provided locally at sites.

- In other respects there were common themes – oriented around an increasing business focus that led to stopping activities that were not considered core activities (but which could have secondary links to safety performance). There was perceived to be an increased resistance to automatic acceptance of regulatory requirements, and a trend towards reducing safety support services.

7.3.3 *Formal Regulatory Position*

A number of different regulatory positions and approaches were apparent, although there were common themes:

- Reporting of staffing changes
- Assessment of change without specific standards (i.e. no formal regulatory position)
- Provision of guidance – criteria for evaluation
- Review of management of change ‘process’ and ‘product’
- Focus on the process of management of change
- Increased attention to organisational change
- Identification of more precise requirements
- Acknowledge difficulty in developing baseline requirements
- IT developments and ‘economy of scale’ lead to centralisation
- Issue of regulating headquarters functions
- Issue of regulating international activities

Some specific regulatory positions were also summarised (these are observations from some of the participants, and may not fully represent national positions):

Country	Position
Belgium	Requires justification for change (not formalised) Similar process to plant changes
Canada	Does regulate change, via 2yr licence period Staffing is a licence position Management of change information submitted voluntarily (not licence position)
Japan	Site organisation is documented in Safety Preservation Rules which are approved by the regulatory body. Nuclear Safety inspectors confirm the compliance with the Rules at each nuclear installation
South Africa	Requires justification for change (not formalised) Similar to plant changes
Spain	Yearly reporting of staff changes
Sweden	Regulator is notified of change Process is required to manage organisational change Process is required to determine adequate personnel numbers and competence
UK	Uses Licence Condition 36 to regulate via Site Licence Management prospectus required at time of licensing

In summary, there was broad consensus concerning the drivers for change, and the form that organisational change currently is taking. It was recognised that not all the drivers are present at all times, and that different licensees may implement change in different ways.

The formal position on regulation of change differs from country to country. Generally there was a recognition that it was for the licensee to declare changes, but the regulatory response to this varied. Although the value of proactive assessment of the potential impact of proposed changes was understood, there was a common view concerning the difficulty in achieving this. The UK 'baseline' approach was seen as having value, but the challenge of implementing it was understood.

Monitoring of organisational change was limited, even though there was a common understanding of the value of assessing the change process rather than only assessing the outcome. The need for, and lack of, tools, standards and criteria was highlighted.

7.4 Syndicate Session 2 – Defining Regulatory Issues and Concerns

The five syndicates each separately 'brainstormed' current regulatory issues and concerns:

- Definition of issues
- How issues manifested themselves
- Overview of risks
- Overview of potential solutions

7.4.1 *Issues and concerns, and how they are manifest*

- Lack of control by licensee (e.g. of Contractors).
- Not enough people – 'intelligent customer', resultant safety culture.
- Competence – impact of multi-skilling, training and maintenance of skills.
- Unclear roles/responsibilities/accountabilities.
- Availability and prioritisation of central resources.
- Excessive or 'unmanaged' overtime.
- Workload changes – increased failure rates, reduced independent verification, communications problems, poor quality work.
- Succession management.
- Work not being done (backlogs) – plant improvements, maintenance.
- Loss of corporate knowledge/memory – intellectual and 'emotional' meaning of safety, documentation vs. skills of the trade, design basis and as-built details.
- Failure to communicate within the organisation.
- Loss of support infrastructure – e.g. design.
- Loss of confidence in management decision making.
- Erosion of emergency response capability.
- Does the regulator have a mandate to regulate organisation and management (O&M) competence, tools and methods?
- Does the licensee have expertise/ to self-assess O&M?
- Who can provide technical support to regulator and licensee?
- Need for criteria and standards to assess O&M.

- Need proactive indicators – sampling plus judgement.
- Must not restrict licensee from taking responsibility for process – how does regulator know when to intervene.
- Nuclear safety must be ensured during a change process – the regulator needs to be assured of this.
- Licensees can change their ‘agenda’.
- Use of contractors – failure to integrate work activities, configuration control problems, accountability issues.
- ‘Psychological’ impacts – morale, vigilance, reporting problems, job security fears.

These issues can be categorised under six headings:

- Licensee’s ability to understand and manage change.
- Regulators ability to understand and assess change.
- Loss of corporate memory, competence.
- Workload changes, resource availability.
- Increased importance of self-assessment, and ability to do so.
- Contractorisation and outsourcing.

7.4.2 *How might above Issues be Manifest*

A number of themes were identified that illustrate the impact of the issues:

- Multiskilling – issues of reduced standards of training, reduced standards of work, loss of secondary skills, failure to recognise needs.
- Licensees may not have arrangements for managing change – analyse, plan, implement, evaluate.
- Different regulatory approaches – definitive rules vs. judgement of process.
- Lowered morale.
- Apparent lack of control (unintended or deliberate).

7.4.3 *Risks of poorly conducted Organisational Change*

There was broad consensus that the risks associated with organisational change, and stemming from the issues listed above, could be considered under two headings:

Immediate risks – failure to manage the change process such that nuclear safety was impaired (e.g. work backlogs, inadequate resources, etc.)

Delayed risks – failure to take actions now that would prevent issues arising in the future (e.g. succession management issues, training issues, etc.)

The manifestations of the issues, and hence the risks, tended to be viewed in terms of licensee performance. Due to the clear perception that licensees must remain responsible for safety, and must recognise that responsibility, the challenges in terms of regulating change were not made explicit, other than in terms of the need for tools and techniques to support the regulatory process. It is believed that this means the risk from regulatory failure remains the risk that the change management process is inadequately conceived or implemented, and hence that the licensee is no longer able properly to manage nuclear safety risks.

Additional agreed risks included the economic failure of the licensee, breakdown in licensee/regulator relationship, and loss of public confidence. There was also recognition of the possibility that the industry could become non-viable within a particular country, and hence that successful management of change was considered of paramount importance, not just for nuclear safety.

7.4.4 Potential Solutions

A range of solutions was identified, addressing different issues. Solutions for licensee issues should come from the licensees, and not from the regulator. However, the regulator must take responsibility for ensuring that its own assessment processes are robust and adequate, and can influence the licensee to develop solutions.

7.4.4.1 Regulator-influenced activities

- Promote use of valid evaluation tools.
- Promote licensee self assessments.
- Promote WANO/peer reviews/IAEA OSART/OSCAR.
- Improve regulation of staffing levels.
- Improve dialogue between licensee and regulator on 'good' O&M.
- Review process and outcome.
- Encourage licensee to be insightful and apply effort.
- Allow licensee to demonstrate organisational learning.
- Use sampling to build confidence.
- Develop universal frameworks for making judgements.

7.4.4.2 Licensee activities

- Develop and implement a skills maintenance plan.
- Identify 'safety critical' areas and monitor O&M closely.
- Better co-operative research on international models.
- Improve classification and prioritisation of changes.
- Demonstrate organisational learning.

In summary, the conclusion from this session was that there was a broad range of issues arising from change and failure to manage its implementation effectively. The breadth of issues demonstrates that change management affects all aspects of licensee activities. Furthermore, whilst the regulator is concerned only with nuclear safety, in practice this requires that they consider a very broad range of issues.

A further conclusion was that failure properly to manage change could have very serious consequences, but that those consequences might not be immediately apparent and recovery difficult. Consequently, the importance of understanding the quality of the change management process at its start was critical. Failure to manage the process properly from the start could lead to situations that were increasingly difficult to resolve.

A number of potential solutions to the issues raised were identified. There was a clear recognition that the licensee's responsibility for safety must not be diluted by inappropriate regulatory action. However, it was recognised that there was a range of actions that could be taken by the regulator that could encourage and foster the licensee behaviours that were required.

7.5 Syndicate Session 3 – Generic Regulatory Challenges

At the conclusion of Day 1, the issues raised were grouped into five generic headings, in order that the Syndicate groups could then each consider one area in detail.

These five headings cut across the issues described in the previous section, and focused on regulatory activities and interests. The headings were offered to the workshop for discussion, after which it was agreed that only four would be taken forward:

- 1) What are the essential elements of licensee's change management process?
This covers the manner in which a licensee should attempt to manage the change process, and hence what the regulator should be looking for and assessing
- 2) What are the competences needed to apply change management processes (licensee and regulator)
This covers the skills and capabilities that a licensee will require if it is to be capable of managing a change process effectively. It also covers the skills and abilities required of the regulator if they are to be able to discharge their responsibilities properly.
- 3) How does the regulator take account of 'regulatory burden' on licensee (eg application of classification processes)?
Regulatory oversight and intervention can impose a significant burden on the licensee. The regulator needs to understand the nature and extent of this burden, and how to minimise unnecessary impact.
- 4) What is the extent of the regulator's legitimate interest in the 'HR' aspects of the licensee's change management process?
'HR' issues can have a significant impact – not only with respect to training, multi-skilling, workload and staffing arrangements, but also in respect of morale, overtime, career aspirations, job security and succession management. The regulator needs to be clear what are the nuclear safety implications of these issues to be able to apply effective regulatory oversight.
- 5) How does the regulator foster and maintain a constructive dialogue with the licensee throughout the change process?
If the regulator is trying to assess the licensee's intentions and how they are proposing to manage the change process, then a constructive dialogue is essential. The regulator, deliberately or inadvertently can influence the success of that dialogue.

Other generic themes can be identified, such as the requirement for regulatory tools. However, the workshop participants agreed that this set provided a broad spectrum. It was agreed that G3 – Regulatory Burden – would not be considered further.

For each topic described below, the points raised by the Syndicate group are noted, followed by any comments raised in discussion.

Each Syndicate was asked to consider:

- Problem definition
- Knowledge, experience and practice
- Gaps
- Recommendations.

7.5.1 *G1: What are the essential elements of licensee's change management process?*

Syndicate Feedback

- Development of a baseline: job analysis, impact on safety, etc.
- Statement of proposed change
- Categorisation of change – analysis of safety implications
- Justification
- Implementation plan (change process, pre-requisites)
- Independent assessment (peer review)
- Monitor/review and feedback
- Re-state baseline.

Discussion

Some comments were noted relating to baseline development. It is developed slowly over time. Ideally it must be provided before change commences. It will be conducted with varying levels of rigour, depending on the issue and the proposed change. It must be developed with a degree of pragmatism. It is merely a justification – it is not a discipline or an end in its own right. Ideally, it needs to be developed well in advance of any proposals for change, and hence should be constantly developed and updated.

The question was raised of how one ensures that existing documentation is adequate and valid. It was noted that there was a range of different regulatory positions on this.

It was observed that the assessments should go beyond a simple 'static' description and should instead consider dynamic performance.

The importance of the pragmatic use of existing performance indicators was mentioned, and then to apply a Management of Change assessment process to consider change.

Even changes that are intuitively beneficial should still be subject to proper baseline assessment.

The danger of becoming too engrossed in simulator studies and assessments was highlighted. At the extreme, the option should remain for the licensee to implement change and demonstrate through inspection that the effects are beneficial, or that detrimental effects have been controlled.

A question was asked as to where the regulatory involvement should be best located. One comment was that it could arise at any stage in the process. There was some agreement that regulatory scrutiny should certainly be apparent at the 'justification' stage, but that it was not limited only to that stage.

7.5.2 *G2: What are the competences needed to apply change management processes (licensee and regulator)*

Syndicate Feedback

The issue:

Industry has focused historically on engineering and 'scientific' problems. It has no competence in human problems and organisational impacts.

Human Factors tends to focus on the human-machine interface and individual psychology issues. Historically it has not focused on organisational issues.

There is a lack of knowledge about organisational and system issues.

An inadequate understanding of the effect of organisational change on plant safety.

Knowledge, Experience and Practice.

Significant knowledge, experience and good practice outside the nuclear industry.

There is significant knowledge, experience and good practice inside the nuclear industry, but it is not drawn together in a structured or 'formalised' manner.

Gaps

There is only minimal risk analysis and risk management for organisational change.

It remains unclear how best to develop a baseline.

Early warning systems of impending change management problems are scarce.

There is minimal regulation for Management of Change.

Recommendations

Safety management systems must include arrangements for management of change, and management of change competence.

Baseline requirements for Management of Change should be clarified.

Current approaches to management of technical change/plant modifications should be used as a model in respect of organisational change.

Discussion

The pragmatic value of the use of the technical change model was noted, but the question was raised concerning what competence is required from the regulator, and whether this was management competence?

Different groups solve problems in different ways. Caution was expressed about transporting conventional management models (typified by 'MBA' thinking) into the nuclear and H&S context.

Better use of organisational psychology was suggested, as was the need to understand the engineering mentality that was prevalent within the industry, and hence the need to 'sell' the benefits of the psychological approach internally.

7.5.3 Regulatory interest in the 'HR' aspects of change management

Syndicate Feedback

The Problem:

Scope of 'soft' issues

Motivation

Stress

Culture

Morale

Organisational issues and technical issues are equally legitimate based on potential safety impact.

Difficulty in establishing the potential safety impact of an organisational or 'soft' issue.

Knowledge, Experience and Practice; Gaps

There is much discussion of the links between organisational issues and safety, but too little practice and methodologically sound demonstrations

Methods to assess organisational issues are starting to be developed

Methods are likely to require changes in the relationships between licensees and regulators

Recommendations

More studies on links between safety culture/organisational issues and safety; in particular more international studies.

Regulator must be more conscious of the effect of their actions, and its impact on the licensee's organisation and culture.

There is a need for greater confidence and 'courage' in developing methods for assessing organisational issues – acknowledging that it is both difficult and different.

There needs to be a good balance between methods accepted by engineers, and methods focused on organisational issues.

It is important to distinguish and maintain a good balance between the requirements for assessing the process, and for assessing the results of the process, e.g. what is a good change management process vs. what is a good organisational structure/safety culture. Whilst it is important to assess the process, it is also important not to lose sight of the fact that the resultant change is what affects safety.

Discussion

One view was that ultimately it is important to monitor performance, and that an excessive focus on the change process will be unhelpful. If current performance monitoring and reactor oversight processes identified degradation, then the regulator would address this and investigate. They do not prescribe. The licensee describes the organisation. If they intend then to make any changes, they must inform the regulator.

It was noted that there are different regulatory mandates.

One regulator commented on concern about increasing the regulators mandate, and the potential resource demands that this could generate. They also raised the question of whether the regulator can expect the licensee to use relevant tools, or whether it should prescribe tools and approaches. They emphasised the importance of understanding the current situation and hence the context in which change was proposed.

They also noted that there was a range of options available to the regulator: they could ignore the change process and merely allow the licensee to continue to manage their activities; they could assess the safety case processes, where they should have a view but ensure that the licensing process remains independent; they could assess the safety case outputs. An amalgam of the last two approaches seems appropriate.

A comment was made by another regulator that there was a need to maintain a balance between the resource demands of the change management and baseline development process, and the benefits that would accrue.

They also observed the importance of financial control systems and corporate governance. There was a need for external overview to maintain public confidence.

Awareness of safety management system issues tends to arise only after technical issues have been addressed, and that there is a continuous improvement issue.

It is often possible for the regulator to get caught in industrial relations issues, finding itself in the middle between the utility and the unions.

There was a need for a variety of peer review processes. Peer review should consider soft factors. There would be benefit in corporate review up to CEO. Licensees must undertake self-assessments. It was observed that licensees like the regulator to undertake assessments because it is visibly more independent.

The regulator must be prepared to offer guidance. There were too many different ways of undertaking management of change and hence the regulator should indicate what it is expecting to see, and in what form the evidence should be presented. Different regulators and different licensees tend to lead towards different positions on the continuum of external assessment.

The regulator must continue to monitor self assessments. This should be done in conjunction with the data already available to the regulator from routine inspections. A comment was raised as to whether the quality of data from routine inspections was always sufficient for these purposes.

In summary, it is apparent that all regulators perceive a legitimate interest in 'soft' issues and O&M. There were some differences in the manner in which they address this interest, ranging from taking a 'hands-off' approach and focusing on outcomes, carrying out regular O&M inspections, emphasising the importance of self-assessment, through to some regulators adopting flexible positions. Generally, all regulators acknowledged the need to maintain a view on the adequacy of O&M arrangements.

7.5.4 *Dialogue between Regulator and Licensee*

Syndicate Feedback

Problem

Lack of clear focus for dealing with O&M within licensee.

Regulatory interest in O&M seems novel to the licensee.

Approaches to planning and managing change appear novel and uncertain to the licensee – they are more familiar with the better developed approaches to technical assessment.

The impact of O&M factors is often not clear, and hence the regulatory burden is perceived as being inappropriate; additionally, the safety implications may not be fully considered.

The regulator can be perceived as questioning management competence.

It is not clear whether either the licensee or the regulator have competent staff in this area, i.e. management systems/experience.

Great sensitivity to change – personnel affected, share price, etc.

Potential for conflicting licensee/staff views – e.g. who is affected, 'power games', etc.

Knowledge, Experience, Gaps

There is a need for a clear management of change process, defined by the licensee and accepted by the regulator.

Management of change programme steps need to be made explicit and agreed at the start.

The programme should be visible to all, especially the regulator.

The programme should explicitly acknowledge the regulator's role, and information needs.

Early identification of issues, to avoid: late and 'nasty' surprises; expense and inconvenience; perception of regulatory burden.

The regulator must respect the confidentiality of proposed changes.

The regulator must have an internal assessment plan.

Recommendations

Process – the regulator and the licensee need to consider their own processes and how they interact with each other.

There needs to be a clear focus within both the regulator and the licensee for contact and communication on O&M issues.

The regulator must provide clarity of its requirements.

There must be a clear and agreed end point for the change process under review.

Responses by the regulator and the licensee must be timely, taking account of the pace of the change process.

Discussion

One regulator questioned whether the regulator ‘recognises’ or ‘approves’ change processes. Another noted that not all regulators would wish to ‘approve’. Businesses do not like uncertainty.

Licensees tend to expect the regulator to be clearer on requirements than is sometimes the case.

In responding to the confidentiality issue, one regulator noted that there is legal obligation for this within some countries, except where a case can be made for “common good”.

They also commented on the issue of appearing to question management competence. It was considered that lack of management competence was a legitimate nuclear safety issue, but it was also acknowledged that challenging management competence was a difficult process.

7.6 Syndicate Session 4 – Specific Issues

Based on the outputs from the previous sessions, a set of specific issues was identified and reviewed. From this, a list of eight specific issues was identified:

- Intelligent Customer Capability
- Resource Levels
- Morale and Safety Culture
- Succession Management
- Corporate Memory
- Organisational Structure
- Allocation of Functions between Site and Central/Shared Locations
- Approach to, and Levels of, Contractorisation

Three syndicate groups formed to discuss these issues, as follows:

Group 1 – Regulator awareness and assessment of licensee approach to contractorisation (Issues 1, S8).

Group 2 – Resources, succession management and corporate memory (Issues S2, S4, S5).

Group 3 – Organisational structure (Issue S6).

It was agreed that S3 Morale and Safety Culture, and S7 Allocation of Functions between site and central services, were not amenable to a brief consideration, and hence were not discussed further.

7.6.1 Regulator awareness and contractorisation (Issue S1, S8)

Syndicate Feedback

The syndicate considered that the key issues was regulatory awareness and assessment of the licensee approach to contractorisation, but that it was bound up in the issue of the licensee’s ability to act as an intelligent customer, and to demonstrate that it could do so.

A lifecycle model of contract management was identified, and issues concerning the retention of intelligent customer capability throughout the life cycle were summarised against the elements of this model (Figure 2).

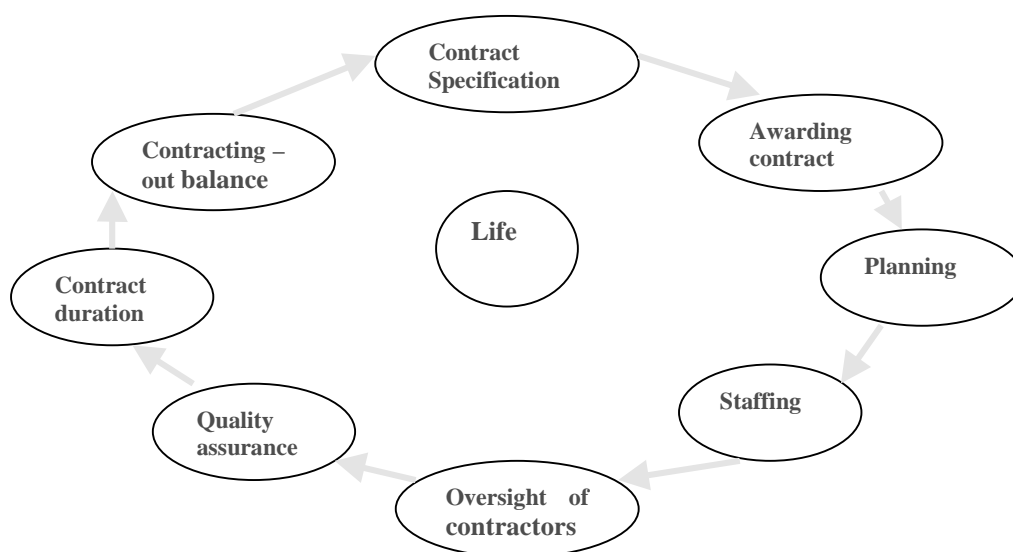


Figure 2: Contract Management Model

Contract Specification: the licensee should provide a clear specification for delivering a process.

Awarding Contract: should the regulator know before the contract is signed? Does the regulator have a role in the procurement process?

Planning: what does the regulator need to know about levels of planning? How much control should be handed over?

Staffing: will the contractor staff be controlled to the same standards?

Oversight: the regulator must be assured about the oversight arrangements.

QA: the manner in which QA will be operated must be made explicit.

Contract Duration: licensee/regulator dialogue required. Include security of supply issues.

Contracting-out Balance: the regulator must know what will be fully/partially/never contracted out. Issues include how far in advance to inform the regulator, and whether they should be informed on all occasions (what constitutes small/insignificant contracts?).

Contractorisation – role of Licensee

- Policy statement – functions contracted out or retained
- Consultation with regulator before significant contracts awarded
- Apply same standards to contractors as to staff for education, training and qualification
- Maintain registers of contractor records
- Retain in-house ability to assess contractor performance
- Form partnerships with the ability to train and develop contractors
- Retain ability to assess quality of work done
- Control the overall work planning and management process.
- Intelligent Customer – required licensee capability
- Produce specifications that delineate contractor responsibilities and licensee oversight
- Place contractor work within an overall work management system
- Retain in-house ability to assess performance
- Form partnerships that will ensure continuity, development, feasibility and win-win situations in long-term contracts
- Retain supervisory and management powers
- Apply same standards to contractors for staffing and resources
- Place contractorisation within quality control and assurance processes
- Procurement must be seen as a safety-critical function

Discussion

Decisions about the level of dialogue over contractorisation are influenced by what the contractor is being asked to do, and the relationship with the licensee. If the contract is large and safety-significant, then the licensee should apply organisational change processes.

The importance of considering what should not be contracted out was noted, such as short-term repair capability, as was the issue of liability.

One regulator questioned how a licensee can determine what is a realistic training capability. They noted that the licensee/contractor relationship has similarities with the licensee/regulator relationship, and that the licensee/contractor relationship is grounded in civil law. However, it is important to understand how the contractor fits in to the licensee organisation.

Another regulator noted that they require the licensee to ensure that all contractor staff are “suitably qualified and experienced” (SQEP).

Small organisations may not be able to apply the same standard of safety management system as a large organisation, and hence the licensee must remain alert to different standards and their impact.

One regulator noted three issues:

- the elements of the model presented above are dependent on the particular situation;
- the licensee must ensure that the contractor has adequate training, but it is less important where that training comes from;
- the licensee must not be satisfied with contractors doing work to a lower standard than the licensee's own staff..

Another suggested formal standards are important rather than the quality of the work itself. This echoes the earlier distinction between assessment of process and assessment of output.

The challenge of organisations splitting into separate companies and then cross selling services as contractors was raised, with the attendant blurring of licensee/contractor boundaries. One regulator noted the existing system of two licensees with one 'corporate centre', and that each licensee separately needed to be able to demonstrate an 'intelligent customer' capability. The degree to which that demonstration is required varies dependent on the level of 'trust' of the service, SQEP issues, local considerations, etc.

They also raised the issue of the extent of contractorisation, and what are the limits. Licensees should produce a policy statement showing how they develop their own limits. Another regulator commented that their arrangements were complex.

The safety significance of the purchasing department and hence the importance of considering carefully how work is specified was emphasised. It is possible to procure items, design services and assessment services, and hence the safety significance of the procurement process is unarguable. A warning was raised concerning the effect of making purchasing decisions with a primary focus on price.

7.6.2 Group 2 – Resources, succession management, corporate memory (Issues S2 S4 S5)

Syndicate Feedback

Resource Levels

Importance of Issue

Workfloor level (multi-tasking, multi-skilling, etc.)

Middle Management level (increased workload, longer response times to address safety issues, etc.)

Licensee should provide the regulator with an established baseline, and perform all relevant assessments against that baseline. Consequently the baseline is the key to the process of demonstration to the regulator.

Informal contacts between the licensee site staff and the regulator's inspectors can provide valuable insight concerning problems relating to inadequate resources.

Indicators include:

Absenteeism (Stress)

Overtime levels

Backlogs

Response times to address safety issues and to analyse events

How does regulator form a judgement?

The regulator must have confidence in the process:

Does the process at the site allow the licensee to consider all the issues associated with changes in staffing levels?

What are the analyses performed by the licensee (e.g. functional and task analyses)?

How does the licensee demonstrate adequacy (e.g. running scenarios and exercises)?

How should the regulator address financial resources? This is unclear.

Succession Management/Corporate Memory

Experience

Adopt a proactive approach for long-term succession management

Undertake an analysis that reveals the informal as well as formal relationships within the organisation

Identify key staff

Recommendations

Mechanisms must be in place to identify required expertise and key staff, and to ensure access to them is protected.

Can the regulator insist that succession planning and redundancy planning is in place? Distinguish between:

Contingency arrangements for short-notice replacement for safety-critical positions (e.g. due to illness/accident)

Long-term arrangements and planning

It was considered that the regulator has a legitimate interest in short-term contingency plans. They are clearly within the regulator's mandate and should be described in the safety case.

There was less consensus concerning the long-term arrangements – is this a commercial risk or a safety risk? Some views were that it is merely a business issue; others were that licensees should be encouraged by the regulator to apply good practice; a third group considered that both long-term and short-term arrangements are within the remit of the regulator.

Discussion

Financial resources were a legitimate consideration for the regulator if it affects nuclear safety. Decommissioning issues were cited as an example.

Another regulator noted that a licence would not be granted if it was not possible to assess the financial resources (this could lead to a loss of the site licence).

The concept of the idea of the analogue of car rental was raised, and decisions about whether to own a car or to hire one. There is a need to quantify how much money must be available in advance to cover car hire requirements.

7.6.3 Group 3 – Organisational structure (Issue S6)

Syndicate Feedback

How does the regulator know, and form judgements, about the adequacy of the organisational structure?

History and experience (what solutions have worked in the past)

Benchmarking (existing good practice)

Baseline assessment

Plant “management prospectus”

Research-based science

Should the regulator seek to make judgements about licensees’ organisational structures?

Discussion

There was concern about the issue of inadvertently reducing the licensee’s autonomy.

Licensees may be more comfortable with an approval-based system, and hence there was a suggestion that the process should operate in the same way as ‘technical’ approval.

The regulator can identify relevant standards, but not take responsibility for the proposed changes or the process.

It remained essential that the regulator looks at management competence, SQEP arrangements and post profiles.

8. ANNEX 2 – PARTICIPANT FEEDBACK SESSION

A review session was held at the end of the workshop to capture the initial impressions from participants. These views are collated below:

- The workshop provided a valuable opportunity to confirm the adequacy of participants' own approaches, and to compare detail rather than offering new insight.
- General level of agreement on process and issues, but a spectrum of views, and some disagreement, on potential solutions and approaches.
- Regulatory resources remain an issue – regulators need to recognise that dealing with the new challenge of organisational change places demands on their own resources.
- The similarities and contrasts between approaches to dealing with management of organisational change and changes to technical issues should be further developed.
- What are the limits on investigating the procurement cycle – how far down the supply chain should the regulator go in monitoring the adequacy of organisational resources and competencies?
- There may be a need to bring management systems expertise into the regulator's capabilities which have been focused on delivering technical competencies.
- Methodology work is important (e.g. to develop criteria, early indicators) – improving the ability of the regulator (and licensee) to judge and monitor.
- The Baseline concept as developed by NII is useful and important.
- The impact of the regulator's actions on the licensee's organisation must be recognised and reflected in the regulator's approach to dealing with licensees.
- A question remains as to how the management of change concept (and aspects of process monitoring) fits into regulatory regimes which focus on performance monitoring. How should the potential risk of poor management of change be assessed?
- "Soft" human resources issues are challenging for the regulator.
- A challenge is to maintain the balance between maintaining the necessary regulatory oversight and placing excessive constraints on the licensee's business flexibility.
- Operating and other procedures must keep pace with change.
- The increasing globalisation of the nuclear industry affects management and regulation of change.
- Public trust is an issue.
- Better sharing of information amongst the entire industry (including regulators) would be helpful.
- Licensees must remain fully responsible for management of change, but the regulators will also be held accountable for their own actions.
- International regulatory consensus (and consensus between different regulators within a country) would improve the ability to influence utilities.
- Business is changing. Soft "human resources" issues are increasingly recognised as important and utilities need to work with the regulator to recognise and clarify the role of these and the extent of regulatory interest.

9. ANNEX 3 – PARTICIPANTS IN WORKSHOP

Name	Organisation	Country
Kaisa Åstrand	STUK	Finland
Jon Berman	GSB (consultant)	UK
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Dave Derbyshire	NII	UK
Benito Gil	CSN	Spain
Philippe Goedertier	AVN	Belgium
Gudela Grote	ETH Zurich	Switzerland
Kalevi Haule	Consultant	Finland
Claudia Humbel	HSK	Switzerland
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