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NUCLEAR ENERGY AGENCY
RADIOACTIVE WASTE MANAGEMENT COMMITTEE

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Working Party on Decommissioning and Dismantling (WPDD)

PROCEEDINGS OF THE TOPICAL SESSION ON STAKEHOLDER INVOLVEMENT IN DECOMMISSIONING PROJECTS

WPDD - 6th Meeting

Held in Brussels, Belgium
on November 14, 2005

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FOREWORD

Set up by the Radioactive Waste Management Committee (RWMC), the WPDD brings together senior representatives of national organisations who have a broad overview of Decommissioning and Dismantling (D&D) issues through their work as regulators, implementers, R&D experts or policy makers. These include representatives from regulatory authorities, industrial decommissioners from the NEA Co-operative Programme on Exchange of Scientific and Technical Information on Nuclear Installation Decommissioning Projects (CPD), and cross-representation from the other NEA Committees. The EC is a member of the WPDD and the IAEA is participating as an observer. This broad participation provides good possibilities for the co-ordination efforts amongst activities in the international programmes.

At its sixth meeting, in Paris, 14-16 November 2005, the WPDD held a topical session on the "Stakeholder Involvement in Decommissioning Projects". The topical session was jointly planned and run with members of the NEA Forum on Stakeholder Confidence (FSC). This report documents the topical session. The main text summarises the lessons learnt and includes the rapporteurs reports. Appendix 1 and 2 provide the agenda of the topical session and all contributed papers respectively. The Topical session also provided a stimuli to review all the contributions in the area of stakeholder involvement that the WPDD has received since its inception. A list of references is provided in Appendix 3.

The topical session was meant to provide an exchange of information and experience on the following issues:

- Views from Stakeholders Regarding Stakeholder Involvement and Their Own Role.
- Case Studies on Stakeholders Confidence.

Mr Juan Luis Santiago, ENRESA served as Chair of the Topical Session. Mr. Steve Chandler, The Environment Agency UK and member of the FSC and Mr Doug Metcalfe, Natural Resources Canada, served as chairmen for each of the sub-sessions on the above mentioned issues. Mr. Yves Le Bars, CEMAGREF and former Chairman of FSC served as rapporteur for the Topical Session.

At the end of each session time was allotted for a plenary discussion. The rapporteur reviewed the main points and the lessons learnt at the end of the whole Topical Session.

Acknowledgement

The WPDD wishes to express its gratitude to Mr. Juan Luis Santiago for chairing the topical session, Mr. Steve Chandler and Mr. Doug Metcalfe for chairing the sub-sessions, and Mr. Yves Le Bars for acting as rapporteur.

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SUMMARY OF MAIN POINTS

In conjunction with its 6th annual meeting, the WPDD in close co-operation with the FSC held a Topical session on "Stakeholder Involvement in Decommissioning" on November 14, 2005. The session was attended by 36 participants totally representing 14 NEA member countries and 2 international organisations.

Two keynote addresses were given at the Topical Session. In the first the former FSC Chairman, Yves Le Bars, talked on what is needed for robust decisions and how to bring all stakeholders into the debate. In the second keynote address Claudio Pescatore (via Torsten Eng) made a summary on what have been said on stakeholder involvement in decommissioning during earlier meetings of the WPDD. The main part of the session was then devoted to views from different stakeholders regarding their role and their involvement. This part was chaired by Steve Chandler from the FSC and contained viewpoints from local communities (Kävlinge in Sweden and Port Hope in Canada), authorities (Scottish Executive and CSNC) and operators (EDF from France and EWN from Germany). Case studies from the decommissioning of Dounrey in the UK and from Trojan and Main Yankee in the USA were presented in the end part of the Topical session followed by a summary and lessons learnt report by the rapporteur, Yves Le Bars. A detailed programme of the Topical session can be seen in Appendix 1.

Outcome

At the Topical session it was emphasised that we have to adopt a shift in the decision making process. We have to design and implement a policy definition process with opportunities for dialogue and a well defined and recognized structure of the actors. It was acknowledged that the FSC decision making process (DMP) model is well known and documented in different OECD/NEA brochures and that this model underlines the necessity of a well defined step by step process, with an adapted structure of actors (industry, implementers, regulators, government, parliament, local authorities), and an opened behaviour of people involved.

There are specificities of the decommissioning and dismantling (DD) case regarding stakeholder involvement issues both on the local and national level. The local and national levels can't be seen as separate. Local decisions need national involvement, and subsequently debate at the national level.

At the local level, implementing DD is deemed to be easier than siting a radioactive waste (RW) repository mainly since the local community is already familiar with radioactivity and the often associated fears. On account of this, all countries (except France) try to site repositories in already "nuclearised" communities. However, two negative aspects in DD do not exist in RW management:

- DD represent the end of an energy production activity (with employment, resources and taxes), as a repository could trigger local development, with new industrial activities and resources for the local municipalities.
- As repositories for waste disposal do not yet exist, the local community could fear a forever waste storage.

At the national level, DD face specific concerns:

- It's compulsory to define specific decommissioning regulation, e.g. regarding clearance levels and methodologies of dismantling.
- An inventory of DD waste has to be published, even if uncertainties remain.
- Prioritization and planning of the decommissioning of all nuclear facilities are an important and sensitive issue.

The decision process needs an "engine" (the energy moving the system), and a driver (the organization in charge of over-viewing and driving the process, including taking care of the associated debates). In DD the engine of the process almost always seems to be at the national level: for example when phasing out of nuclear energy is a strong political position (Germany), or when the government and the industry want to demonstrate their decommissioning capacity before building new NPPs (France). The Port Hope case though shows another "engine" for the DMP: the local willingness to have a clean municipality, after years of nuclear fuel industry operation.

The decision process is often clearly defined, in steps. For example, in Port Hope the local/national agreement defines milestones and independent assessment as well as provides "compensations". In the US we can see explicit priority criteria, as in GB and Italy.

The decision process needs a driver. The studied DD cases provide different driving actors: sometime it's industry, or the government, or a municipality or an agency.

The question "which organization carries the debate?" often has no simple answer. It must be a body in which a major part of the stakeholders has confidence: a municipality, a university, an agency, a specific new body, etc.

In DD the structure and roles of the actors is the second key factor for stakeholder confidence. At the Topical session the following interesting roles were identified:

- The municipalities, as local actors responsible for land use (Sweden, Canada) and for the wealth of their community, are expecting support and development projects associated with DD.
- The regulator plays an important role when it can advise the affected municipalities.
- Industry is a key component in the process, either when integrating all functions for DD (as EDF in France), or when it leaves a specific body to be totally (Spain) or partially (Belgium) in charge of DD. UKAEA has a specific position: the government wants to have Stakeholder engagement plan with a list of key topics to put in consultation.
- The government and parliament involvement is important but was not addressed in detail in the case studies presented at the topical session.

Following ideas for further improvement of the decision making processes in decommissioning projects were discussed at the Topical session:

- There is a need for stronger national policies regarding decommissioning (inventory, financing, political support to reach decisions): each country should try to describe in a better way its decision process and its steps (making the different deadlines understandable). The process should be made well known. Today two different approaches can be seen: one in which stakeholder involvement is the driving factor, but having in mind that different solutions can be adopted (Port Hope, UKAEA, Sweden); one focused on a technical approach (France, Italy) where there is a belief that a best technical solution exist. In a specific decision process these two approaches are

always competing. There is a need for further study cases in the future and FSC and WPDD should continue their fruitful co-operation.

- The 3 pillars of how to reach local confidence should be further emphasised in all decommissioning projects:
  - understanding of the different actor's commitment for safety;
  - creating an open dialogue environment; and
  - exploring development opportunities.

Mobilizing staff with an understanding of what is needed for a successful DD, including work in the stakeholder involvement field, is very important.

SUMMARY OF STAKEHOLDER ENGAGEMENT SESSION OF WPDD TOPICAL SESSION ON STAKEHOLDER INVOLVEMENT IN DECOMMISSIONING PROJECTS NOVEMBER 14, 2005

Steve CHANDLER
The Environment Agency, UK

The Swedish speaker made clear that giving information to stakeholders is not enough; we need to ensure real participation in our decision making process. Where possible, this should be part of existing democratic structures.

The Canadian presentation raised a number of important issues, including who leads the process and how to build public confidence in a waste disposal site. In terms of leadership it is clear that there are various options, central and local. However, what is important is that there is some form of legal agreement that legitimises this leadership role. This helps to ensure buy-in of all groups and also helps local democratic bodies to recognize the decisions made. Public confidence in waste disposal sites (or decommissioned sites for that matter) is improved by finding some open public use for the sites, for example sports facilities.

The Canadians also raised the issue of independent peer review. It is important that local stakeholders have a source of independent advice on whether what they are being told by the central government and regulators is reasonable.

The Canadian regulator mentioned that nuclear operators have a requirement in their licence to communicate with stakeholders. If I have understood this correctly it seems a very positive development. He also mentioned staff confidence and credibility, illustrating this by his amusing joke on the difference between introvert and extrovert engineers. This is something that the FSC has also taken an interest in. It is vital that the nuclear industry and regulators recruit, develop and reward staff who have strong communication skills. Historically, our business has placed more emphasis on pure technical ability than on communicating simply the outcome of technical work. But the public does not see it this way. Indeed, we could go further and question the value of a safety case that cannot be understood by any intelligent person. Simplicity and clarity is as important as technical rigour in these documents.

The Italian presentation mentioned setting up a bilateral agreement on monitoring with local authorities. This seems like a step in the right direction, but the FSC would recommend far more than that to build public confidence. Today the public expects to be directly involved in decision making on major issues that affect them, not just via elected representatives. As I mentioned in my presentation on the situation in the UK, it is also important not to raise unrealistic expectations of how much the public can influence our decisions. In much UK legislation, decisions can only be made on a strictly technical basis and the opportunity for public influence is very limited.

The presentation by EDF highlighted another vital requirement for successful stakeholder engagement. That is a disciplined, project based approach within the leading organizations. If stakeholder engagement is not meticulously planned it will flat on its face, as people will be given different messages at different times. So it is very important that this disciplined approach includes both local and national players to ensure consistency.

Finally, the presentation from Germany mentioned the stepwise approach to decision making. This is very much in line with FSC recommendations. It is important that stakeholders are involved right from the start of the process, and not just in the final site selection stage. The steps involved in reaching a decision must be transparent and the opportunity for stakeholder involvement in each one needs to be clear. If the legal and procedural framework incorporate this stepwise approach explicitly it is a great help for stakeholder participation.

SUMMARY OF CASE STUDIES PRESENTED AT THE WPDD TOPICAL SESSION ON STAKEHOLDER INVOLVEMENT IN DECOMMISSIONING PROJECTS NOVEMBER 14, 2005

Doug METCALFE
Natural Resources Canada

Two case studies were presented on experiences with stakeholder involvement in decommissioning projects. The first paper described the development of the United Kingdom Atomic Energy Authority's (UKAEA) stakeholder involvement activities for the Dounreay Nuclear Reactor Test Establishment. The second paper presented the US Nuclear Regulatory Commission regulatory process for decommissioning that includes opportunities for public involvement. The presentation contrasted the stakeholder involvement for two commercial US nuclear power plants (NPPs) that completed decommissioning in 2005, the Trojan NPP and the Maine Yankee NPP. The two case studies highlighted the importance of involving stakeholders in decommissioning projects, and provide important lessons learned.

The Dounreay case study demonstrated the UKAEA's determination and commitment to continuously improve its stakeholder engagement program. In 2002, the UKAEA set out to broaden its stakeholder program by improving both public understanding and participation. With regard to public understanding, the UKAEA committed to keep the public informed on decommissioning developments, and ensure that communication was in an understandable form. To improve participation, the UKAEA actively worked to identify and engage stakeholders. The UKAEA then made efforts to involve stakeholders in decision-making activities, including the use of stakeholder panels to discuss and consider options for specific aspects of the Dounreay decommissioning and site restoration plan. In 2004, the UKAEA commissioned an independent review of its stakeholder involvement program to assess the program's effectiveness and benchmark it against best practices. The program was found to be useful, and positive feedback was provided on the use of stakeholder panels and the UKAEA's determination to deliver a broad based and effective stakeholder strategy. Recommendations to UKAEA included involving stakeholders earlier in the process and on strategic issues, as well documenting its stakeholder strategy and clarifying its objectives to ensure that stakeholder expectations are not unduly raised. The paper concluded with the recognition that a successful stakeholder engagement process is a fundamental requirement for implementing decommissioning work at Dounreay, and that the project has benefited from the stakeholder consultation activities.

The US case study compared and contrasted the Trojan NPP decommissioning project, which proceeded relatively smoothly, with the Maine Yankee NPP decommissioning project, which was more publicly contentious, and identified how stakeholder issues impacted the projects. Public confidence in the operator of the Trojan NPP was higher than that for the Maine Yankee NPP, illustrating that negative public perceptions from the operating phase of an NPP can continue with the transition into a decommissioning project. For the Trojan site, a number of opportunities for stakeholder involvement were provided early in the process, and this appeared to defuse any significant concerns. In contrast, stakeholder groups raised a number of concerns regarding the decommissioning of the Maine Yankee NPP, and progress in addressing the issues was limited until a

Citizen Advisory Panel was formed to assist the operator in dealing with the concerns. The Citizen Advisory Panel provided a forum for discussing issues, such as post-decommissioning requirements for groundwater monitoring. For both sites, the presence and participation of US Nuclear Regulatory Commission (NRC) staff at public meetings was found to be beneficial, in that they were able to provide assurances that a strong regulatory regime was in place to ensure that health, safety and the environment would be protected during NPP decommissioning and following site restoration.

RAPPORTEUR'S REPORT
TOPICAL SESSION ON STAKEHOLDER INVOLVEMENT IN DECOMMISSIONING PROJECTS, NOVEMBER 14, 2005

Yves LE BARS
CEMAGREF, France

Having heard all participants along this day, I would give three types of conclusions: the specificities of the decommissioning and dismantling (DD) compared with radioactive waste management; a first assessment of the decision making processes presented during this session, regarding the FSC criteria; and some others conclusions…
But before, I want to recall the shift we have to adopt in decision making process. It's not a problem of "more information is needed" for "public acceptance" It's not only an issue of stakeholder's involvement, and not only a question of confidence in decisions. But we have to design and implement a policy definition process with opportunities for dialogue, well defined and recognized structure of actors…

1. The specificities of the DD case

First, at the local level, implementing DD is easier than having to site a radioactive waste (RW) repository, for one major reason: the local community is already very familiar with radioactivity and the often associated fears. On account of this, all countries (except France) try to site repositories in already "nuclearised" communities.

But two negative aspects in DD don't exist in RW management:

- DD represent the end of an energy production activity (with employment, resources and taxes…), as a repository could trigger local development, with new industrial activities and resources for the local municipalities
- and as nowhere final solution of waste disposal exists, the local community could fear a for ever waste storage…

Second, at the national level, DD face specific concerns:

- It's compulsory to define specific regulation, as clearance level or methodologies of dismantling (as in France, where the definition of non radioactive waste is the result of a mapping in the NPP).
- An inventory of DD waste has to be published, even if uncertainties remain on the real application of clearance level or mapping of NPP: funding and programming RW disposal routes and repositories need this inventory.
- Prioritization and planning are very sensitive issues: DD could last 20 to 100 years…
- And the national level is asked to define a local negotiation methodology, far and transparent.

Local and national levels can't be seen as separate. Many RWM programmes have failed not going forward in a well balanced local-national process: local decisions need national involvement, and subsequently debate at the national level.

2. HOW process/actors/behavior/ dialogue model is adopted by, and adapted to DD?

The FSC DMP model is well known and documented in different OECD/NEA brochures: it underlines the necessity of a well defined step by step process, with an adapted structure of actors (industry, implementers, regulators, government, parliament, local authorities…), and an opened behavior of people involved.

2.1 The process needs an "engine" (the energy moving the system), and a driver (the organization in charge of over-viewing and driving the process, including taking care of the associated debates).
In the DD cases the engine of the process seems to be quite always at the national level: for example when phasing out of nuclear energy is a strong political position (see Germany), or when the government and the industry want to demonstrate before their cleaning capacity before building new NPPs (see France)…
The Port Hope case shows another "engine" for the DMP: the local willingness to have a clean municipality, after years of nuclear fuel industry.
The process is often clearly defined, with steps.
For example, in Port Hope the local/national agreement defines milestones, and independent assessment, and provides "compensations".
In USA we can see explicit priority criteria, as in GB, or Italy. In Sweden there are future development projects with consultation…
The process needs a driver. The studied DD cases provide different responses: sometime it's industry, or the government, or a municipality or an agency…).
And to the question "which organization carries the debate?", there is no simple answer. It must be a body in which a major part of the opinion has confidence in: municipality, university, an agency, a specific new body???
The limits of the studied DD cases regarding the DM process could be seen, as in RWM, in:

- the difficulty to coordinate national and local steps
- and also the number of local consultations, on different topic, at different stages, which could discourage stakeholders (see Spain, NRC, UK…)

The expectation of early involvement of local communities in the DD process could be helped by following the EIA directive.

2.2 The actors structure and roles for DD is the second key factor for stakeholder confidence. We have seen the following interesting roles:

- The municipalities, as local actors responsible for land use (Sweden, Canada) and for the wealth of their community, are expecting support and development projects associated with DD…
- The regulator plays an important role when it can advise the affected municipalities?
- Industry is a key component in the process, either when integrating all functions for DD (as EDF in France), or when it leaves a specific body to be totally (Spain) or partially (Belgium) in charge of DD. UKAEA has a specific position: the government wants to have Stakeholder engagement plan with a list of key topics to put in consultation.
- The government and parliament involvement has not too much been detailed in the cases.

In USA, a rather specific organization exists, with two expert bodies: NRC and EPA. But who is the driver of the process, and which organization carries the debate?

3. And in conclusion

We have to recognize that an important attention is already paid to SH involvement in DD, mainly centered on hosting communities, involving municipalities, with citizen advisory panels and other types of specific groups. We can conclude giving some ideas for improvement.

3.1 There is a need for stronger national policies (inventory, financing, political support to go to decisions…): each country could try to write out the process in which it is, its steps (making the different deadlines understandable), and make it well known…

We can see two different approaches: one in which SH involvement is the driving factor, but having in mind that different solutions can be adopted (Port Hope, UKAEA, Sweden…); one focused on a technical approach (in France, or in Italy…) where there is a belief that a best technical solution exist. These two approaches are competing in the process…

But it is always difficult to see how the game is played, on field! There is a need for further study cases…

3.2 The 3 pillars of the local confidence have been recalled in the day: first understanding the actor's commitment for safety, stating an open dialogue, and seeing development opportunities! We know that the level of fear regarding a specific risk strongly relates to the level of confidence given to the managing organization.

3.3 Mobilizing staff for a successful DD, like in RW management organizations, is sometimes difficult. But, at the end, everybody could be proud to have done something difficult for health and environment!

APPENDIX 1:

AGENDA OF THE TOPICAL SESSION ON STAKEHOLDER INVOLVEMENT IN DECOMMISSIONING PROJECTS

NOVEMBER 14, 2005

14 NOVEMBER 2005

Topical session

Stakeholder Involvement in Decommissioning Projects

Chair: Juan Luis Santiago, ENRESA

09.15	**1**	**Welcome and introduction** *Juan Luis Santiago, ENRESA*
09.30	**2**	**Keynote addresses**
	2a	**What makes for robust decisions and the involvement of all of the stakeholders in the debate?** *Yves Le Bars, CEMAGREF and FSC (20 min)*
	2b	**Stakeholder involvement and decommissioning** **Some lessons derived from papers presented at WPDD (2000-2004)** *Claudio Pescatore, NEA (15 min)*
10.15		Break
10.40	**3**	**Views from Stakeholders regarding Stakeholder involvement and their own role.** *Chair: Steve Chandler, The Environment Agency UK and FSC*
	3a	**Local communities & public**
	3aa	**The municipality as a stakeholder** *R. Palmqvist, Mayor Kävlinge and chairman GMF (20 min)*
	3ab	**The Port Hope area initiative municipal involvement** *Rick Austin, Mayor Port Hope and Mark Stevenson, Port Hope (20 min total)*
	3ac	**Restoration principals and criteria; Superfund program policy for cleanup at radiation contaminated sites** *Stuart Walker, EPA (20 min)*
	3ad	***Clarifying questions*** *(10 min)*

	3b	**Authorities:**
	3ba	**Stakeholder involvement: Views from a policy maker** *Elisabeth Gray, Scottish Executive and FSC (20 min)*
	3bb	**Outreach at the Canadian nuclear safety commission** *Bob Lojk, CNSC and Mario Dionisi, APAT (10 min each)*
	3bc	***Clarifying questions*** *(10 min)*
12.40		Lunch
14.15	**3**	**Views from Stakeholders regarding Stakeholder involvement and their own role. (continued)**
	3c	**The French decommissioning program: A stakeholder point of view** *Jean-Paul Chatry, EDF and Axel Baecker, EWN (10 min each)*
	3d	**Panel discussion** *Speakers (45 min)*
	3e	**Summary of stakeholder engagement session of WPDD** *Steve Chandler, The Environment Agency UK and FSC (10 min)*
15.30		Break
15.50	**4**	**Case studies on stakeholder's confidence** *Chair: Doug Metcalfe, Natural Resources Canada*
	4a	**Stakeholder involvement in the decommissioning of Dounreay** *Norman Harrison, Dounrey (30 min + 15 min discussion)*
	4b	**Stakeholder involvement in the decommissioning of Trojan and Maine Yankee nuclear power plants** *Bruce Watson, USNRC (30 min + 15 min discussion)*
	4c	**Summary of case studies presented at the WPDD topical session on stakeholder involvement in decommissionig** *Doug Metcalfe, Natural Resources Canada (10 min)*
17.30	**5**	**Summary and Lessons Learnt. Report by Rapporteur** *Yves Le Bars, CEMAGREF and FSC (30 min)*
18:00		Adjourn

APPENDIX 2:

TOPICAL SESSION ON STAKEHOLDER INVOLVEMENT IN DECOMMISSIONING PROJECTS

CONTRIBUTED PAPERS

WHAT MAKES FOR ROBUST DECISIONS AND THE INVOLVEMENT OF ALL OF THE STAKEHOLDERS IN THE DEBATE?

Yves LE BARS
CEMAGREF, France

So that decisions will be robust and proof against conflicts of interest and changes of administrators and policy-makers, it is essential that they are reached through a process that involves stakeholders and allows time for debate.

The first point that I would like to note is that in the culture of many countries the *concept* of public policy, in the sense of defining a *policy agenda,* is not that straightforward. Secondly, drawing on the work of the "Forum on Stakeholder Confidence" (FSC/NEA), I will look at what *goes into* the mix, based on a number of different examples: processes, actor structures and behaviour. Lastly, I will give *a few rules* for conducting public debates.

1. Public policy is not so straightforward

As in many other countries, public policy is not a principle of French culture. I will show what I mean with a sketch of three periods from the post-war history of France.

1-1 Our public policy structure bears the marks of post Second World War conditions: the Cold War and the severe shortage of basic goods. At the time housing, energy, transport, telecommunications and even healthy food were scarce, leaving us lagging far behind the standard of living in North America, which was then considered the benchmark. In a case such as this, to ensure that basic needs are met, it is efficient to hand over decisions to an expert, who then becomes “the decision-maker”

In this model the «expert », often an engineer, is justifiably the person to plan and decide what action is to be taken: he is qualified to do what is expected, he is responsible for integrating all aspects (technical, economic and social) of the options he decides on.

In a situation like this, there is no need to have a public policy: it’s an agency structure (the CEA, a State body) that says what the public wants. The expertise of the decision-maker is what gives policy its coherence.

Needless to say, in France at any rate, this attitude to decisions reflects an older culture, a political tradition in which an enlightened elite, be it royalist or republican, is seen as the vested representative of the public interest and therefore plays a major role in public affairs. This very role makes the elite stronger and more resistant to change.

1-2 Once basic needs have been met, society’s expectations become more complex, the service dimension assumes greater proportions and there is a social reluctance to accept the technical expert’s preferred choices on transport, energy, urban planning and environmental pressures. Conflicts arise between groups of stakeholders. Decisions become more complex. The expert loses a degree of control over them. People want to have a choice and several experts may be called before the decision-

making body to defend the options they have chosen. The risks in one expert opinion are countered by calling on a second expert opinion. (A. Hatchuel, 2001). It is difficult to pinpoint exactly when this period began, but the social upheaval of 1968 and the energy crises of 1973 may have contributed to this trend.

Compared with the previous model, this form of decision-making recognises that there may be more than one solution to a problem and organises information on each one of the potential projects.

1-3 Several factors have brought us a stage further, with the inclusion of stakeholders in the decision-making process. The expert and the decision-maker have had to let “the others” into the decision-making system. It is now a three-way process and the concept of the “decision-maker” is shifting towards that of the "facilitator", who leads the process of inventing a collective future.

Why this shift in paradigm?

In the first place, health and environmental crises created a climate in which the legitimacy of new independent stakeholders who were capable of initiative was recognised. For instance, people suffering from AIDS may be regarded as “the problem” but they also claim credit for being “the solution” to the disease, too. They initiate solutions and are active players in therapeutic mechanisms. Transport users are self-proclaimed stakeholders in transport policy and communities which host waste storage facilities are actors in their own environment and development, etc. Bertrand Colomb, Chairman of Lafarge, got it right when he said, *« Who is it who authorises us to operate a quarry? Officially, of course, it’s the Prefect, but in actual fact it is the people living in the neighbourhood of the quarry »*. Government does not have all the leverage. Decentralisation policies have given more autonomy to local authorities and the privatisation of firms, along with the globalisation of their business, have reduced the influence that government can exert over the choices they make.

Secondly, the nature of the collective issues has changed and society has become more complex: it is no longer a matter of meeting a clearly identified need, but of coming up with an answer that is acceptable to all, that is implemented by relatively independent actors and, let us hope, is consistent with established public policy. It issue is not about “catching up” with the US any more, but of inventing a future of our own.

Lastly, the nature of the risks and even the unknowns that we have to face are changing. We are now hearing about “bio-social risks” (A. Hatchuel 2001). The long-term management of radioactive wastes is one of these; others include Genetically Modified Organisms (GMO), Mad ow Disease (BSE), the Acquired Immune Dificiency Syndromes (AIDs) and widespread pollution by new chemicals, such as pesticides. These have attendant effects on health and the environment, doses are low, but the economic actors dealing in these substances are powerful.

As Jacques Theys has said out: *"it is not a dialogue between experts and policy-makers any more, at the least, it is a three-way dialogue between the experts, the public and the decision-maker”.*

2. Framing public policy

Moving on now from “analytical” to "normative" considerations: what lessons can we learn for public policies, particularly where there are risks?

Public policies must be developed on the assumption that they are to be implemented by several independent actors. It is the process for framing public policy that has to be put in place and

implemented. No-one can tell in advance what the outcome of the process will be, since it will often depend on further study, input from research findings and the interplay of independent actors. The administration and its public bodies are changing roles, and their relationship to policy is changing too: it is now to provide leadership for these processes, to guarantee the involvement of all the parties, including research potential, but without prejudging the results.

The introduction of the *precautionary principle* makes the case for this approach even stronger. The precautionary approach calls widely on experts, researchers and technical experts to say what the dangers are, evaluate any potential impact in terms of risk and formulate potential solutions to reduce and eliminate such risks. However, as stated in Article 5[1] of the Law introducing the precautionary principle into the French Constitution, where there is any uncertainty, the measures implemented should be "proportionate" to the risk.
This "proportionality" safeguard can no longer be left to the expert alone; it has to be negotiated in tandem with the development of the technical solution. This indeed calls for genuine interaction with the sectors of society concerned along with the involvement of experts and researchers.

This modernisation of our decision-making process developed in response to the public's enormous mistrust of policy-makers. This said, the need for a paradigm shift in our methods of decision making has not yet become standard practice. True, some municipal authorities in France have been pioneers in the field, as was the case in Grenoble, to name one, in the 1970s and 1980s. Governments in the North of Europe have a tradition of consensus building, as can be seen from the way they are making progress on the thorny issue of radioactive waste management (in Sweden and Finland). But in most countries, just how many government services are capable of leading a process that involves all of the stakeholders in addition to a whole range of experts as well as delivering decisions that are as robust from the social standpoint as they are from the technical standpoint?

Even today, the organisation of public policy in France still bears the marks of last century's shortages and the Cold War period of the 1950s, when the expert was the legitimate decision-maker. The willingness to explore alternatives to the solutions proposed first led to involving several experts. Finally, the emergence of new risks and the new aspirations of autonomous actors involved in implementing solutions, made three-way interaction a necessity.

3. A few things that go into the making of robust decisions

Drawing on experience from the many failures in radioactive waste management and on the GMO and pesticide situations, I will try to see what is needed for decisions to be made and what makes them able to stand the test of time, i.e. resistant to its uncertainties. This involves the process and the structure and behaviour of the actors involved: "Process, structure, behaviour" an approach on three fronts that is being developed by the Forum for Stakeholder Confidence (the FSC, set up by the OECD/NEA.

This must be quite a universal idea, since I note that a French research institute, the "*Institut de Recherches et d'Applications des Méthodes de Développement* (IRAM)" has adopted it, too. Its "Thematic Note" on "Governance, the Gordian knot of micro finance?" published in June 2005 makes

1. *Article 5.* – Where the occurrence of damage, even if it is uncertain in the current state of scientific knowledge, could have a serious and irreversible impact on the environment, public authorities shall ensure, by the application of the precautionary principle and, in their areas of responsibility, by the implementation of risk evaluation procedures and the adoption of proportionate interim measures to obviate the occurrence of damage.

the distinction between structures (institutional, financial and ownership frameworks), organisation (procedures, information management), behaviour (actor profile and interplay). S. Pappalardo, director of AIDES -- a French association combating AIDS worldwide – struck a similar note when he pointed out how the fight against AIDS had challenged society's methods of developing public policy – and not just in the area of AIDS – when it mobilised all the actors along with research and industry in an attitude of respect for the person.

A stepwise process that makes it possible for experts and the public to interact is needed.

A form of standard process has gradually gained ground throughout the world in an attempt to surmount the difficulties encountered in managing the most hazardous radioactive wastes.

A stepwise process, with milestones, studies alternatives, including site definition, mobilises research together with an independent appraisal and *provides forums for debate so that the all of the stakeholders can learn from each other*. The French Law of 1991, the Japanese Law of 2000, and the Canadian Law of 2002 all feature most of the above characteristics.

The mutual learning objective warrants further mention.

When the process of policy development begins, each party has not necessarily clearly formulated what its own interest might be. Each has conflicting desires that it has to chose between ("heart on the left, wallet on the right", isn't that how the saying goes?). It is the work that the process entails that will enable them, mutually, to formulate them more clearly. The process may lead to some form of consensus, but will not necessarily do so. Decisions will favour one interest or the other, one standpoint or the other, but they will have a stronger base and will be more robust. "We can take unpopular decisions, provided that we have discussed them at length beforehand" a former Director General of the CNRS used to say.

Authors like Michel Callon, stress the need to take into account the experience gained by what he calls "field researchers" as opposed to "laboratory researchers". What we have to manage to do is to really listen, beyond the bounds of what the technical experts know. In Canada, radioactive waste managers asked themselves "what does the experience of the aboriginal tribes have to tell us about the long-term management of radioactive wastes?"

It is clear from policy difficulties with GMOs that a process of working with research and key stakeholders was sorely lacking. A number of scientists are now trying to avoid a repeat of this experience with nanotechnologies.
Hence the question: ***what is necessary in the "pre-process definition phase"?*** There has to be some momentum for putting the issue on the agenda. What crises, forces in society, subversion or social awareness are needed to force an issue to be put on the agenda?

The interplay between actors can block policy affirmation and the formulation process. In the case of radioactive waste, the current debate shows that defining "why we should take action today" is not so straightforward. Can EDF identify its long-term liabilities before going private? Can Areva improve its exports of power stations by showing that France has managed to solve the problem? Or is it a clear response to an environmental problem? Companies may also not wish to see the area they deal with dragged into the political arena (even and perhaps more so public sector companies, since they can lay claim to having a public responsibility).

In the case of GMOs, public debates have been organised (including a consensus conference and, more recently, a debate on field trials with vines), but not within the framework of a process with milestones.

It would be better to designate a ***process leader***. The limitations of central government sectors – taking the lead in the process ought to be one of their main responsibilities -- is a huge obstacle to getting the process for formulating public policy off the ground. There may be situations in which it is difficult to designate a process leader: for the moment this is still the case for soil contamination by the pesticide Chlordecone in Martinique and Guadeloupe. While this may not be a wide scale problem it is one where policy should be organised in phases, with due precaution, and should incorporate the results of research. Local action has been to high standard, prompted by the existence of regional pesticide pollution study groups (GREPP), which gather together all of the stakeholders, sharing information and job of defining action plans. In contrast, co-ordinating research with national decisions is a task shared by four ministries: an attempt to set up a single national secretariat failed, as each ministry was afraid that it would have to shoulder the responsibility, particularly the financial responsibility, for any consequences. An interministerial meeting, chaired by ministry cabinet officers, is held instead.

As for radioactive waste in France (the situation is not the same as in other countries such as Canada and Sweden), the process is still proceeding without a clearly designated leader. In actual fact, the French parliamentary office for science and technology (*Office parlementaire d'évaluation des choix scientifiques et techniques,* OPECST) acted as the lead in liaison with the Ministry for Industry. The holding of a national public debate on this issue since mid- 2005 has given a higher profile and greater role as lead agency to the Directorate of the Ministry for Industry that is responsible for the problem.

A structure for actors

The process alone is not enough to guarantee confidence: the respective roles of the stakeholders and their behaviour are crucial.

The process has to clearly define the responsibilities of all of the actors: in the case of technological risks these are industry, public research operators or consultants, the regulator, government, parliament and associations. The separation of the task of health risk evaluation by scientific specialists from the task of risk management by the public authorities and their regulatory bodies reflects this need for clarification.

Regarding radioactive waste, the responsibilities of waste generators, operators, evaluation bodies, inspection and safety authorities as well as local authorities at *commune* and *département* level and central government must be clear, well-established and recognised: this objective is not always met, as can be seen from the historical entanglements (which have not yet been straightened out) between the CEA, a public research centre, and Areva, a world leader in the nuclear industry, of which the CEA is the "main shareholder".

Through their behaviour, the actors must apply themselves to respecting both the spirit and the letter of the process. In particular, they must make their objectives, methods, findings and the evaluations of their work accessible to all interested parties, while at the same time analysing through study and research programmes the pertinence of opinions expressed outside technical and scientific circles.

The behaviour of the actors must reflect values such as rigour, openness to dialogue and willingness to listen. This is not always easy. Numerous criticisms, which were to a greater or lesser extent justified, prompted Andra (France' national radioactive waste management agency) to outline the values that guide its policy, applying the lessons it had learned from the past:

- exemplary science and technology: comparative studies, publications, a range of evaluations, explanation of uncertainties;
- neutrality in local relations and availability to all of the actors;
- full and reliable information on its activities, projects, safety regulations and the general operation of the Agency;
- not overstepping the terms of the Agency's mandate, even to be of service.

As can be seen from this example from the radioactive waste field, a change of culture is being asked of experts and scientists in a policy formulation and implementation process that has changed radically since the 1950s.

4. A few rules for conducting public debates

Public debates are part and parcel of the decision-making process and mark the different stages of that long process: as I mentioned earlier, they are one of the prerequisites for effective results. This is not to say that public debate guarantees a consensus, rather that the mutual learning process makes the results robust.

First, we will take a look at the past experience referred to earlier, then we will attempt to identify what goes into a constructive experience: the necessary conditions, methods and tools.

First, let us look at the ***role of public debate in the past*** (radioactive waste, GMOs, pesticides).

Regarding radioactive wastes, France has a local information and monitoring committee, (the "*Comité local d'information et de suivi*", CLIS) in the vicinity of its geological storage research laboratory. This is a local Forum comprising 100 people, designated by Prefectoral Decree, from associations, unions, chambers of commerce and industry, including local and national elected representatives and the administration, which is chaired by the Prefect. It has an administrative secretariat and a science secretary to assist it with its analyses. Its executive of 20 people meets every month and reviews the issues to be tabled on the agenda: it is not the operator who decides the agenda. It recieves 300 000 euro per year for its operating expenses, training and independent analyses. It was criticised in a parliamentary report for being unduly influenced by criticism from the anti-nuclear lobby and people who were against geological storage. However, the CLIS did allow issues of concern to the local population to be addressed and was instrumental in Andra not overstepping its limits.

On a national scale, there is no permanent framework for organised debate, with the exception of a few meetings on reports by the OPECST. In order to prepare for the 2006 deadline set under the Law of 1991 for a strategic decision after 15 years of research, the government decided to hold a public debate in late 2005 under the aegis of the Commission for National Public Debate (CNDP). Arrangements for this debate are now under way and will combine meetings at the sites concerned (current storage sites, research site) with meetings in Paris. This is the first time that the CNDP has had to organise a debate on policy rather than on a project, in itself this is a sizeable challenge for French democracy. It is also the first time that the debate has been taken out of the hands of the traditional players in the nuclear field: ministerial offices are edgy and are interfering in ways that can be tiresome at times, industry is worried and the parliamentary members of the OPECST were opposed from the start. However a petition calling for a local referendum on the laboratory forced a debate on the issue. Lesson one: this type of debate is an on-going negotiation, organising it takes three to five people working full time. There are many reasons why it fails: withdrawal of one of the interested parties, takeover by

superannuated nuclear industry employees or opponents of the nuclear industry, loss of interest, superficiality, etc…

GMOs are an easier case to explain: there is no established process for defining milestones, mobilising research or organising more intensive debate. Between the European Union, national governments and the involvement of local authorities, the division of roles among the actors is not very clear. The citizens' conference was a very interesting event which showed that the average citizen was capable of tackling this kind of issue. But their conclusions were not taken into account in any process.

A law on transparency in the nuclear industry, drafted more than three years ago, provides for federating local committees (grouping interested parties together) in the vicinity of nuclear facilities and giving an official role to their national-level association. This model was recently extended under what is known as the "AZF" law on chemical risks, which provides for setting up information and monitoring committees for the chemical industry. Experience with pesticides and the GREPP, have already been outlined.

These examples show that the process of preparing and implementing public policy requires a Forum, not a decision-making arena, where any subject can be raised without worrying about how representative the person's views may be. Differing viewpoints can thus be made explicit, different arguments can be put forward and, something that is still a rarity in the nuclear sector, the interplay of the actors becomes more visible, a prerequisite for any arrangement, any compromise.

A few conditions for a constructive debate can be singled out and these should be stressed although there are, of course, others.

The first pre-condition for a constructive debate is that the experts, technical specialists or researchers involved in the issue must be quite clear that they, too, can be irrational.

Claims that the "public is being rational" are rather more frequent than that the experts are. Nevertheless, when we see specialists in the nuclear sector becoming enamoured of their own technology or waste storage specialists becoming uncompromising supporters of storage ….

When choosing a project or a strategy assumptions can be implicit (often, the specialists have not put them in words) and these have to be made clear. One of the advantages of a good debate is that it forces clarification of these issues. Sometimes, this is referred to as "stretching" organisations and technicians.

The specialists' solution to a given problem will be different depending on whether they come from the "Promethean" school (they think that "human science and technology will always be able to handle it"), the naturalist school ("natural mechanisms can be used and under certain conditions can absorb the problem"), or whether the technician is more from a management culture or an investment culture.

The second condition is the genuine participation of every person and every organisation. One engineer attending an international forum of local authorities concerned with radioactive waste management supposedly said: "I am not here to say what I think ". This is hardly a genuine attitude in a forum for debate that is not going to be taking any decisions. The credibility of the actors requires that their case be presented as clearly as possible: which brings us back to the previous point about assumptions. In and of themselves they may be quite acceptable, legitimate even, but they have to be stated as clearly as possible.

The third condition relates to the behaviour of experts and technicians or researchers, who need to find the right balance between "involvement" and "distance". This is a difficult balancing act: an all too familiar one for social workers who often have to deal with abject poverty. The support of a supervisor helps them to cope with their feelings of helplessness. In a public debate, part of a process in which decisions are taken by non-experts, but where experts play a key role, this need for balance between involvement and distance is not always easy.

There are numerous ***methods and tools for public debate.*** Case studies can help to identify what works and what does not, but the context is always the determining factor. However, when a technical or scientific dimension is involved the methods established in Denmark can be cited. The "Danish Board of Technology" has developed methods appropriate for every situation at different stages of the project and policy process: ranging from the citizens' panel, which monitors the process through more traditional-style enquiries, to the citizens' conference.

In France, the CNDP has developed its own methodology and its own rules. It can refuse to hold a debate when it considers that there are no good grounds for it and bars itself from expressing any conclusions on the debate, other than to state the points of agreement and disagreement it has noted. It requires the project owner to provide clear technical information and can dismiss anyone whom it considers to have failed to satisfy this criterion. An owner's technical specifications together with actors' specifications (drafted by interested parties who so wish) are circulated at the beginning of the debate. The start of the debate is preceded by a crucial organisation phase. In the case of radioactive waste, this negotiation phase lasts twice as long as the debate itself.

One key question: who will facilitate the debate? Process leaders or the project owner, an independent body, the public authorities? The attitude of relative mistrust or trust must dictate which option is used. In the case of risk management, in France and in Europe in general, mistrust of institutions slants the preference towards independent bodies, but do they always exist?

Conclusion

Each national situation is specific to the given country: any transfer of experience out of that context must be handled with extreme caution.

This said, would it not be possible to keep some generic rules? For example on difficulties with process definition, the necessary clarity of the structure and respective role of the actors, particularly when they are public actors, the behaviour of experts and technicians involved which becomes an increasingly sensitive point the closer they are to process leadership.

We can expect significant progress from comparing our experience – and managing dismantling is no exception to that rule!

In France, a 1999 decree authorises the implementation of a Local Information and Monitoring Committee to be chaired by the Prefect of Department where an underground research laboratory (URL) project is implemented.

STAKEHOLDER INVOLVEMENT AND DECOMMISSIONING SOME LESSONS DERIVED FROM PAPERS PRESENTED AT WPDD (2000 – 2004)

Claudio PESCATORE
OECD/NEA

Introduction

Decommissioning and dismantling (D&D) are the last elements of the life cycle of both nuclear and non-nuclear facilities. The problems of this phase are partly the same and partly different from those of the preceding phases (planning, construction and operation). Public concerns about safety, for instance, are present in every phase.

In the course of construction and operation important challenges include meeting public expectations of a higher quality of life, accommodation of an increasing population, mitigation of construction nuisances and assurance of the safe operation of the facility. In the decommissioning and dismantling phase public concerns include decrease in employment, the reduction of revenues for the municipality, the future use of the affected land, and other negative social impacts (e.g. emigration of part of the skilled population) [d'Abadal, Castellnou]. This phase too is characterised – as earlier phases - by the heterogeneity of stakeholder interests and values, and the difficulties to achieve consensus or compromise. The difficulties arise in connection with the harmonisation of energy production, environmental protection and sustainable socio-economic development considerations. Issues of interaction between local and regional decisions are also characteristic.

From the point of view of conflict management the building of trust amongst stakeholders is very important in the decommissioning and dismantling phase. Consequently, social lessons learned from the siting and development of nuclear facilities are widely applicable in the field of D&D.

This paper summarises some lessons learned from papers on stakeholder involvement presented at WPDD meetings mainly between 2000 and 2004.

National policy issues

A clear national energy policy

Decommissioning of an NPP may be due to the end of life-time, an unexpected event (e.g. accident), or a political decision on phasing out. In the latter case, it can be assumed that when phasing-out of nuclear power is part of a widely accepted national energy policy framework, decommissioning decisions are more likely to be supported. Open and fair national debates on the preferable mix of various energy sources need to be conducted, where environmental, economic, social and political impacts are addressed. The question on 'how and where the diminished electricity supply is to be compensated for?' requires special attention, since it may affect local, regional, national, and often also international interests:

> "We and most citizens living close to the NPP Barsebäck wanted to know why it was closed and in front of all how and where its production would be replaced! So far we know that we probably

> will buy more dirty electricity from the old Danish and German coal fired power plants, causing severe airborn emissions to our sensible lakes and forests in southern Sweden. We also know that the Government is approving upgrading the capacity at Ringhals NPP, already a fact, and at Forsmark and at Oskarshamn. This was too inconvenient to be explained by a Government, officially favouring the total phasing out of the nuclear production in Sweden." [Palmqvist}

Links with national RWM policy

The decisions on decommissioning are linked with the national RWM policy in a number of ways. It makes decisions on decommissioning easier if there exists a RWM facility for the storage of radioactive waste from the NPP site, or at least a RWM program that holds out the promise of the establishment of such a facility in the foreseeable future. However, in many cases these conditions are not met, and NPPs operate – or may be seen to operate - as de facto waste storage facilities:

> "we have to demonstrate that new developments are possible when decommissioning is over. Currently the debate about the future of nuclear energy is strong because the debate about energy supply is also a conflictive issue. Nuclear territories are open to accept other kinds of power plants. They are willing to defend their condition of power production site. This goal makes necessary some proceedings which ensure that the land will be suitable for production when decommissioning is over. As a definitive solution for high level radioactive waste has not been set yet, the local populations are afraid of the possibility to transform the site into a radioactive waste storage. This could prevent the site from being used for other industrial activities." [d'Abadal]

At the same time, the problems arising in the course of decommissioning may have an impact on energy policy decisions:

> "All of decommissioning proceedings including both treatment and storage of radioactive waste are the main subjects of the debate in relation to the future of nuclear energy. So, decommissioning is fully involved in the general debate about a solution to radioactive waste". [d'Abadal]

All these aspects point to the importance of the interactions between national policies and local/regional decisions. The question emerges: How can local stakeholders influence national debates and in what way local decisions need national involvement?

Local dimensions

Identifying facilities to be closed down or expanded with host community support

Decisions concerning the phasing out (or expansion) of energy production at certain facilities are similar to facility siting decisions in the sense that concrete geographic locations are affected in this case too. In addition, the closing of certain facilities may be accompanied by the expansion of other facilities. The population of candidate sites, the affected local and regional authorities, the operator and the employees of the affected facilities demand to be involved in making these decisions [Moding, Palmqvist].

In such debates special attention should be paid to the following questions:

- What environmental and socio-economic gains and losses will accompany the planned shut down (expansion)?
- How and when will the affected communities be compensated and by whom?

Local acceptance and compensation

Although decisions on closing down or expansion are similar to the ones associated with choosing a site for a facility, there are some asymmetries as well. While in most countries local communities have a say when it comes to the decision of siting a new facility (in several countries, like Sweden and Finland, municipalities have even the formal right of veto), they have less power in case of a decision to close a facility (and no municipality has in this case the right of veto). Nevertheless, the operator should initiate a dialogue with the affected municipalities and, try to find solutions that are mutually acceptable. These solutions pertain to public information and local control, as well as the mitigation and compensation of negative socio-economic impacts. It is important that the target geographic region for information, control, mitigation and compensation should not be narrowed down to the community hosting the NPP, but should include affected neighbouring communities that see themselves as being affected.

Experiences show that it is more difficult for the affected municipalities to negotiate compensation for decommissioning purposes than for siting a new facility. There are, however, good examples for the former as well:

> "The nuclear power municipalities would like to see that the State and power companies act in a socially responsible manner when preparing for phasing out! In the case of Barseback and its shut down the former owner, Sydkraft Co, acted very social and responsible by giving the employees a five year job guarantee after the decision was taken on closing the reactor!" [Moding]

Decisions on decommissioning

The decision on decommissioning concerns the activities to be conducted in the area of the nuclear installation - the demolition or transformation of buildings, the treatment and storage of radioactive waste -, the timing of these activities, and the future use of the land. Generally, the communities demand the earliest possible restoration of the original state, safety and security guarantees and the highest possible rate of employment of the local workforce in D&D activities. In this phase it is particularly important to involve the local actors in decision making and monitoring:

> "In Vandellós-I, during the decommissioning period, a Commission was created, made up of representatives of the company in charge of dismantling, the administrations of the area of influence and other representative bodies. The purpose of this Commission was to track the evolution of the dismantling process and receive information on it. The aspects that were dealt with by the Commission are the following: Compliance with the conditions agreed on in the license (permit), work progress, evolution of contracted personnel, etc., waste management, materials accounting., safety (training and accident rates) and environmental surveillance, events" [Castellnou]

Theoretically, various possibilities may arise in connection with future land use: industrial vs. non-industrial use and, in the latter case, establishing nuclear vs. non-nuclear facilities. Typically, municipal governments are ready to consider new energy-type installations, since the necessary infrastructure is mostly available. There are hitherto only a few examples of non-nuclear re-use of land.

With respect to land use, local municipalities typically have a certain degree of legal control.

> For instance "UK land use legislation (contained in the Town and Country Planning Act 1990) in general terms requires an application to be made to the local planning authority for permission to

execute any works that involve construction of new buildings or a change to the appearance of existing buildings. No consent is required for total demolition". [Woollam]

In Sweden municipalities have the right to veto any proposal to establish new installations:

"A Swedish municipality has a very strong position in questions of future land use as it has a so-called municipal planning monopoly. Each municipality, according to Swedish law, has the right, in most cases, to decide over the future use of the land within its own boundaries, even in a case such as this. ...the municipality does not appreciate the views of the governmental authorities, especially Energimyndigheten, to maintain the Barsebäck site as a possible location for alternative energy production (i.e. not nuclear power) in the future. Their argument is that the power lines and infrastructure are already in place. The State's present declaration concerning Barsebäck after Barsebäck thus clashes head on with the municipality's declared intentions as expressed, for example, in its latest Municipal Comprehensive Plan." [Moding]

The main question concerns how an area can be made suitable for siting other facilities. This question is especially relevant when no storage facility exists for the disposal of RW:

"There is a requirement to assess the alternative options in detail to answer questions about what would happen in the event that planning consent was not granted. In the case of, say, a proposal to build a supermarket this is straightforward: if no consent is granted no store is built. But when no disposal route exists for the waste from decommissioning, as in the UK, the options for dismantling a nuclear power station are limited." [Woollam]

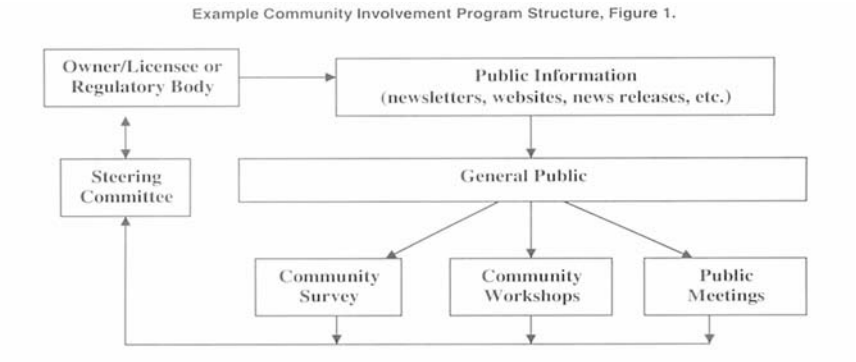
Trust in the actors

Continuous partnership between institutions and host communities

When a partnership between the affected communities, the operator and the authorities has been developed and nurtured during the planning, construction and operation of a facility, it is more likely that a cooperative rather than a contentious approach will dominate in the decommissioning phase.

In order to build trust in the institutional actors the affected population must be involved in decision making as early as possible in the decommissioning process as well [Keyes]. In some countries the EIA process provides a useful framework for public participation.

An example of how a community involvement programme may be structured is reported in Figure 1. Although there are good examples for community involvement, recognition of the importance of community involvement in decommissioning projects remains a challenge.



Transparency and proactive information

Transparency and proactive information of the public are key factors of confidence. Accurate and accessible information should be provided on a regular basis, and operators/communicators should maintain a continued presence in the community even in the decommissioning phase.

A broad range of community involvement techniques may be applied in the field of decommissioning (see Figure 1). Examples are newsletters, websites, press releases, fact sheets, community workshops, public meetings, opportunity of site tours, interviews and surveys in the community, and tools providing access to official documents, etc. [Keyes].

Facts rather than partisan information should be communicated and communicators should avoid using technical jargon. Transparency requirements should be balanced by commercial and security sensitiveness. However, the meeting of contradictory requirements is not without problems:

> "Nuclear matters are complex and the nuclear community tends to suggest decommissioning is technically straightforward. Hence we may assume others have understood the technical evidence, even if they dispute it. This is often not the case.
>
> Every strategic decision should have a robust rationale and should have resulted from a detailed options analysis. Anti-nuclear groups want this analysis to be visible and transparent. In some cases commercial considerations make this difficult: public domain reports should be prepared that present as much information as practicable. In some cases this will never satisfy all objectors" [Woollam]

Safety, Participation and Local Development

According to local leaders the three main pillars of trust for any local project are „Safety, Participation and Local Development". Local authorities should thus be involved in:

- Participation in decommissioning process in order to defend local interests;
- Control of decommissioning activity as far as general local responsibilities are concerned;
- Definition and management of socio-economic plans. [d'Abadal]

The participation of local/regional authorities is of key importance, since they are in charge of public information, they are also the ones facing the local population and the media. With regard to local responsibilities, environmental protection may be indeed within the powers of local/regional authorities, whereas, more typically, nuclear safety and security, radioactive waste management, and emergency plans are the competence of the national sphere. These, however, are not independent issues from one another, and the question arises as to which organisation should carry these debates and how to involve the local public(s).

Finally, municipalities want to maintain a suitable level of economic activity and are ready to enter into negotiations on socio-economic benefits on behalf of the communities. To that effect, all actors should pay attention to the issue of long-term sustainable development during the whole life cycle of nuclear installations. Thus, communities should as much as possible be give new opportunities to compensate for lost income and diminished development.

Decommissioning in itself can provide some boost to the local economy for at least a few years, especially if negotiations between the operator and the local community are aimed at maximising local benefits:

"In the case of Vandellós I decommissioning, a total of 1,800 people were involved during the period 1998-2001, with a peak figure of 400 workers simultaneously on site. The composition of this employment was 65% local and 35% from other areas. … Indirect employment, which is more difficult to quantify, arises from increasing activity in the area, especially in the services sector. … The other pillar supporting economic activity is the contribution made by dismantling to the local administrations, through: Revenues from licenses and permits, compensation in the form of a fee for waste storage, and agreements with the administrations of the area to promote economic, cultural and sporting activities and investments in equipment." [Castellnou]

Role of the actors

Key actors should play a clearly defined, visible, and active role. Especially „regulators should be more visible and support the outreach activities". This was one of the outcomes from the presentations and discussions at the NEA Workshop on "Safe, Efficient, and Cost-effective Decommissioning". Which was held in Rome, September 6-10, 2004.

Conclusions

Community/stakeholder participation and economic development involve the identification of all relevant stakeholders and the community needs. There must be an early discussion of plans with all stakeholders. A continuous dialogue with the communities/stakeholders is vital and it is also important that the communication not only contains technical matters but also deals with feelings and "soft values". The dialogue process must be completely transparent and the roles of each actor must be clear. Attitudes and behaviour of each stakeholder plays an important role in the outcome of the process. Successful community/stakeholder involvement is hence a result of a carefully crafted set of co-ordinated activities over the long-term.

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THE MUNICIPALITY AS A STAKEHOLDER

Roland PALMQVIST

Mayor of Kävlinge/Barsebäck and President of GMF (a European network between municipalities hosting nuclear installations) and of KSO (a corresponding Swedish network in operation since 1977)

Mr Chairman, dear participants,

Thanks a lot for your invitation. I am very pleased to have the possibility to explain how we as local politicians look upon the dialogue regarding nuclear installations in our municipalities. As seen from the map of European reactors (see last page) there is a lot of local districts affected by nuclear operations. What has a mayor from such a community to say about the shut-down phase of such operations and especially about the need for communication between stakeholders when closing and decommissioning a nuclear power reactor? To answer this question I am structuring my information into 4 parts as follows:

1. The European municipalities – some characteristics.
2. The siting of NPPs (nuclear power plants) in Europe.
3. The shutdown, decommissioning and the dismantling phases.
4. Lessons learnt.

1. European municipalities – some characteristics

The European municipalities from North Cape to Gibraltar are different in size and in decision making power. To sum up these differences in very short terms: The more north they are situated, the larger and the stronger they are. The average population of a Swedish "kommun"/commune/municipality is around 18.000 inhabitants and its annual budget is many times bigger than that in a comparable municipality in Great Britain, Germany, France, Belgium, Switzerland, Hungary or Spain. A Swedish commune has the right by law to decide the local income tax level. In my commune, Kävlinge, we have a regional and local tax of 29% proportional tax on the income of each citizen living in the municipality. As a Scandinavian mayor I am always astonished when I listen to my European colleagues and their often very limited budgets. But for sure it does not mean that their local and regional and maybe national influence are limited. Often they perform an impressing will to interfere in the national decision making. A Nordic commune is more sovereign and have many more employees than its comparable European partner, for instance in its big budget and in its physical planning. A Swedish or Finnish municipality has also a local veto to undesired siting of any industry. And if we say no to the siting of a facility of any kind it means no! The central Government cannot overrun this local veto right except when it comes to siting of national defence installations. Another difference between us is that the taxes from NPPs and from all firms in Sweden are delivered directly to the state. In most countries on the continent the nuclear operators pay a large amount of money yearly to the affected municipality. In Germany the tax is taken out in proportion to the amount of radioactive wastes produced. In France EDF is a very important "sponsor" to the municipalities, hosting NPPs.

The local democracy in Europe has a long history, too long to be described here and now. In my home country we have the enormous advantage of living in peace since the time of Napoleon. Our local democracy was developed already in a nation of thousands of villages and parishes, dominated by the church and the farmers. Our modern local democracy and its laws were formed and developed starting in the 1860s and developing gradually parallel to the urbanisation, with radical land reforms creating larger and larger, local districts after 1950. Real democracy, *id est* "one man one vote" are guaranteed since the 1920s. With larger municipalities we somewhat lost the close relation between the elected people and the citizens, something you in southern Europe with small communities still have. In a normal French, German or Spanish municipality in the country side, where the NPPs mostly are found, the mayor personally knows almost all the citizens. I do not know more than 10% of the 27.000 inhabitants living in my commune! But most citizens in my town know me!

2. The siting of NPPs in Europe

Who decided where to place the nuclear facilities once upon a time? Mostly the operators, supported by the central governments. The local democracies either had less to say about it at that time or had nothing against the idea of being chosen as suitable places for a high tech industry with many well educated and well paid employees. If any local politician or mayor opposed a siting the principle of "father knows best" was applied. This was of course the case in former dictatorships like those in Eastern Europe or in Spain but also in existing democracies at that time as well. Sparsely populated sites were mostly preferred by the nuclear industry. But quite a few NPPs were also located at the seaside rather near densely populated areas like my Barsebäck in the Öresound region. Hereby we could avoid expensive, and to many visitors, ugly cooling towers. In Sweden all our 12 commercial reactors, like in Finland, were located along the coast in the middle and in the south of the country just to compensate for the geographic imbalance of all our hydro power, coming from the north.

As a result we got a perfect total energy balance for the supply of electricity within the nation, with nuclear as a base load production (still around 50%) and hydro (another 50%). Hydro as regulator to the varying needs of the market and of the seasons. A perfect mix applied in Sweden/Norway/Finland and in Switzerland. With the increasing international trade and ownership and with more cables in the Baltic Sea the Swedish electricity consumers are gradually loosing this advantage of getting better prices! There are of course opponents in Sweden to the rising costs for electricity. Protests are heard very often nowadays, especially in many industries and in the homes with electrical heating! As a mayor I often meet people that are aware that the closure of Barsebäck is contributing to the higher electricity prices. They would like to see a better dialogue between the national politicians and the community.

3. The shut down, the decommissioning and the dismantling phases

These three phases are looked upon by our affected municipalities with different interests. The first decision to shut down is a key issue to any citizen and any municipality affected by it. Why stop a safe and profitable operation, approved by the controlling authorities? This "why" must be answered in a proper and understandable way. Already here a dialogue between the Government, the operator and us in the municipality must take place. I am underlining this need for a much better (read much more democratic) initial dialogue being developed between the affected employees, the local citizens, the affected municipality and the operator and the government. And we as affected citizens must have a feeling and knowing for sure that our opinion is listened to and taken into a serious account in the decision making of when and how a nuclear operation will come to an end. Information is not enough! If a meaningful and democratic dialogue is avoided by the Government, which happened during the shut down of Barsebäck 1 and 2, the affected citizens feel run over. A clear majority of my citizens do not understand why Barsebäck had to be closed. Most citizens living near the power plant do not

accept it and they like me have a feeling of being cheated. The decommissioning phase and the dialogue with the local community could have had a more favorable. start. The well-known Nordic democracy at the local level was hurt seriously by my own central Government since they used the principle of "father knows best". Our courts and the Ministry in charge used bureaucratic tricks as an answer to our appeal. They explained that the shut down was just a decision by the Government not to allow a further production of electricity at the NPP.

When it comes to the phase of decommissioning all stakeholders have to be heard. According to the Swedish Environmental Act an Environmental Impact study must be the base when entering the decommissioning phase. For the initial decision to stop production of electricity the law does not say that it is necessary to listen to the most affected stakeholders. This was used in the case of Barsebäck. I am looking upon this in the same way as the baker looks at his bakery, adding the yeast too late, a long time after the bake off! We and most citizens living close to the NPP Barsebäck wanted to know why it was closed and in front of all how and where its production would be replaced! So far we know that we probably will buy more dirty electricity from the old Danish and German coal fired power plants, causing severe airborn emissions to our sensible lakes and forests in southern Sweden. We also know that the Government is approving upgrading the capacity at Ringhals NPP, already a fact, and at Forsmark and at Oskarshamn. This was too inconvenient to be explained by a Government, officially favouring the total phasing out of the nuclear production in Sweden. Within our network of GMF- my German colleagues recently told us that in Germany the federal Government also apply the principle of "father knows best" by avoiding inconvenient transports of spent nuclear fuel either to the reprocessing plant or to a central storage. In stead the spent nuclear fuel is stored for an undefined period at the remaining NPPs against the will of the affected municipalities. My colleagues in Germany are objecting, in vain so far, the system of decentralised storing.

The authorities will play the dominating role during the decommissioning phase. To us in an affected municipality the decommissioning is of a limited interest compared to the mentioned first phase - to stop the production. But the municipality has one interest and that is to explain as early as possible how the municipality wants the land and the existing buildings and infra-structure to be used in the future. Our preferred new land use is "a green field and a new seaside housing area" just exactly at the place where the NPP is situated and we want it cleared as soon as possible. Here I have to add that just today my municipality colleagues are meeting the Swedish Minister for Environment to explain our wishes. I myself kept my promise to participate here today. We had to wait a long time to be granted an "audience in Stockholm"!

Other municipalities in Europe meeting shut downs could prefer new installations of new reactors as in Finland (Olkiluoto) or of gas fired plants. Gas fired plants with deliveries of gas from Russia and Norway seem to be a very attractive alternative to nuclear. Coal fired plants is to my opinion hard or impossible to get approved by a population used to a safe and clean production of nuclear electricity. Even the newest ones with CO_2 burial underground, as Vattenfall intends to try in a pilot plant in eastern Germany, will be difficult to accept by an affected local public. Most people living near our NPPs are well educated in energy matters and they are frequently asking: How are we avoiding the greenhouse effect with an increasing consumption of fossile fuels? They are not getting a proper answer! Anyhow the municipalities hosting NPPs have a long experience of large-scale facilities and the citizens living close to NPPs have a much better knowledge and experience worth being regarded as an important siting factor to an operator trying to find a place for a new power plant.

When it comes to the dismantling phase the municipality is more affected than ever. How and where to recycle materials is of local interest and should be discussed. As a local stakeholder I am underlining the fact that the planning of the land use is in our hands. As said earlier a Swedish municipality by law also has a local veto to any proposal to establish new installations. Most of my

colleagues in Europe, except the Finnish ones, are envious of us having this possibility. This means that the stakeholder SKB, the company coordinating and fulfilling the nuclear waste handling programme of Sweden, has not only to listen carefully to the decision makers in the municipalities but to perform a true dialogue with the people living in the proposed areas for a future final repository for spent nuclear fuel. In our case the remaining "finalists" are areas in the communes of Oskarshamn and Östhammar (Forsmark). Studies so far show that they have excellent geologic conditions. They also have a local competence, knowing and understanding the overall, national need for finding a safe place for the spent nuclear fuel. But they also know that they have the right and privilege to say no. And if so it means a no! If they finally say yes, the municipalities can also include conditions to be met. These could be based on demands for the very best protection (physically and economicly) against accidents and damages in the future. The result of this dialogue probably means a lot of compensations to the local population and to the municipality!

Back to my case Barsebäck, where we in the affected municipality want to enter the decommissioning and dismantling phases as soon as possible. We want to establish a modern, very attractive sea side housing area, just on the spot with the existing and closed power plant. That is why we want the installations being pulled down as quickly as possible. We are not in favour for having a new coal or gas fired station at the site. We do not want wind mills neither there nor in the sea outside. We also want a quick dismantling of the big gridlines, now troublesome barriers to our land use planning in a rather densely populated area. But both the operator and the affected authorities are objecting our ideas of a quick dismantling, arguing that it would be too expensive. Some arguments have also been heard saying that the infrastructure would be excellent for a new, non-nuclear power plant, not saying of which type.

As an example of applied and ambitious decommissioning and dismantling planning and work we have visited our neighbours in northern Germany at the Greifswald, more precise the Lubmin site. The will of the region (the Land Mecklenburg-Vorpommern and the district) and the municipality is listened to there. In Germany they are lacking a central storage for spent nuclear fuel like ours in Sweden and an accepted low radioactive waste repository. An enormous amount of German tax payer's money are invested at the old NPP of Lubmin. Probably a world record of this kind! The Germans are "recycling" the site of the reactor and huge turbine halls just to establish a new future with a new type of industries like the terminal for gas, harbour facilities, tourism etc. This is a very impressing and impressing project to me. Especially the rapid process of decommissioning and dismantling there we would like to copy at Barsebäck. A wish and a proposal of a rapid decommissioning and dismantling also for Barsebäck. As said, just to day my colleagues from our local council are informing our Minister for Environment Mrs. Sommestad about our intentions to hurry up the operations at Barsebäck. We want the land for other purposes as soon as possible!

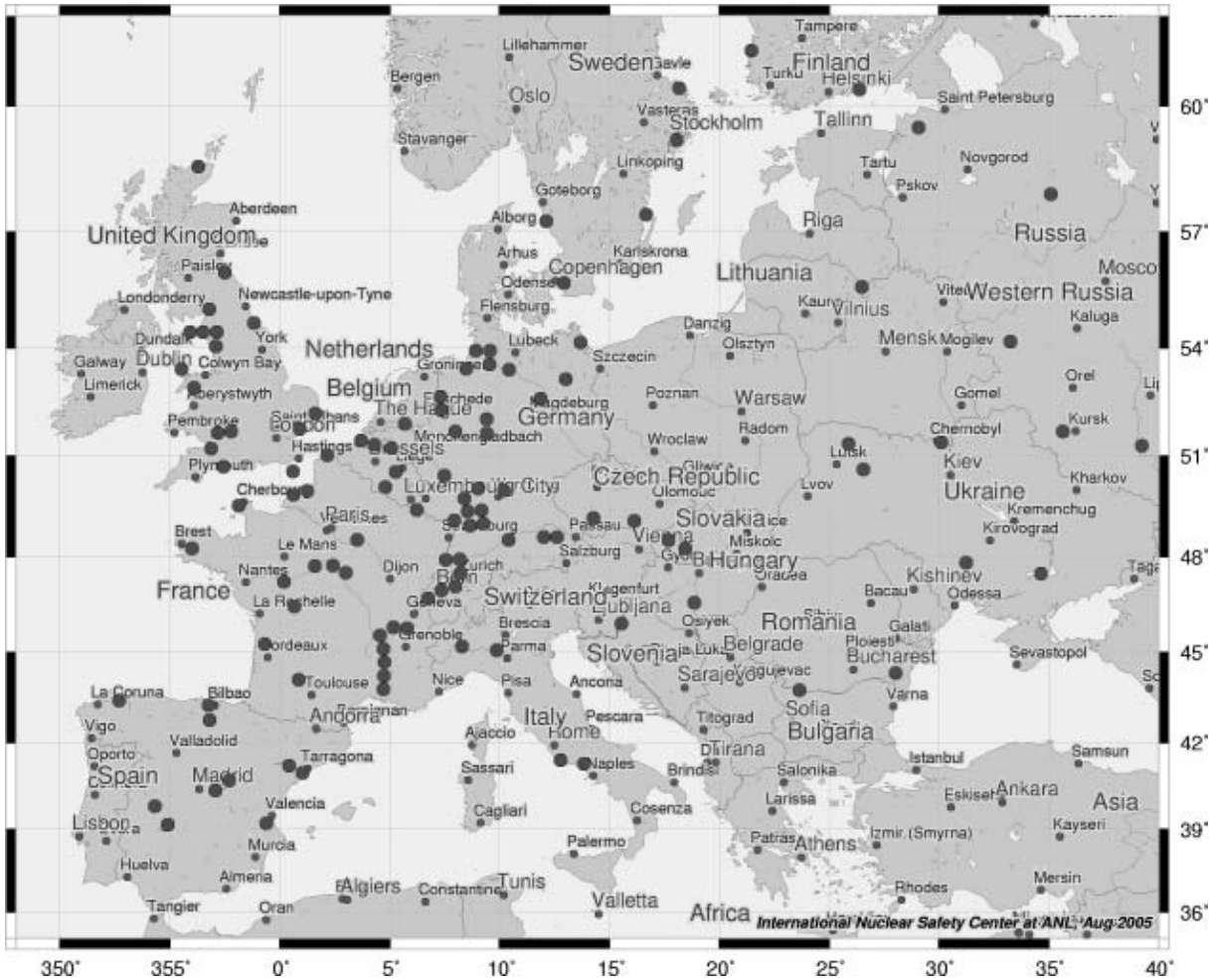
4. Lessons learnt

Every decision or proposal to install a new plant or to close an existing one is affecting a defined local population and a fixed geographic place in a municipality. This is a self evident geographic and democratic fact sometimes forgotten. The municipality, being closest to the grassroots, performing as a local stakeholder must be heard on time (early!) and hopefully listened to. My Barsebäck case and also some examples abroad are frightening examples of lacking dialogues with the affected municipalities. Our appeal was rejected by our courts and our Government without satisfying arguments as seen from our point of view as local stakeholders!

A lesson learnt is that a municipality hosting a nuclear facility should discuss and define its future land use. In Sweden our communes have the exclusive right to decide on their land use. If defined on time such a definition and decision of how to use the site in the future could be very useful in the phases of

both decommissioning and dismantling. It is also very important to me that transparency, openness is applied by all stakeholders. Secret negotiations between for instance a Government wanting to phase out and the owner/the operator must be avoided in the future. The democracy has a need for being improved when affected stakeholders, including the employees and the commune are kept aside. Therefore we are cooperating in GMF in a new project, supported by EU, on how to develop a better local dialogue based on good, concrete examples in different countries. The project will last at least two years from now and it is lead by the GMF secretariat in Spain. The Commission in Brussels is often informed by us in GMF and they are very aware of the national strategy and the decision making in the capitals is not always reflecting the grass-root thinking on the local level! We are underlining the importance of the EU-guiding star: Subsidiarity. The member municipalities of GMF are simultaneously also arguing for the urgent needs of a more coordinated energy programme for Europe, including for instance more fair energy taxes. We deserve it the sooner the better. "Father", read the national government, does not always know best!

Thank you for your attention.



THE PORT HOPE AREA INITIATIVE MUNICIPAL INVOLVEMENT

Mayor Rick AUSTIN
The Municipality of Port Hope, Canada

and

Mark STEVENSON
Port Hope Project Manager and Peer Review Coordinator

Introduction

Thank you.

I will lead this presentation but I will turn it over to Mark Stevenson for his thoughts on the peer review role on this Project.

As the Mayor of Port Hope with over 17 years on Council, and a life-long resident in the community, I have a unique perspective about the current Environmental Assessment process to clean up the waste, and the events that precede it.

By way of background, my municipality contains one of the world's oldest nuclear facility sites. From the 1930s through to the 1970s, processing residues from radium refining facilities located at the Port Hope Harbour were being stored and/or deposited on numerous sites throughout the municipality. For a variety of reasons, including spillage of material during transportation and unmonitored or unauthorized diversion of materials, many private and public properties in the municipality were contaminated with low level radioactive waste.

Over the past 30 years, the community has demanded that the nuclear industry and the federal government clean up the mess left in Port Hope. In the 1980s and 1990s, the federal government sought to fulfill its commitment to clean up over one million cubic metres of contaminated material remaining in Port Hope but was unable to find a solution. Some of you are aware of the Low Level Radioactive Waste Management Siting Task Force and its work in trying to find a home for historic LLRW in the 1980s and 1990s. It is only within the past 6 years that we, as a community, began to see the "light at the end of the tunnel". And, the light began to shine when the communities took the issue of long term management of the waste into their own hands and proposed possible solutions to the federal government. So the Port Hope Area Initiative is a community-based initiative. And, we see ourselves as partners in the process.

Today, I'd like to move beyond the broader community perspective and share with you some of the reasons for success (so far) and some opportunities and challenges that our municipality, and specifically municipal Council, faces as a partner in this Environmental Assessment and project development process.

I will address some of the key elements of the Project that I believe have lead to the success of the Project to this point, including:

- The Legal Agreement and Agreement Monitoring process.
- The Property Value Protection Program.
- Hosting Fee.
- Municipal veto on some decisions.
- End Use as an asset to the Community.
- The Value of Peer Review.

I will also touch on a couple of the remaining challenges.

Benefits of Signing the Legal Agreement

Our partnership in the Port Hope Project is enshrined in a legal agreement signed between the Federal Government and the Town of Port Hope, Township of Hope and Municipality of Clarington in 2001. Subsequent to the signing the Township of Hope and the Town of Port Hope were amalgamated by the Province of Ontario into the current Municipality of Port Hope.

In the past, the municipalities at times felt as though they were David about to confront the federal Goliath. The Legal Agreement gives us the 'legs' to be on the same level as the federal government.

During the negotiations for the Agreement I was Deputy Mayor and by the time the Agreement was signed I was Mayor of the Municipality of Port Hope. I am proud to be a member of the Council that signed this Legal Agreement. It is extremely important to me to be able to continue the work that our previous Mayor and our Chief Administrative Officer set in motion by signing the Legal Agreement.

The Agreement provided us with considerable influence over the outcome of the Environmental Assessment and the Project. First and foremost, this Legal Agreement commits the federal government to clean up the waste in the municipality, a feat that had eluded the federal government and the municipalities for so long. Specifically, the Agreement requires that Canada clean up properties contaminated with Historic Low-Level Radioactive Waste so that they can be used for "all current and foreseeable unrestricted uses".

However, the work did not stop with the signing of the Legal Agreement. To avoid possible misinterpretations of the Agreement we needed to ensure that communication channels remained open. One of the mechanisms that was developed to implement the agreement was the Agreement Monitoring Group (AMG). This Group consists of representatives of the Low-Level Radioactive Waste Management Office (LLRWMO) as proponent for the Environmental Assessment, the federal government (NRCan), the Municipality of Port Hope, including Peer Review Team representative Mark Stevenson and the Municipality of Clarington. The AMG meets approximately every six weeks in confidential meetings to ensure that all actions required under the Legal Agreement are on track and that all actions comply with the Legal Agreement. The meetings allow for an open and frank discussion among all parties. And let me tell you, at times the discussions have been very frank and a little tense. But at all times we had the legal agreement to guide our discussions and to provide the framework to resolve issues.

Municipal Veto

The Environmental Assessment process is a valuable planning tool. Based on our previous experience, we understand that decisions can be taken by senior levels of government at times without the full

knowledge and support of the local community. The Legal Agreement requires municipal consent at key milestones before the federal government can move forward with the EA process. If there is no municipal consent then the process would be halted until actions were taken to address municipal concerns. In addition, the Agreement provides the municipality with the authority to veto decisions made by the federal government during the EA process if the preferred option agreed to by Municipal Council is subsequently changed. This veto provides us with the political leverage to negotiate a project and a level of cleanup that reflects the municipality's needs.

One example of a milestone where municipal involvement is important was the formal consent required from Council to allow the proponent to submit the Environmental Assessment for federal government review. The Assessment included a recommendation to change from two proposed long term waste management sites within the amalgamated Municipality of Port Hope to one site for approximately two million cubic metres of contaminated material. Council considered this recommendation very carefully because it means transferring about one million cubic metres of waste from one Ward in Port Hope to another Ward. We listened not only to the advice of our peer review team but also the advice of the residents of both wards. In the end, we agreed to the proponent's recommendation, provided that outstanding issues were resolved to our satisfaction.

Property Value Protection (PVP) Program

The Municipalities understood from the outset that a major resident concern with the project would be the effect on property values. In fact, the lack of a program to protect property values was the main reason for the failure of a previous attempt to address the problem. In the 1980s, the federal government put forward a disposal concept to bury the historic low level radioactive waste in limestone caverns. Although there was local opposition to the concept of burial under the water table, the Municipality of Port Hope decided not to allow the federal government to proceed when it became clear during negotiations that the federal government would not include a Property Value Protection (PVP) Program. After many years of trying to address this issue, Municipal politicians and staff knew full well that, to garner local support, residents and businesses needed to know that their investment in the community (their property value) would be protected during the cleanup. Remember, this is a multi-year cleanup effort, with the potential for disruption in the community and property values are at risk during the cleanup.

During the negotiations for this Legal Agreement, the municipalities not only were insistent that a program be put in place to address this concern but they also defined what the program needed to address. The result is the PVP Program. This program ensures that home and commercial property owners will not be disadvantaged financially because of the Port Hope and Port Granby Projects. Reductions in value upon the sale of property due to the Port Hope Area Initiative will be reimbursed by the federal government.

We believe the PVP Program has been an essential component in enabling us to get to this stage.

Hosting Fee

The three municipalities and the federal government recognized that a hosting fee would be a necessary part of the package for the communities to accept siting a facility in their community. The legal agreement sets out the same hosting fee for the three municipalities although the Town of Port Hope has almost all of the contaminated sites (Clarington and the former Hope Township have existing waste management sites within their boundaries). And, the federal government agreed to clean up four non LLRW contaminated industrial sites, one a former coal gasification plant, in the former Town of Port Hope. The goal of the municipality was to ensure that the cleanup would not only make

the historic LLRW contaminated sites available again for public use but also to relieve a future burden from the municipality for the cleanup of these other industrial sites.

In addition to being a strong incentive for the communities to continue to host a waste management facility, the hosting fee provides on opportunity for the Municipality to create a positive legacy for our community.

Facility End Use: Ensuring a Positive Legacy

A significant challenge that Council faces is ensuring that this project results in a positive legacy for the municipality; something that the community can value rather than being home to a facility that creates a negative image for the Municipality. A case in point is the discussion of end use for the proposed waste management facility. Council recently appointed a Long Term Waste Management Facility End Use Advisory Committee to advise Council on how the facility and the site should be used after the municipality has been cleaned up and the facility has been closed.

The goal of the community has always been to have a facility that our community can be proud of – a facility that can be used by residents and visitors. What better way to demonstrate the safety of the facility than to design it so that it is used by the public without any additional radiation exposure. This was one of the performance criteria developed as part of the original community proposals and agreed to by the federal government. The LLRMWO has a design that addresses this community requirement and the End Use Advisory Committee is pursuing a publicly accessible facility, including flower gardens, walking trail, active sports facilities and heritage and science interpretive centres. However, some residents prefer that the mound be permanently fenced and signed to prohibit public access. And, future generations, who will have no recollection of the cleanup, should be aware of the nature of the facility, especially if they have access to it. The challenge for Council is to balance the desires of current residents and anticipate the needs of future generations when we make decisions today.

Peer Review

The Agreement also ensures that the municipalities have the resources to conduct an independent assessment of the work completed by the LLRWMO. Despite my years living in Port Hope, I am not an expert in radioactive waste management or the environmental assessment process, nor are other members of Council or staff. Thus, it was important to Council that the municipality retains a team of experts in radioactive waste management and other related disciplines to assist us in reviewing the work that the LLRWMO is undertaking for this Initiative. These reviews help me to re-assure residents that the Municipality is scrutinizing the scientific, engineering and social analysis of the proponent. The firm of Hardy Stevenson and Associates Limited, represented by Mark Stevenson and Dave Hardy, has provided Council with the expertise required to fully address our interests and concerns. Mark will outline the Peer Review Team's role in a few minutes.

Other Challenges of the Project for Council

While this Legal Agreement provides the municipalities with greater influence over the project description and the outcome of the Environmental Assessment (EA), especially when compared with the typical role of municipalities in other Federal EAs, there are many challenges that the municipalities face as partners in this process. Being a partner requires the municipality to work collaboratively with Natural Resources Canada, the lead federal agency, the LLRWMO, and with the Municipality of Clarington. While the parties see "eye to eye" on many issues, there have been instances where our interests conflict with those of the federal government. Sometimes it is necessary for all parties to "give and take" to ensure the success of the project. Although the Legal Agreement is

signed and sealed, the project really is a series of discussions and negotiations to ensure that the Agreement is implemented, that issues and directions are agreed to as the project moves forward and that public and Municipal support, and federal government commitment are maintained. Two issues that have yet to be bridged are agreement on cleanup criteria and the influence of the amalgamation of the two municipalities into one.

Cleanup Criteria

A key requirement for leaving a positive legacy is that the waste be cleaned up from the contaminated sites so that the sites can be used for all unrestricted future uses. In 25, 50 or 100 years the Municipality, its residents or business owners should not be burdened regulatory requirements or real or perceived health risk because regulations that governed this project in 2005 became more stringent.

The development of cleanup criteria (how clean is clean?) has been difficult. For each attempt to find a solution to the contamination in Port Hope over the past 20 or so years, agreement has never before been achieved on the cleanup criteria. Port Hope Council and staff, together with the Municipality of Clarington, collaborated with the LLRWMO to agree on a set of cleanup criteria for this project. The basis of the discussions was to be a technical document prepared by the federal proponent based on a risk assessment model and guided by the current regulatory regime in Canada. The discussions circled around the volumes of materials that would be generated at each remediation site. After a number of meetings when tensions were rising and nerves were frayed, we stepped back and reiterated our basic goals and desires. We then move to a discussion of the principles that could guide the development of the cleanup criteria based on a key principle contained in the legal agreement – that the remediation sites should be cleaned up "so that all such properties will be able to be used for all current and foreseeable unrestricted uses".

After a series of meetings and some lengthy discussion, the text of the principles took form. The text was edited and the wording re-examined a number of times by the group until an agreeable set of criteria emerged. These principles are intended to guide the development of cleanup criteria. They are a key aspect of this project. These principles are intended to guarantee that, among other things, the contaminated sites will be cleaned up so that the current and future owners can use their properties for any use, such as vegetable gardens, play areas, and other recreational uses.

Now I will turn over to Mark Stevenson to briefly summarize his thoughts on the peer review process. Mark.

Peer Review Process

For the next few minutes I will share some of my insights into the Peer Review process for the Port Hope Area Initiative. I will focus on two main areas: 1) what is the PHAI peer review process? 2) how does a peer review process work? My role as lead consultant to Port Hope is to act as the Project Manager for the Municipal involvement in the Project, to coordinate the multi-disciplinary peer review team; to liaise with community members and to advise Municipal staff and Council. I have a full time office within the Municipal offices.

What is the Function of a Municipal Peer Review?

Residents typically ask their most direct and accessible level of government to help them to address issues. Yet, issues involving nuclear physics, toxicology, air emissions, hydro- geological engineering cannot be addressed by most municipalities because they lack the staff and resources to address them. Even the largest Canadian municipalities will not have nuclear engineers and toxicologists on staff.

The municipal level of government is the most accessible to residents. Municipal councillors live in the same communities as residents. As voters, the local residents are looking for assurance that their concerns are being addressed. The level of trust in municipal councillors increases when residents can hear facts and opinions from their councillors. And, so that they know that their interests are being addressed.

This pressure from residents inevitably results in municipal councillors being asked to take a stand on issues that are typically well beyond the ability of the municipality to address. In addition, in Canada, residents generally have a high level of education and have access to resources and information from many sources including the Internet. Their questions to political representatives are generally well researched and thoughtful.

Even if municipal councillors are not being asked to take a political position by residents, most municipalities are interested in knowing that a Proponent will be acting carefully and will not be leaving a municipality with a problem. The municipality must determine if there will be health effects, and must ensure that the clean-up be done correctly. The Municipality is also concerned with the potential for long standing financial obligations. Consequently, municipalities feel that it is prudent to conduct due diligence.

Rather than vote to stop a potential controversial project, municipalities can seek to 'level the playing field' with the proponent by asking for a peer review of the project. The peer review process functions to provide both a required level of expertise and to support political choices by the municipality.

Peer Review for the Port Hope Area Initiative

For the Port Hope Area Initiative, both the Municipality of Clarington and Municipality of Port Hope successfully negotiated in the Legal Agreement that a peer review team be retained by the municipalities during the environmental assessment studies and clean-up of contaminated sites.

Both Municipalities saw the practicality of hiring one firm: Hardy Stevenson and Associates Limited to conduct the peer review for both municipalities. By hiring one firm, each municipality would have the benefit knowing the studies and analysis being conducted by the PHAI for its neighbour, while at the same time, the overall Peer Review costs could be reduced because there would be no duplication of peer review expertise.

They sought and received a Peer Review Team that:

- Is independent of the PHAI and the Municipality. It is imperative to the process that the Peer Review Team is neutral. To be successful, residents must feel that the Peer Review Team is a neutral body, acting to maintain a level playing field between various stakeholders.
- Has an extensive track record and reputation of working with Citizen Groups and Environmental Groups.
- Answers to the Municipality.

To support the independence, the Peer Review Team is paid directly through the Municipality. The Municipality recaptures the costs from the federal government through the PHAI.

How is the Peer Review Team organized?

Initially the Peer Review Team was comprised of a range of professionals with expertise in nuclear engineering, air quality assessment, hydrogeology, geology and soils science, land-use planning, shoreline and harbour engineering, social science and natural environmental sciences. Several unique aspects of the Peer Review Team include:

- The team is a private sector consultancy that brings a depth of experience, focus and discipline to the peer review.
- The team includes a Project Manager and communications person located full time in the Municipality of Port Hope.
- There is flexibility to be able to add additional Peer Review Team members as PHAI studies warrant. To date, we've added a Medical Doctor who has a family practice, but is also highly skilled in the health effects of radio nuclides and has a PhD in toxicology and epidemiology. We have also added a transportation engineer.
- A final unique aspect of the team is that it is led by social scientists and planners rather than scientists and engineers. We felt that the social science issues were just as, if not more, complicated than the physical sciences and engineering. It is often the social aspects that derail projects. We felt it would be better to have the Peer Review led by social scientists who understand nuclear science and engineering, who could see the problems from the perspective of residents and the local community, and then apply the technical expertise from that perspective.

What are some of the distinct elements of the Peer Review Process for the PHAI?

The Peer Review process related to the PHAI has a number of distinct characteristics intended to improve communication and the effectiveness of the interaction between the PHAI and Peer Reviewers and the community:

- The Peer Review process is ongoing and iterative. To address the potential of Peer Review experts providing major negative comments at the end of a study, major comments are received in time to make adjustments or to be resolved. (e.g. transportation and health studies). This allows PHAI experts to reflect on Peer Review expert comments, conduct additional analysis or refine conclusions, as required.
- The Peer review team provides an integrated set of comments. Although for each discipline one lead reviewer is assigned, for key reports additional relevant disciplines also review the report and the comments of each reviewer are discussed and relevant comments incorporated into a set of comments forwarded to the proponent.
- To date the Peer Review Team has commented on all major reports prepared by the proponent and numerous background reports, including the Draft Environmental Assessment Study Report, the individual effects assessment reports and each discipline baseline study as well as the Cleanup Criteria Discussion Document.

The Peer Review Team has a visible role in the community. The Peer Review Team attends public meetings in order to identify local concerns and values, and to listen to what makes up the quality of life for residents. Additionally:

- As Peer Review Project Manager, I am accessible to any member of the community and am visible in the community, working full time in the Municipal Offices.
- The Peer Review Team conducts its own public consultation meetings at key milestones.

How does the Peer Review Process Work?

The Peer Review process works on the basis of a number of principles that assist in liaison between the Municipality and PHAI.

Principles for Peer Review

First, the Peer Review Team works for the Municipality and reports through me to the Chief Administrative Officer and Council.

Second, the Peer Review team does not conduct original and independent research. Instead, the team will point out where there are studies missing or where significant gaps in the analysis occur. It is up to the PHAI, and not the Peer Review Team, to decide whether, and how, to address the research gaps.

Third, the Peer Review experts take the role of 'peer reviewers', not adversaries. That said, there have been, and will continue to be, times when there are strong areas of disagreement about scientific and engineering studies. While there is a process of discussing and resolving these issues, at times the Peer Review Team and PHAI will simply disagree and take a public position accordingly. Or comments of the government review agencies may help to resolve outstanding issues.

Fourth, the Peer Review Team has access to all relevant documentation. The PHAI has generally provided open access to information and studies. This allows the Peer Review Team to be thorough and dig for information where necessary.

Methodology

The Peer Review Team follows a methodology that sets out the process of evaluating reports. The methodology reinforces the principle of a fair and transparent process.

The following questions are posed in the methodology of the Peer Review Team:

- Is the purpose of the EA work clearly stated and all issues and impacts encompassed through the stated purpose?
- Is the methodology sound? Does it permit an objective review of the issues, data and facts?
- Are relevant data and facts clearly and consistently used in the reports/studies?
- Have cumulative effects been thoroughly understood?
- Are certainties and uncertainties of the EA studies openly and objectively stated?
- Are there data gaps?
- Can we trust the data?
- Are the conclusions supported by the data and analysis?
- If the peer review team examined the data would it reach the same conclusions?
- Are realistic mitigation measures proposed by the LLRWMO?
- Will the mitigation measures function to address effects over the life of the project?
- Are there gaps arising from our examination of the issues?

- Are there areas where the Peer Review Team and LLRWMO consultants completely disagree?
- Have significant issues been overlooked during the EA process?
- Are gaps addressed to the point where the EA can move forward?
- Are there Federal, Provincial and local standards, regulations and guidelines that are overlooked?
- What are our conclusions as a peer review team?
- What is our recommendation to the Municipality of Port Hope?

I would like to say that the peer review process also addresses trust and credibility in the environmental assessment process. While there appears to be a general acceptance of the peer review comments, not all residents agree with Peer Review Team findings and recommendations. For these residents, additional information from the Peer Review Team is not likely to be influential; their positions are already firmed up.

In conclusion, the PHAI Peer Review process, I believe, functions to improve decisions by ensuring that the Municipality is well informed; that the Municipal and public interests and concerns are advocated and addressed; and by providing greater credibility and greater community acceptance of the clean up of contaminated soils and radioactive materials.

Thank you for this opportunity to speak to you today. I would be happy to discuss the peer review team role in more detail throughout the day. Now Mayor Austin will provide his own concluding thoughts.

Conclusion

A few concluding remarks. I hope that I've been able to provide some insight about the municipal involvement in the Port Hope Area Initiative (PHAI). Starting with the community proposals, the process has involved a considerable amount of municipal energy and time. I am proud to say that our Councillors have pulled together as a team. And, I would suggest that this level of effort and commitment will occur for any other community in Canada which decides to accept the responsibility to lead the clean up of contaminated sites and to provide for better long term management of the wastes.

Signing the legal agreement has made us partners in the process and provided us with greater influence over the outcome of the EAs. We learned that, along with this partnership, comes the responsibility of balancing our interests with those of the federal government. Some may observe that the two municipalities of Clarington and Port Hope are now managing Federal-scale responsibilities. Indeed, few if any other cities in Canada require their Councilors to be conversant in matters of nuclear engineering, epidemiology, health physics and the social sciences.

While we have come along way, we still have some distance to go. We will need to confirm clean-up criteria and then prepare for Canadian Nuclear Safety Commission (CNSC) approvals and other approval steps. Most importantly, we will need to prepare the residents of Port Hope for periods of disruption while the clean-up is underway. And although our community is in transition and the local political landscape is likely to change in 2006, we are confident that, working with NRCan and the LLRWMO, the clean-up will be completed. We look forward to the day that we become not only Canada's best community but its cleanest.

RESTORATION PRINCIPLES AND CRITERIA: SUPERFUND PROGRAM POLICY FOR CLEANUP AT RADIATION CONTAMINATED SITES

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The Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation (OSRTI) is responsible for implementing the long-term (non-emergency) portion of a key U.S. law regulating cleanup: the Comprehensive Environmental Response, Compensation and Liability Act, CERCLA, nicknamed "Superfund." The purpose of the Superfund program is to protect human health and the environment over the long term from releases or potential releases of hazardous substances from abandoned or uncontrolled hazardous waste sites. The focus of this paper is on Superfund, including how radiation is addressed by the Superfund program.

This paper provides a brief overview of the approach used by EPA to conduct Superfund cleanups at contaminated sites, including those that are contaminated with radionuclides, to ensure protection of human health and the environment. The paper addresses how EPA Superfund determines if a site poses a risk to human health and the framework used to determine cleanup levels. The theme emphasized throughout the paper is that within the Superfund remediation framework, radioactive contamination is dealt with in a consistent manner as with chemical contamination, except to account for the technical differences between radionuclides and chemicals. This consistency is important since at every radioactively contaminated site being addressed under Superfund's primary program for long-term cleanup, the National Priorities List (NPL), chemical contamination is also present.

Introduction: Superfund based on Protection of Human Health

The Superfund program is dedicated to cleaning up hazardous waste sites and protecting public health and the environment. EPA has worked closely with the Agency for Toxic Substances and Disease Registry (ATSDR) in evaluating the impacts of Superfund sites on public health. Studies conducted by the ATSDR show a variety of health effects associated with some Superfund sites, including birth defects, cardiac disorders, changes in pulmonary function, impacts on the immune system, infertility, and increases in chronic lymphocytic leukemia. In addition, hundreds of drinking water wells across the country have been shut down due to contamination.

Superfund is one of the United States' most ambitious and complex environmental programs. Since it was launched, the Superfund program has maintained two bedrock principles: protection of human health and the environment is foremost, and polluters must pay for cleanup of the contamination they create.

Superfund arose out of the need to protect citizens from the dangers posed by abandoned or uncontrolled hazardous waste sites. In the wake of the discovery that a residential district had been

built atop an abandoned chemical dump at a town called "Love Canal" in New York State, the American public demanded that its government take action.

The enactment of Superfund gave the federal government broad authority to respond to hazardous substance emergencies, and to develop long-term solutions for the United States' most serious hazardous waste problems like Love Canal. It also enabled the United States Federal government to recover the costs from responsible parties, or to force them to clean up the hazardous site at their own expense.

When CERCLA or Superfund was enacted, the challenge of what was assumed to be a few hundred discrete, land-based cleanups appeared relatively straightforward. Furthermore, the Congress created a $1.6 billion Trust Fund to ensure that funding would prove no obstacle. Things have not worked out as smoothly as that, however. The problem of neglected hazardous waste sites has revealed itself to be far more complex and widespread than anyone at first realized.

While every Superfund site is unique, and thus cleanups must be tailored to the specific needs of each site, there are two requirements that must be met at every site. CERCLA requires that all remedial actions at Superfund sites must be protective of human health and the environment. Therefore, cleanup actions are developed with a strong preference for remedies that are highly reliable, provide long-term protection and provide treatment of the principle threat to permanently and significantly reduce the volume, toxicity, or mobility of the contamination. In addition, EPA believes that site cleanups should protect ground waters that are current or potential sources of drinking water to drinking water standards whenever practicable. In addition, CERCLA specifically requires Superfund actions to attain or waive the standards and requirements found in other State and Federal environmental laws and regulations. This mandate is known as compliance with "applicable or relevant and appropriate requirements" or ARARs.

Remedy Selection

A comprehensive regulation known as the National Oil and Hazardous Substances Pollution Contingency Plan or NCP contains the guidelines and procedures for implementing the Superfund program. The NCP reiterates CERCLA's goal of selecting remedies that protect human health and the environment, that maintain protection over time, and that minimize untreated waste. The NCP sets forth nine criteria for selecting Superfund remedial actions. These evaluation criteria are the standards by which all remedial alternatives are assessed and are the basis of the remedy selection process. The criteria can be separated into three levels: threshold, balancing, and modifying. The first two criteria are known as "threshold" criteria. They are a reiteration of the CERCLA mandate that remedies must (1) at a minimum assure protection of human health and the environment and (2) comply with (or waive) requirements of other Federal environmental laws, more stringent State environmental laws and State facility-siting laws. They are the minimum requirements that each alternative must meet in order to be eligible for selection as a remedy.

After the threshold criteria are applied, EPA considers a number of other evaluation criteria. Five of the criteria are known as the "balancing" criteria. These criteria are factors with which tradeoffs between alternatives are assessed so that the best option will be chosen, given site-specific data and conditions. The criteria balance long-term effectiveness and permanence; reduction of toxicity, mobility, or volume; short-term effectiveness; implementability; and cost. The final two criteria are called "modifying" criteria: new information or comments from the State or the community may modify the preferred remedial action alternative or cause another alternative to be considered.

EPA believes the "modifying" criteria concerning new information or comments from the community is important. In many instances, communities are able to provide valuable information on local history, citizen involvement, and site conditions. To ensure community participation, EPA specifically requires the party conducting the cleanup to conduct a number of activities. For example, EPA conducts community interviews and develops a community relations plan to help EPA determine the community's level of interest in the site, major concerns and issues. EPA creates an information repository and administrative record for every site and makes it available to community members. EPA also develops a document specifically for the community which explains the various clean up options being considered, holds at least one meeting to explain the options and invites the community to submit comments on them. EPA also make funding available to eligible community members so they may obtain technical assistance to better understand the often complex issues associated with cleaning up a Superfund site. By identifying the public's concerns, EPA is able to fashion a response that more effectively addresses the community's need.

Risk Assement

To help meet the Superfund program's mandate to protect human health and the environment from current and potential threats posed by uncontrolled hazardous substance releases (both radiological and nonradiological), EPA has developed a human health evaluation process as part of its remedial response program. The process of gathering and assessing human health risk information is adapted from well-established chemical risk assessment principles and procedures. The Superfund Baseline Risk Assessment provides the EPA's estimate of the likelihood and magnitude of health problems occurring if no cleanup action is taken at a site. Specifically, the risk assessment provides:

- an analysis of baseline risks to help determine the need for action at sites;
- a basis for determining levels of hazardous substances that can remain onsite and still be adequately protective of public health;
- a basis for comparing potential health impacts of various remedial alternatives; and
- a consistent process for evaluating and documenting public health threats at sites nationwide.

The results of a risk assessment are critical in determining whether responses to protect human health and the environment are justified, and in establishing an appropriate cleanup level. The risk assessment also helps EPA identify potential risks associated with a particular remedy and evaluate risks remaining at a site after cleanup is completed.

Cleanup levels for radioactive contamination at CERCLA sites are generally expressed in terms of risk levels, rather than millirem or millisierverts, as a unit of measure. CERCLA guidance recommends the use of slope factors in the EPA Health Effects Assessment Summary tables when estimating cancer risk from radioactive contaminants. Many of you are probably more familiar with estimating millirem or millisieverts using dose conversion factors, rather than basing cleanup on site-specific risk assessment.

Risk-based Cleanup Levels

Compliance with the requirements of other laws, ARARs, is often the determining factor in establishing cleanup levels at CERCLA sites. However, where ARARs are not available or are not sufficiently protective, EPA generally sets site-specific remediation levels for: 1) carcinogens at a level that represents an upper-bound lifetime cancer risk to an individual of between 10^{-4} to 10^{-6}; and for 2) non-carcinogens such that the cumulative risks from exposure will not result in adverse effects to human populations (including sensitive sub-populations) that may be exposed during a lifetime or

part of a lifetime, incorporating an adequate margin of safety. Such is the case for the non-carcinogenic risks of uranium. The specified cleanup levels account for exposures from all potential pathways, and through all media (e.g. soil, ground water, surface water, sediment, air, structures, biota).

The 10^{-4} to 10^{-6} cancer risk range can be interpreted to mean that a highly exposed individual may have a one in 10,000 to one in 1,000,000 increased chance of developing cancer because of exposure to a site-related carcinogen. Once a decision has been made to take an action, EPA prefers cleanups achieving the more protective end of the range (i.e. 10^{-6}). EPA uses 10^{-6} as a point of departure and establishes Preliminary Remediation Goals (PRGs) at 1 x 10^{-6}. EPA has developed a Preliminary Remediation Goals (PRGs) for Radionuclides electronic calculator which may be found at: http://epa-prgs.ornl.gov/radionuclides/.

To assess the potential for cumulative noncarcinogenic effects posed by multiple contaminants, EPA has developed a hazard index (HI). The HI is derived by adding the noncancer risks for site contaminants with the same target organ or mechanism of toxicity. When the HI exceeds 1.0, there may be concern for adverse health effects due to exposure to multiple contaminants. Radioisotopes of uranium are generally the only radionuclides for which EPA will evaluate the HI for at a CERCLA site.

While cleanups will generally achieve a risk level within 10^{-4} to 10^{-6} for carcinogenic risk, risks of greater than 1 x 10^{-4} may be acceptable under appropriate circumstances. CERCLA guidance states that "the upper boundary of the risk range is not a discrete line at 1 x 10^{-4}, although EPA generally uses 1 x 10^{-4} in making risk management decisions. A specific risk estimate around 10^{-4} may be considered acceptable if justified based on site-specific conditions." Other EPA regulatory programs have developed a similar approach to determining acceptable levels of cancer risk.

EPA's risk range of 10^{-4} to 10^{-6} represents EPA's opinion on what are generally acceptable levels. This has been a consistent EPA position under CERCLA and other programs for many years. Congress did not define protectiveness in CERCLA and also did not change EPA's risk management approach during its very thorough consideration of the Superfund program prior to amending the CERCLA law in 1986.

Radiological Contamination included in Risk-based Cleanup Levels

CERCLA defines radiation as a hazardous substance subject to actions conducted under CERCLA. In particular, radionuclides are designated generically as hazardous air pollutants by Clean Air Act section 112, and CERCLA section 101(14)(E) defines the term "hazardous substance" to include Clean Air Act hazardous air pollutants.

EPA policy requires that cleanup of radionuclides are governed by the risk range for all carcinogens established in the NCP when ARARs are not available or are not sufficiently protective. Remedial actions under CERCLA must be protective, i.e. generally within the cancer risk range of 10^{-4} to 10^{-6} for all exposure pathways in all contaminated media.

Compliance with Environmental Laws

Compliance with (or waiver of) requirements of other Federal environmental laws, more stringent State environmental laws and State facility-siting laws is a cornerstone of CERCLA. Cleanups conducted under the Superfund program must comply with these laws unless a waiver is justified. These laws, as well as ARARs, assist EPA in identifying preliminary remediation goals and

alternatives. Complying with ARARs both during the implementation and upon completion of an action helps the lead agency define the ways in which the activity can be carried out in a manner that is protective of human health and the environment.

Because the diverse characteristics of Superfund sites preclude the development of prescribed ARARs, it is necessary to identify ARARs on a site-by-site basis. There are many radiation standards that are likely to be used as ARARs to establish cleanup levels or to conduct remedial actions. Some of the radiation standards most frequently used as ARARs at Superfund sites are the soil cleanup and indoor radon standards developed to address contamination at sites that are subject to the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). When used as an ARAR at Superfund sites, the soil cleanup level for radium 226 and radium 228 combined, or thorium 230 and thorium 232 combined, is 5 picoCuries per gram (pCi/g) *[0.2 becquerals per gram (Bq/g)]* above background, while the indoor radon level is 0.02 working levels inclusive of background.

For a list of "Likely Federal Radiation Applicable or Relevant and Appropriate (ARARs)", see Attachment A of EPA's guidance "Establishment of Cleanup Levels for CERCLA sites with Radioactive Contamination." This document and others providing additional guidance on compliance with ARARs at radioactively contaminated CERCLA sites, go to the following webpage: http://www.epa.gov/superfund/resources/radiation/radarars.htm.

Groundwater

One extremely important ARAR that should be noted are Maximum Contaminant Levels (MCLs) that are established under the United States law for drinking water standards, called the Safe Drinking Water Act. Over 85% of the sites designated for long-term cleanup by the Superfund program have some groundwater contamination. Ground water contamination is generally more difficult to detect and clean up than contamination in other environmental media. Ground water generally moves slowly; velocities are usually in the range of 5 to 50 feet per year. Large quantities of a particular contaminant can enter an aquifer and remain undetected until reaching a point of use, such as a water well or surface water body. Moreover, contaminants in ground water, unlike those in other environmental media such as air or surface water, generally move with relatively little mixing or dispersion, so concentrations can remain relatively high. These plumes of concentrated contaminants move slowly through aquifers and may be present for many years, sometimes for decades or longer, making the resource potentially unusable for extended periods of time. Slow migration over an extended period can cause a large area to become contaminated, and will increase the potential for exposure to those contaminants. All of these factors favor prevention of contaminated ground water where possible, and remediation of chemical and radioactive materials in other media (e.g. soil) to prevent future contamination of ground water.

EPA believes contaminated ground water should be restored to beneficial use, whenever practicable. This means that sites where the contaminated ground water is a potential or current source of drinking water should be remediated to concentrations corresponding to drinking water standards (e.g. concentrations corresponding to MCLs or more stringent State drinking water standards). The Superfund program requires MCLs be met within the aquifer, not at the tap. EPA's phased approach to addressing contaminated groundwater at CERCLA sites is discussed in "Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites, Final Guidance, which may be found at: http://www.epa.gov/superfund/resources/gwguide/index.htm.

EPA's policy is to defer to State determinations of ground-water use when such determinations are based on a Comprehensive State Ground Water Protection Program (CSGWPP) that has 1) been endorsed by EPA and 2) allows such determinations to be made at specific sites. In the absence of a

CSGWPP, EPA considers other state classification schemes and EPA's classification guidelines which uses criteria defining ground waters of sufficient quantity and quality to supply the needs of a single family household. EPA's us of CSGWPP's at CERCLA sites is discussed in "The Role of CSGWPPs in EPA Remediation Programs" which may be found at:
http://www.epa.gov/superfund/resources/csgwpp/role.pdf.

The current MCLs for radionuclides are set at 4 mrem/yr to the whole body or an organ for the sum of the doses from beta particles and photon emitters, 15 picoCuries per liter (pCi/l) *[0.6 becquerals per liter (Bq/l)]* for gross alpha, and 5 pCi/l *[0.2 Bq/l]* combined for radium-228 and radium-226, and 30 micrograms per liter of uranium. EPA has published concentration tables for each radionuclide that correspond to the 4 mrem/yr MCL in "The Final Implementation Guidance for Radionuclides and Appendices" (see page I-3) which may be found at:
http://www.epa.gov/safewater/rads/implement.html.

MCLs are developed using health, technological, and cost information. EPA establishes Maximum Contaminant Level Goals (MCLGs) at a level of a contaminant in drinking water at which there is no known or anticipated health threat from that contaminant to a person who consumes the water. EPA has established MCLGs for carcinogens, including radionuclides, at zero since scientists do not know if any level of exposure, no matter how small, might cause cancer. MCLs are established as close as possible to the MCLG, taking into account the technological and cost considerations for public water systems in achieving various concentration levels. EPA does use a target risk range of 10^{-4} to 10^{-6} when establishing MCLs for carcinogens. An MCL can be set outside the range if it is not feasible to achieve a specific level.

Other Criteria, Advisories and Guidance

Many Federal and State environmental and public health agencies develop criteria, advisories, guidance, and proposed standards that are not legally enforceable but contain information that would be helpful in carrying out selected remedies, or in determining their protectiveness. These materials are meant to complement the use of ARARs, not to compete with or replace them. Because they are not ARARs, their identification and use are not mandatory. These are known as to-be-considered (TBC) material. However, it is EPA's policy that dose-based (millirem) recommendations should generally not be used as TBCs.

In conjunction with the completion of the baseline risk assessment, where no ARARs address a particular situation, or the existing ARARs do not ensure sufficient protectiveness, these advisories, criteria or guidelines are used to set cleanup targets. This information may be invaluable in deciding how to carry out a particular remedy. Many ARARs have broad performance criteria but do not provide specific instructions for implementation. Often those instructions are contained in supplemental program guidance. Sometimes the Superfund program develops guidance on interpreting a particular ARAR to assist site decision makers. For example, at UMTRCA sites the standard for subsurface soil is 15 pCi/g *[0.6 Bq/g]*, averaged over a 15 cm thick layer of soil more than 15 cm below the surface. This standard for subsurface soil was derived as a tool for use in locating and remediating discrete deposits of high activity tailings found in subsurface locations at UMTRCA sites (typically 300-1,000 pCi/g). Since this range of radioactive contamination differs from that typically found at Superfund sites which contain the full range of radioactive contamination including lower levels, 15 pCi/g *[0.6 Bq/g]* wouldn't necessarily be an ARAR. However, since the subsurface soil standard was used as a finding tool for any contamination above 5 pCi/g *[0.2 Bq/g]*, EPA has interpreted the cleanup level as 5 pCi/g *[0.2 Bq/g]* (combined for radium-226 and radium-228 or thorium-230 and thorium-232) for purposes of ARAR compliance. This information is found in the

Superfund guidance document entitled "Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA sites."

Land Use/Institutional Controls

The concentration levels for various media that correspond to the acceptable risk level established for cleanup will depend in part on land use at the site. Land uses that will be available following completion of a response action are determined as part of the remedy selection process considering the reasonably anticipated land use or uses along with other remedy selection factors. EPA's policies for how to determine a sites reasonably anticipated land use is discussed in "Land Use in the CERCLA Remedy Selection Process", which may be found at:
http://www.epa.gov/superfund/resources/landuse.pdf.

Institutional controls are generally included as a supplemental component to cleanup alternatives, not as a substitute for treatment or containment. Institutional controls are non-engineering measures – usually, but not always legal controls – intended to affect human activities in a way that prevents or reduces exposure to hazardous substances. Institutional controls usually restrict land use to prevent unanticipated changes in use that could result in unacceptable exposures to residual contamination. At a minimum, institutional controls are intended to alert future users to the residual risks and the need to monitor for any changes in use.

EPA's CERCLA policy states that if a site cannot be cleaned up to a protective level (i.e. generally within the 10^{-4} to 10^{-6} risk range) for the "reasonably anticipated future land use" because it is not cost-effective or practicable, then a more restricted land use should be chosen that will meet a protective level.

Where waste is left on-site at levels that would require limited use and restricted exposure to ensure protectiveness, EPA will conduct reviews at least once every five years to monitor the site for any changes including changes in land use. Such reviews need to analyze the implementation and effectiveness of any institutional controls with the same degree of care as other parts of the remedy. Should land use change in spite of land use restrictions, it will be necessary to evaluate the implications of that change for the selected remedy, and whether the remedy remains protective.

Site Examples

Two examples of radioactively contaminated Superfund sites that have been addressed are the Glen Ridge and Montclair/West Orange sites in New Jersey. These two nearby sites were similar enough that they were addressed jointly. Over 700 properties were contaminated with radioactive waste materials suspected to have originated from radium-processing facilities located nearby during the early 1900's. Some of the radium contaminated soil was used as fill in low lying areas or was mixed with cement for sidewalks and foundations. Carcinogenic risks to residents posed by site-related indoor radon were estimated to range as high as 4×10^{-1}, while the maximum carcinogenic risks from radium contaminated soil were estimated at 1×10^{-2}. The remedy for these two sites included the excavation of highly contaminated soil and debris material for offsite disposal. The primary contaminant of concern in soil was Radium 226 with decays to radon gas. The ARAR used for radium was soil cleanup standards for uranium millings under 40 CFR 192 (5 pCi/g *[0.2 Bq/g]* over background). For radon, the ARAR used was indoor radon standards under 40 CFR 192 (0.02 working levels, inclusive of background).

Closing

Actions under Superfund must result in the protective cleanup of sites. The CERCLA framework for addressing hazardous sites ensures that risks from radiological contamination will be addressed in a manner consistent with risks from non-radiological contamination, except to account for technical differences posed by radionuclides, and that cleanups for all contaminants will achieve protection of human health and the environment. The same set of principles and decision making criteria apply equally to both chemical and radioactive hazards. The goal is to provide lasting, protective site restoration while taking into account the cost and achievability of different approaches to attaining these protective goals.

For more information and copies of EPA guidance documents for addressing radioactively contaminated CERCLA sites, see the EPA's Superfund Radiation webpage at:
http://www.epa.gov/superfund/resources/radiation/index.htm.

For more information and copies of EPA guidance documents for developing cleanup levels for long-term CERCLA sites, see EPA's Remedy Decisions webpage at:
http://www.epa.gov/superfund/action/guidance/remedy/index.htm.

Both of these webpages contain numerous OSWER Directives, which are EPA's official guidance for the Superfund program, and other material that is useful for cleaning up CERCLA sites.

STAKEHOLDER INVOLVEMENT: VIEWS FROM A POLICY MAKER

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1. Scottish Context

1.1 In 1999 powers and responsibilities were devolved from the UK government to the new devolved administrations in Scotland, Wales and Northern Ireland. This paper deals with the issue of radioactive waste management in the Scottish context as, following devolution, responsibility for radioactive waste management in Scotland is a devolved responsibility of the Scottish Parliament. The founding principles of the Scottish Parliament are:

- Openness and participation
- Accountability
- Power sharing
- Equal opportunities

1.2 The government of Scotland is known as the Scottish Executive and has 22 Ministers covering a wide range of devolved responsibilities including: wider environmental matters, health, socio-economic, skills and education. The Scottish Ministers also have specific responsibility in legislation regarding the governance of the Nuclear Decommissioning Authority (NDA). Scotland also has its own agencies to deliver our government policies, such as the Scottish Environment Protection Agency (SEPA) and enterprise and skills delivery bodies. There is a high level of interest in nuclear and radioactive waste issues in Scotland and the map (Slide 5 in the presentation) illustrates why this might be as Scotland has both civil nuclear and defence sites around the country which generate radioactive waste. Alongside this is its close proximity to the largest nuclear site in the UK – Sellafield.

2 Current Scottish Executive (SE) and UK-Wide radioactive waste management activities

2.1 There are a number of radioactive waste activities underway in the UK at present. The two principle ones are in relation higher activity and low level wastes and they are part of a programme known as Managing Radioactive Waste Safely (MRWS). Both are being undertaken jointly by the UK government and the devolved administrations (referred to as government).

2.2 On higher activity wastes the current phase is the work of the independent advisory committee appointed jointly in 2003 by the UK government and the devolved administrations – the Committee on Radioactive Waste Management (CoRWM). CoRWM was set up with terms of reference:

"to review the options for managing the UK's solid radioactive waste and recommend to Government the option, or combination of options that can provide a long-term solution protecting people and the environment".

2.3 It is required to work in an open and transparent manner and public and stakeholder engagement has been a fundamental part of its process throughout. As well as direct engagement with stakeholders it holds its plenary meetings in public and publishes its documents on its website- www.corwm.org.uk. CoRWM will make recommendations on long term management options to Ministers in July 2006. It will be for Ministers to decide.

2.4 The review of Low Level Waste was announced in April 2005. It is a government consultation and there have been two workshops with stakeholders – waste producers, regulators, central and local government - in preparation. The first scoped the issues of the various stakeholders and the second reviewed a draft consultation document. Following a further period of review the consultation will be issued.[1]

2.5 Other activities in the UK include the work of the new Nuclear Decommissioning Authority set up on 1 April 2005 under legislation (the Energy Act 2004) as a strategic body to ensure that the nuclear legacy is cleaned up safely, securely, cost effectively and in ways which protect the environment for the benefit of current and future generations. The NDA, as owner of the UK's civil public sector nuclear liabilities, is responsible for most of the UK's radioactive waste. Information can be obtained on its website – www.nda.gov.uk. The UK is also looking at how to decommission nuclear submarine reactors and how it should deal with radioactively contaminated land.

3 Stakeholder Engagement

3.1 As said above, openness and participation are fundamental tenets of devolution for Scotland and for how the Scottish Executive works. In 2002 we undertook some research into participation in radioactive waste matters[2] and the findings have informed how we have conducted our own consultations but also those we are jointly undertaking on an UK-wide basis.

3.2 Setting the Framework: It is important that people understand the basis on which they are engaging, both those who are conducting processes and the public and stakeholders with whom they need to communicate. Therefore there should be clarity as to: Rules of Engagement; Techniques; Processes; Support Mechanisms; Resource Implications; Quality Assurance; Evaluation. These apply in various measures to both those conducting and those participating in the process.

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1. Consultation document – A Public Consultation on Policy for the Long Term Management of Solid Low Level Radioactive Waste in the United Kingdom – was published on 28 February 2006. Information can be obtained at the website: http://www.peoplesscienceandpolicy.com/llw/index.html

2. Scottish Council Foundation Report for the Scottish Executive (SE) on Public Engagement - 4 July 2002
http://www.scotland.gov.uk/cru/kd01/lightgreen/mrws-00.asp
4 page Summary of Scottish Council Foundation Report for the SE on Public Engagement - 4 July 2002
http://www.scotland.gov.uk/cru/resfinds/erf20-00.asp
4 page Summary of Findings of a telephone survey for the SE on radioactive waste - 4 July 2002
http://www.scotland.gov.uk/cru/resfinds/erf21-00.asp

3.3 Determining and Defining the Approach: There is no one best method of engaging but there needs to be clarity as to why and who we are engaging, what we are engaging on, as well as how and when we need to engage. For Example:

Why? We need to be clear if we are giving or seeking information; decision making; enabling participation; influencing policy from outside the system. Whether we are invoking statutory requirements and/or voluntarily adopting best practice, participation should be possible, but it is for stakeholders choose to participate or not.

Who? It is not always the same stakeholders we are engaging, they may change during different stages of a process, or for different processes. We can have national and local players, interest groups, citizens, regulators, non-governmental organisations, industry in some or all parts depending on the nature of the issues. Where there are long timeframes, such as in radioactive waste, people will come in (and out) at various stages and we need to be able to address their needs, including informing them of the earlier stages where decisions have been made. It is also important to seek to address issues from an intergenerational perspective. Some of our research involved young people who may be future decision makers in this long term process and who will be living with the consequences of decisions taken now.

What? The material used and the way it is developed must be accessible. Issues need to be clear, and this is particularly important if there are no opportunities for face to face discussion to clarify and explain. We should seek to identify not only our own issues but also those of stakeholders. These are not always the same, for example, for waste producers they may be technical but for communities they may be socio-economic. We also need to consider the wider context in which we are operating: international; European Union; UK; Scottish; local.

How? There are a wide variety of tools available: paper consultations, electronic communications; face to face interaction in many forms. The Forum on Stakeholder Confidence (FSC)[3] has done much work here and should be considered by those engaging in radioactive waste engagement. We need to choose the tools which are most suitable for the purpose and look to examples by others, such as those at this WPDD meeting, and where necessary undertake specific research.

When? There may be a need to engage on a number of occasions during a process and particularly if it is over a very long timeframe such as in radioactive waste. It is a long timeframe, not just for the process, but also for the life of the materials we are managing. This is an aspect where intergenerational issues are particularly relevant.

3.4 Good Practice There are some simple messages which can assist us:

- Plan, target, anticipate, accommodate.
- Be clear, be simple, be concise, be realistic, be flexible.
- Be imaginative – "technical consultations" do not demand a technical consultation.
- Monitor and evaluate

4 External factors

4.1 Whatever engagement process we are undertaking, we need to recognise that we are not working in isolation. There will always be other factors which will impact on what we are trying to achieve and importantly, many of these will be outside our direct control.

3. Forum on Stakeholder Confidence website: http://www.nea.fr/html/rwm/fsc.html

4.2 The accessibility and accuracy of information can be affected by how it is reported, for example, in the media and we need to recognise that this may be a major source of information for many. Related issues which have a high public profile can also impact for example, discussions on new nuclear energy can often be linked to radioactive waste issues. Independence of advice can be questioned and this leads to how the credibility of "experts" is perceived. Trust is an issue at all levels. People may or may feel that they are, or are not, directly affected by the proposals. We may make considerable efforts to engage but the choice lies with people who may, or may not, choose to be involved.

4.3 There needs to be visibility of the process and transparency and openness at all stages. There are many methods of informing, consulting and involving, but there is no single best way of engaging and we need to remember that not everyone has access to electronic systems.

5 Conclusion

5.1 We must:

- not assume that people understand the issues just because we do;
- avoid using jargon and make the facts understandable, particularly technical facts ;
- understand that there is no "one stakeholder group";
- recognise that there are many groups at different levels of awareness, understanding and desire to be involved;
- encourage trust;
- be open and willing to listen but we must be clear about the boundaries within which we have to operate;
- encourage and maintain ongoing dialogue throughout the process;
- need to feedback outcomes as process continues but we must manage expectations.

5.2 A comment from one of the young people involved the young person's focus group which was part of our Scottish Executive research referred to earlier has remained with me it is:

"we all need to be involved in this, it's not just for us, but for our children and for their children"

This illustrates the importance not only of engaging in radioactive waste management matters but also the timeframe of the effect our decisions will have and their impact on future generations.

OUTREACH AT THE CANADIAN NUCLEAR SAFETY COMMISSION

R. LOJK, M. BEN BELFAKHEL and CNSC staff
CSNC, Canada

Mission and Mandate

Established by the *Nuclear Safety and Control Act (NSCA)* that came into force in May 2000, the Canadian Nuclear Safety Commission (CNSC) is an independent federal agency that reports to Parliament through the Minister of Natural Resources. The CNSC regulates all uses of nuclear energy and nuclear materials from the production, to use, to the final disposition of any nuclear substances. Under the *NSCA*, the CNSC has the mandate to:

- Regulate the development, production and use of nuclear energy and materials to protect the health, safety, security and environment;
- Regulate production, possession and use of nuclear substances, prescribed equipment and prescribed information;
- Implement measures respecting international commitments on the peaceful use of nuclear energy and substances;
- Disseminate scientific, technical and regulatory information concerning CNSC activities.

The main regulatory activities include setting regulatory standards, issuing licenses, verifying compliance and communicating with stakeholders and the public. These activities are accomplished by the work of two independent entities: a commission of up to seven members and a staff of about 500 employees. *The Commission* is an independent, quasi-judicial tribunal that provides licensing decisions on nuclear-related activities in a public forum. The President of the tribunal is the CEO of the CNSC staff organization.

CNSC's regulatory philosophy is based on two principles:

- Those persons and organizations subject to the *NSCA* and its Regulations are directly responsible for ensuring that the regulated activities that they engage in are managed so as to protect health, safety, security and the environment and to respect Canada's international commitments on the peaceful use of nuclear energy.
- The CNSC is responsible to the public for regulating persons and organisations subject to the *Nuclear Safety and Control Act* and regulations to assure that they are properly discharging their obligations.

Communication Activities

The CNSC recognizes open, transparent and timely communications as being central to the work and management of Canada's nuclear regulatory regime. As a function of good management, open and proactive communications ensure that stakeholders receive information, and that their views and

concerns are taken into account in the formulation, implementation and evaluation of CNSC policies, programs, services and initiatives.

The CNSC disseminates objective scientific, technical and regulatory information to stakeholders concerning the activities of the CNSC and the effects of the uses of nuclear energy and materials on health, safety, security and the environment.

The *NSCA* establishes a legislative requirement for the Commission to hold public hearings with respect to exercising its power to license. It is also a requirement that applicants, licensees and anyone named in or subject to an order must have the opportunity to be heard. Accordingly, the CNSC Rules of Procedure sets out the requirements for notification of Public Hearings and publication of decisions from Public Hearings, as described earlier. A communication policy was recently developed relating to CNSC interactions with internal and external stakeholders. Licensees are also required, under the Regulations, to have information programs.

To facilitate external communication, the CNSC has a corporate outreach program that provides a proactive, systematic and risk-informed approach in interacting with stakeholders. Outreach activities and events are planned and organized accordingly and as appropriate.

As an agent of the Government of Canada, the CNSC makes all information and services for stakeholders available in both of Canada's official languages: French and English.

Licensing Hearings

The tribunal considers applications in public hearings, which are usually two days in duration for each applicant or licensee. The first day is to hear the application and CNSC staff recommendations. The second day is to consider interventions, and is typically held 60 days after the first day to permit stakeholders time to review the application and recommendations.

During the first hearing day, applicants present the information on their application. CNSC staff presents their comments and recommendations to the Commission tribunal. Commission members question both staff and the applicant regarding the available information. No decision is made at this time.

During the second day, as appropriate, the applicant and CNSC staff present additional information to the Commission tribunal. Any interveners who filed a request 30 days prior to the hearing date are able to present their views at this time or their intervention document(s) can be tabled without a presentation. Commission members can pose questions to the applicant, CNSC staff and any interveners present regarding the submissions made. Participants at the hearing may question each other through the Chairperson. Upon the conclusion of Hearing Day 2, there will be no further submissions considered.

After the Day 2 hearing, the tribunal discusses in camera the application and all the information submitted during the two days to reach a decision. The Notice of the Decision and Reasons for the Decision are sent to all participants and published on the CNSC website (www.nuclearsafety.gc.ca).

Stakeholder Involvement and the Environmental Assessment Act

(Excerpted from a presentation by G. Riverin, CNSC, at the Third ERICA EUG Thematic Meeting Decision-making and Stakeholder Involvement Madrid, 2005)

Canada's experience with stakeholders' involvement in environmental assessment started in 1975. One of the fundamental principles of environmental assessment in Canada is public participation as a means for citizens to influence decision-makers early in the planning cycle.

Canada's initial experience with public participation was through public reviews conducted by independent environmental assessment panels for projects having the potential to cause significant effects on the environment. Approximately 55 proposals were subject to public reviews between 1975 and 1995.

These assessments were conducted under the two environmental assessment regimes that preceded the 1995 Canadian Environmental Assessment Act (CEAA). The proposals mentioned above and many others were subject to public hearings where the public was consulted on the preparation of environmental assessment (EA) guidelines (scoping hearings), review of the assessment documentation for its conformity to the EA guidelines and public hearings to provide their views on the acceptability of the proposal. Public hearings are institutionalized and formal processes although they allow certain flexibility.

As environmental assessment evolved in Canada, public consultation was extended to other types of assessments defined in the 1995 CEAA, such as environmental assessment Screenings or Comprehensive Studies. Under the current Canadian legislation public consultation is compulsory for Comprehensive Studies and discretionary for screening assessments. The CNSC has however integrated stakeholders involvement in all of the environmental assessments it is required to conduct under CEAA whether they are Screenings or Comprehensive Studies

Canada has also conducted major consultation processes with regard to nuclear issues outside of the EA process. One is a Siting Task Force established in 1988 to find a site for disposal of Low Level Radioactive Wastes resulting for operations at the uranium hexafluoride refinery in Port Hope, Ontario. This Siting Task Force lasted 10 years.

AN ABORIGINAL PEOPLES' PERSPECTIVE

(Adapted from "Mine Remediation - An Aboriginal Peoples perspective" a paper by Clarence Natomagan, CNSC)

One important group of stakeholders are the Aboriginal peoples. There is great interest by Aboriginal people in issues which could affect their way of life and the environment as a whole. They wish to understand the potential impacts of nuclear activities such as uranium mining and waste disposal on their lands and communities. They also have valuable input to provide, based on their knowledge and expertise, on initiatives such as the decommissioning uranium mining facilities in Saskatchewan's cold northern climate

While conventional means of communication are used to inform Aboriginal peoples and communities of nuclear activities with potential impact, the preferred way to communicate is in a traditional manner, orally and in person. The CNSC has had great success with thanks to the unofficial role of a CNSC staff member who, in addition to being a qualified uranium mines inspector, is a member of one of the impacted Aboriginal communities. The inspector's education, technical background in the industry, knowledge of the traditional lifestyles and culture, and active community involvement has enabled the CNSC to more effectively communicate its role as a watchdog of the uranium industry in Northern Saskatchewan. The inspector has participated in career symposia and local language radio broadcast interviews, has been profiled in northern publications, and routinely interacts with Aboriginal community leaders and Aboriginal workers within the facilities that the CNSC regulates. By communicating regulatory duties, compliance results, and providing educational information, the CNSC continues to build on the trust that has emerged between it and the impacted communities of Northern Saskatchewan. This in turn enhances the development of the CSNC's strategic objective of being an open and transparent regulator.

Selected Examples of Outreach Activities

CNSC Public Outreach Activities under the CLEAN Program

The Contaminated Lands Evaluation and Assessment Network (CLEAN) program, which was implemented in order to manage low level radioactive sites from past eras, has from the outset been based on outreach and inclusion. Many of the sites, which were not regulated under the previous Act, were reasonably well known and had been a concern to local governments and the public-at-large since their operation and ultimate closure. CNSC staff recognized that by requiring activity at these sites, after years of non-activity, the local public would become cognizant of the sites and their perceptions would need to be considered.

- In concert with the proponent for any regulatory activities at these sites, CNSC staff made a conscious effort to contact local governments, including aboriginal band councils, to introduce ourselves and our purpose while visiting their local communities. When identified CNSC staff responded to community needs by attending council meetings, public open houses, and providing pamphlets and reports which gave details of CNSC activities and processes. This continues today.
- Additionally, CNSC corresponds regularly with local government agencies with an interest in sites under CNSC jurisdiction. These include members of our Joint Regulatory Group, but also include

others who may not have any related authority at the site, but who may be the point of contact for local people who have questions about the site of site activities.

These meetings and correspondence are arranged as part of other compliance activities and augment the delivery of required activities in the area. The goal is to keep people informed and to manage their expectations for site safety and regulatory diligence. A second goal is to motivate proponents to provide site management programs which are risk-informed, transparent and responsive.

Decommissioning of the Elliot Lake Uranium Mines

Elliot Lake is a community in northern Ontario that resulted from the creation and operations of 12 uranium mines in the area, all of which have since been closed and decommissioned. All except one of these mines drains into the local Serpent River watershed. Currently, there are 12 closed uranium mines, 10 tailings management areas containing about 169 million tonnes of uranium tailings/precipitates and 7 effluent treatment plants in the area. Of the 12 mines, 3 are owned/managed by Denison Mines Inc. under 2 CNSC uranium mine decommissioning licences, while the remaining 9 sites are owned and operated by Rio Algom limited under 1 CNSC waste facility operating licence.

Community demographics have changed significantly as the mining community moved out and has been successfully replaced by retirees and cottagers. For the most part, those who currently reside in Elliot Lake, have little concept of its uranium mining past, the role of the CNSC, or how the operations of the tailings management areas impact the environment or the community.

The CNSC regularly conducts inspections and consults with members of the Elliot Lake Joint Review Group, a group of governmental agencies having regulatory authority over various aspects of the Elliot Lake sites. These agencies also receive public inquiries.

CNSC staff has been conducting both opportunistic and pro-active outreach activities in the area. For example, opportunistic outreach has included having representatives of the local environmental committee participate as observers during the annual inspections; meeting separately with the local environmental committee, individuals, groups or the municipality as occasions arise; and, having standing offers with councils, for CNSC staff to attend meetings. The CNSC's pro-active activities have included open houses and public meetings and cooperation with international agencies.

Port Hope Area Initiative (PHAI)

Background

Several million cubic meters of low-level radioactive waste and contaminated soil (containing radium-226, uranium and arsenic in various proportions) are presently located at various sites in Clarington and the Municipality of Port Hope.

The wastes are a result of past practices involving the refining of radium and uranium, which began in 1932, when Eldorado Gold Mines opened radium refining facilities in the Town of Port Hope. Beginning in 1939, residues were taken off site to several locations in the Town of Port Hope and other sites in Port Hope became contaminated through a variety of ways including spillage during transportation, unrecorded, unmonitored or unauthorized diversion of contaminated fill and materials, and erosion.

From 1948 to 1954 residues were disposed at the Welcome Disposal Area. In 1955, waste management operations moved to the Port Granby where residues would continue to be placed until 1988. The Welcome Waste Management Facility (WMF) and the Port Granby WMF are owned by Cameco Corporation and are licensed by the CNSC. The Low-Level Radioactive Waste Management

Office (established in 1982, an office of AECL) monitors the Port Hope wastes, to minimize the spread of contamination.

Efforts have been ongoing over the last 20 years to find an appropriate approach for the long-term management of this waste. In 1997, following an unsuccessful attempt by the federal government's Siting Task Force to locate a host community to permanently store and manage the Port Hope Area wastes, a proposal came forward from Hope Township for the Government of Canada to begin discussion on a local solution to the long-term management of the waste. The proposal was accepted and each of the communities developed their own conceptual approaches to manage the waste. These approaches formed the foundation of a legal agreement signed between the Government of Canada and the municipalities in 2001, defining the terms under which the Port Hope Area Initiative (PHAI) will be carried out. It is guided by the Legal Agreement between the federal government and the affected municipalities and is the vehicle for implementing the community-based proposals. The PHAI is expected to continue for 10 to 12 years with a focus on municipal/federal co-operation and local solutions.

The PHAI includes two distinct and separate undertakings:

- The Port Hope Project, comprising the remediation of sites containing low level radioactive waste (LLRW), marginally contaminated soil (MCS) and specified industrial wastes located in the Municipality of Port Hope and the management of the wastes in a new long-term, low-level radioactive waste management facility; and
- The Port Granby Project, comprising the management of the LLRW and MCS that is currently located at the existing Port Granby WMF in a new long-term, low-level radioactive waste management facility.

The PHAI is currently undergoing a screening level environmental assessment which began with the approval of the EA guidelines document in 2002. There are three Regularory Authorities (RAs) for the project identified under CEAA: Natural Resources Canada (NRCan), who is to provide funding, the CNSC who will be required to licence the project and the Department of Fisheries and Oceans (DFO), who will be required to issue authorizations for the potential destruction of fish and fish habitat in relation to the work in the Port Hope harbour.

The LLRWMO submitted the EA study report in 2005 and the report, which is currently undergoing review, is expected to go forward to a decision in 2006, followed by a two day licensing hearing in 2006/7. The project is then expected to take approximately six years to complete (2013).

CNSC staff annually inspects the three sites currently licensed by the LLRWMO (the Pine Street Extension Temporary Storage Site and the Port Hope Waste Management Facility, as well as the many associated unlicensed sites in the Town of Port Hope (which are currently exempted from licensing by the Commission until December 2006). CNSC staff also inspects, on an annual basis, the Port Granby and Welcome Waste Management Facilities owned by Cameco.

CNSC Outreach

As part of the EA the LLRWMO has conducted an extensive and wide ranging public information program. The responsibility for this program rests upon the proponent as part of the EA process requirements. CNSC staff has attended a number of EA related public events such as alternate means workshops for the Port Hope and Clarington Projects, but do not consider these EA related appearances to be part of CNSC outreach. Consequently, efforts in this area will be enhanced.

Unlike Elliot Lake, the public and municipality in the area are well aware of the nuclear industry and of the role of the regulator (Port Hope also hosts Cameco's uranium conversion facility and the Zircatec operation). CNSC staff communicates with the municipality as required. The Port Hope Joint

Regulatory Group (JRG) includes members from Environment Canada and the Ontario Ministry of the Environment.

Deloro Clean-up Project

Background

The CNSC has received notice from the Ontario Ministry of Environment of its intent to apply for a licence to implement plans to complete the remediation of the Deloro Mine Site, located near the former Village of Deloro, Ontario. The purpose of the proposal is to provide for the long-term onsite management of contaminated soils and low-level radioactive wastes currently located at and in the vicinity of the Deloro Mine Site. The site is currently in the EA process. The Environmental Assessment Study Report (EASR) is to be submitted to the responsible authorities, the CNSC and DFO, in January 2006.

Outreach Activities

In 2003, CNSC staff was requested to make a presentation in Marmora to the Quinte Watershed Clean Group, which is one of the intervener groups.

In 2004, CNSC staff gave a presentation at a Public Liaison Committee (PLC) meeting for the Deloro Mine Site Clean-up. The PLC consists of members from the Village of Deloro (residents), OMOE, City of Bellville, Municipality of Hastings, Quinte Field Naturalists, and Quinte Watershed/Community Press.

CNSC staff also conducts outreach activities with other government departments including the Technical Liaison Committee for the Deloro Mine Site Clean-up. The TLC consists of members from HPEC Health Unit (Belleville), Ontario Ministry of Environment (OMOE), Ministry of Northern Development and Mines (MNDM), Environment Canada (EC), Ontario Clean Water Agency (OCWA), Low Level Radioactive Waste Management Office (LLRWMO) and the CNSC.

CNSC staff has also attended public information sessions at the local community centre to observe the sessions and to answer any questions of a regulatory nature.

Greater Toronto Area

Background

In 2001 CNSC staff requested an exemption of unlicensed properties in the Greater Toronto Area (GTA) from the requirement for a licence to possess, manage and store nuclear substances. The Commission granted an exemption until December 31, 2006 with the condition that institutional controls (land use) be in place. There are 7 sites in the GTA.

Outreach Activities

Staff visits the sites in the GTA approximately every two years to seek confirmation that the institutional controls are in place.

In 2003, and again in 2005 CNSC staff met with the owners of the sites and discussed their ongoing cooperation, their plans for the properties and re-enforced their understanding of the requirements of the *NSCA* as it applies to them and their properties.

CNSC staff has responded to questions from the site owners periodically over the past three years and has participated in teleconferences with other agencies that have questions about the controls we have on the sites.

Radium Luminous Dial Program

Background

With the coming into force of the Nuclear Substances and Radiation Devices Regulations (NSRDR), a licence is required for possession of 10 or more radium luminous dial devices. However, the Commission granted an exemption, which expires December 31, 2005.

CNSC staff is making recommendations on the most appropriate regulatory approach for each group of stakeholders. In all cases, CNSC staff has concluded that the most appropriate regulatory approach is to develop and implement a public information program (PIP) to assist the public in identifying devices containing radium luminous compound and to also provide radiation awareness to those stakeholders who possess devices containing radium luminous compounds. This will be primarily web based and will be supported by printed material available at museums and other public venues as identified.

The overall approach will be a pro-active and highly visible program within the affected community to reach the target audience and position the CNSC more visibly with the public (through museums) and the affected stakeholder group. The tone will be positive and approachable, staying away from regulatory jargon which might dissuade the target audience from seeking further information.

Outreach activities

In the past four years, CNSC staff has had discussions with the Department of National Defence, NRCan, LLRWMO, Transport Canada and non-government organizations such as the Canadian Aeronautical Preservation Association (an association of ~ 30 aircraft museums across Canada), Royal Canadian Legion headquarters and members of the general public. Staff is committed to continue to share information of each others' approach and to advise one another of any emerging issues. CNSC staff will continue to provide updates to these stakeholders on our path forward.

Conclusion

Outreach is a coordinated approach to increasing levels of communication with stakeholders on issues or information of mutual interest, listening to the views received and acting where appropriate. It includes activities which are over and above licensing and compliance activities required by our Act and Regulations.

The CNSC operates with a high level of transparency and thus involves stakeholders through a variety of appropriate consultation processes, effective information sharing and communications.

It is CNSC's experience that efforts at improving outreach and stakeholder involvement result in a win-win situation.

STAKEHOLDERS INVOLVEMENT IN THE DECOMMISSIONING PROCESSES IN ITALY

Mario DIONISI
APAT, Italy

Introduction

The aim of this paper is to present the situation about stakeholders involvement in Italy in the framework of the decommissioning process of the Italian nuclear installations, and in particular the specific experience of the Italian Regulatory Body APAT.

Specific aspects and APAT initiatives for building confidence of stakeholders in the process of the release of solid material from the regulatory control.

Decommissioning activities in Italy

All the nuclear installations in Italy are, at present, definitely shut down and, at different stages, in decommissioning:

- The four NPPs: **Garigliano** (160 MWe BWR), **Latina** (210 MWe GCR), **Trino** (270 MWe PWR), and **Caorso** (860 MWe BWR);
- The Fuel Cycle facilities: the LEU fuel fabrication facility **FN** (Fabbricazioni Nucleari), the MOX fuel fabrication facility **IPU**, and the two pilot reprocessing facilities **EUREX** and **ITREC**

By the end of 1999, the Ministry of Industry, Commerce and Crafts, now named Ministry of Production (MAP), issued strategic guidelines for the management of liabilities resulting from past national nuclear activities. According this new policy all the nuclear installations should be completely decommissioned by 2020.

In this respect, in the 1999 all the ENEL's liabilities connected to nuclear power have been assigned to a newly established company, named SOGIN. The mission of SOGIN covers the implementation of a prompt decommissioning of the four national power stations until an unconditional release of the respective sites within twenty years, as well as the safe management of radioactive waste and spent fuel associated to the power stations.

Comprehensive plans for prompt decommissioning of the four NPPs have been presented by SOGIN to the Ministry of Production Activities, and they are currently under review by APAT.

Following the directives included in the Ministerial Decrees of 2001, in summer 2003 SOGIN took under his responsibility also the ENEA and FN fuel cycle facilities, with the main objectives to manage the activities related to their decommissioning**.**

Decommissioning licensing procedures

Licensing procedures are described in the Legislative Decree 230.

In particular, the decommissioning activities licensing, which was not specifically regulated by previous laws, is now regulated by articles 55, 56 and 57 of the mentioned Decree. The applicant shall present a Global Decommissioning Plan and the detailed document for the first phase. The activities must be authorised by MAP after consultation with the Ministries of the Environment, Internal Affairs, Labour, and Health, together with the interested Regional Government and APAT. This authorisation may be granted for single intermediate phases. In this case the documentation for each phase shall include a status report of the plant at the beginning and at the end of the phase and licenses will be issued for each phase.

> For each decommissioning phase, the activities to be performed have to be described, together with their safety, environmental and radiation protection implications as well as the initial and final state of the site and the solution envisaged for waste management and waste disposal. The identification and analysis of possible hazard and of accident scenarios for each phase of decommissioning must be addressed in the application, together with implication for the outside emergency plan and proposal for its updating.

All decommissioning activities must be performed complying with conditions and technical specifications laid down in the decommissioning licence. Systems, components and equipment relevant to safety and radiation protection are subject to a general regime of technical specifications and surveillance tests, either specified in the decommissioning licence or, possibly, in the operation licence for the section still in force. APAT supervises decommissioning operations and carries out inspections to verify compliance with specifications concerning safety and radiation protection.

For the decommissioning of NPPs, the implementation of an EIA procedure is also required. The applicant shall prepare an Environmental Impact Study (EIS) to be approved by the Ministry of the Environment, describing the project, its purpose and scope, and justifying the preferred strategy. The Ministry of the Environment, on the basis of the advice of the concerned Region and of the EIA Commission, and in concert with the Ministry of the artistic and environmental assets, gives its opinion on the environmental compatibility of the proposed project. The EIA process includes a Public Inquiry, whose comments are taken into account by the EIA Commission in making its advice.

Participation by stakeholders is laid down in law; stakeholders are meant to include Government institutions whose advice is sought under law.

Local and regional authorities and very active groups of concerned citizens are also informed in the case of nuclear installations; there is also an active interest by Parliament Commissions and individual MP's in questions concerning radiation protection and nuclear safety.

The final decision is made under law by the stakeholder group which includes Government institutions.

In order to involve the regional Authorities in the decommissioning process and to guarantee the required transparency to the general public, the Ministry of Productions set up a "national table" open to nuclear operators, regulatory authorities, trade unions, representatives of Region and Municipalities and, possibly, other NGOs.

Site and material release

A general criterion is in force in Italy for unrestricted release. Radioactive materials can be unconditionally released from regulatory control if the radionuclides concerned comply with both a concentration and a radioactive half-life threshold:

- Activity concentration ≤ 1 Bq/g, and
- half-life < 75 days.

If both conditions above are not complied with, a specific authorisation is required for releases, reuse and recycle of the materials concerned. The authorisation is given on the basis of a case-by-case analysis which has to demonstrate compliance with the basic 'below regulatory concern' criterion below, both conditions of which must be met:

a) effective dose ≤ 10 μSv/year, and

b) either Effective collective dose ≤ 1 man·Sv/year or the analysis demonstrates that exemption is the optimum option.

An instance of application of the above criteria for solid materials is the recent authorisation, the Ministerial Decree 4/8/2000 from Ministry of Industry, now Ministry of Production, for some preliminary activities in the framework of the decommissioning plan for the Caorso NPP, thresholds are shown in the following table.

No specific criteria are provided for in Italian legislation for the release of radiologically regulated facilities and/or sites, although the general criteria stated above obviously apply; thus, a case-by-case analysis is employed.

Release criteria stated above (pre-established dose criteria) are applied making use of pathway analyses with a conservative approach, although unrealistic scenarios are excluded; time frame considerations are also taken into account**.**

Furthermore, it is worthwhile mentioning that, on May 2002, the National Standard Organization (UNI) approved a new Standard on"Solid materials from nuclear plants - Radiological methods and procedures for the clearance". To the drafting of this standard all the interested parts were involved, including the regulatory body. The main objectives of this standard are to give reference procedures for the verification of the clearance level in site and material release.

Nuclide	Metal material		Building rubble		Other materials
	Bq/g	Bq/cm^2	Bq/g	Bq/cm^2	Bq/g
H3	1	10000	1	10000	0.1
C14	1	1000	1	1000	0.1
Mn54	1	10	0.1	1	0.1
Fe55	1	1000	1	10000	0.1
Co60	1	1	0.1	1	0.1
Ni59	1	1000	1	10000	0.1
Ni63	1	1000	1	10000	0.1
Sr90	1	1	1	100	0.1
Sb125	1	10	1	1	0.1
Cs134	0.1	1	0.1	1	0.1
Cs137	1	10	1	1	0.1
Eu152	1	1	0.1	1	0.1
Eu154	1	1	0.1	1	0.1
α emitters	0.1	0.1	0.1	0.1	0.01
Pu241	1	1	1	10	0.1

APAT - ARPA Partnership approach in the clearance process

The release of solid material from nuclear installations is one of the most important issue interfacing the public opinion during the decommissioning process.

The number of stakeholders involved in the clearance is generally greater than that of the operation of nuclear installations because the cleared material is used as conventional reusable material or disposed of as conventional waste. In order to perform clearance effectively and smoothly, it is necessary to define the related stakeholders to be consulted or agreed with in the establishing monitoring strategy, its implementation and communication of results.

In practice it is difficult to measure many of the radionuclides at levels specified for release from regulatory control. Therefore it is an important task to provide proof for the compliance with the requirements with reasonable means. In order to ensure compliance, any material to be released from a nuclear facility has to pass an officially regulated process with many stages of quality assurance. This process is approved and supervised by APAT.

In order to improve the process of clearance, APAT is involving the local Agency for the Environmental Protection (ARPA) in the monitoring strategy, its implementation and communication of results.

ARPA, the local (regional) agency for the environmental protection, carries out inspection and verification activities on the material coming out from the nuclear installations in the region.

The non destructive measurements that ARPA carries out, for different reasons, could not be sufficient to judge if a material is not radiologically relevant: the solid material is generally released in packages, containers, truck etc....

The verification of the solid material to be released is a process that actually starts when the material is still at the plant not dismantled, and includes preliminary characterizations, classification, segregation, sampling for the radioanalitical determination of the HTM radionuclides (that will allow the definition of the scaling factors to assign to a specific material).

Two bilateral agreements, one between APAT and ARPA Piemonte and one between APAT and ARPA Emilia Romagna, have been recently signed with the main objective to promote the familiarity of ARPAs with the procedures of monitoring processes on the solid material inside the nuclear installations.

The agreement will include the possibility by ARPA to perform independent verifications through, for instance: non destructive measurements of solid materials before packaging, sampling drawings for radiochemical analysis, in situ procedures verifications.

The involvement of the relevant ARPA, (ARPA Piemonte for the Trino NPP, the FN fuel fabrication facility and Eurex reprocessing plant, and ARPA Emilia Romagna for the Caorso NPP), in the process implemented by the operator to comply with the verification procedures on the material to be released, will enhance the confidence by ARPA on the accuracy and significance of the reported monitoring results, or corresponding equivalent activities.

Being ARPA an environmental agency present on the local territory, this will also contribute on the confidence building by the local population about the overall process of clearance of solid material from the nuclear installations.

THE FRENCH DECOMMISSIONING PROGRAM: A STAKEHOLDER POINT OF VIEW

Jean-Paul CHATRY and Jean-Jacques GRENOUILLET
EDF-CIDEN, France

In January 2001, EDF owner of 56 plants in operation and 9 plants in decommissioning stage decided to accelerate the decommissioning of its first nine nuclear generation units in order to achieve final decommissioning in 25 years' time. An engineering center dedicated to decommissioning, radwaste management and environment was set up to implement this strategy.

Four years after its creation, the first lessons learned in the fields of organization, project and program management can now be described.

I. INTRODUCTION

Over the last ten years, EDF has built up extensive experience in Europe through the decommissioning of its commercial reactors. Nine of its Nuclear Power Plant are currently being decommissioned: 6 Gas Cooling Reactors, 1 Pressurized Water Reactor, 1 Fast Breeder Reactor and 1 Heavy Water Gas Cooled Reactor. Most of them are first generation units which started operating in the 60s and were definitively shutdown at the end of the 80s or at the beginning of the 90s, mainly for economical reasons. They were not competitive compared to the new type of reactors being built at this time (PWR 1300 MW and N4 series).

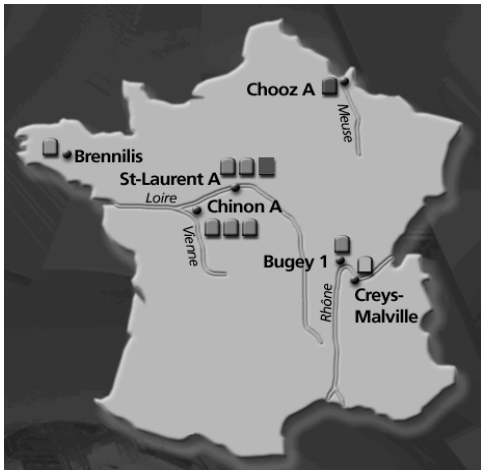


Figure 1 - EDF sites in course of decommissioning

Until recently, EDF had implemented a deferred dismantling strategy, that is to say dismantling everything except the reactor building no later than 10 years after final shutdown, and delaying dismantling of the reactor building by 25 to 50 years to take advantage of radioactive decay. As of January 2001, a new and more aggressive strategy has been implemented to achieve complete

dismantling of the nine units by 2025, with the first reactors dismantled by 2015. The main reason for this change is the need to demonstrate the feasibility of dismantling from the industrial, waste disposal and financial standpoints, in order to keep the nuclear option open.

To apply this new strategy effectively, in January 2001 EDF created the Centre d'Ingénierie Déconstruction et Environnement (CIDEN), an engineering center dedicated to decommissioning, waste management and environmental issues.

This paper will describe, 4 years after this decision, why and how CIDEN has evolved with regard to Project and Program management issues.

II. ORGANISATION

The responsibilities, interfaces and co-ordination of the key players in the deconstruction program are as follows:

Role of the owner:

The Nuclear Engineering Division (DIN) assumes the owner's responsibility for the program.

Management of the program:

CIDEN is in charge of the design and the implementation of the decommissioning program, including the future of the waste and its environmental impact.

Responsibility as nuclear operator

The operation of the units in course of decommissioning on a site where other units are still operating (which is the case for Chinon, Saint Laurent, Bugey and Chooz) comes under the responsibility of the Nuclear Generation Division (DPN). For each site, a protocol defines the specific responsibilities, the interfaces and the co-ordination between the nuclear power plant and CIDEN. When there is only one unit to be decommissioned on a site, CIDEN is responsible for its operation and is considered a nuclear operator/licensee by the regulatory body.

Project Management

Six Projects were created within the Program, one for each site:

1. "Water" reactors
   - Brennilis (1 HWGCR)
   - Chooz A (1 PWR)
2. Fast Breeder reactor
   - Creys-Malville (1 FBR)
3. Gas-Graphite reactors
   - Bugey 1 (1 GCR)
   - Chinon A (3 GCRs)
   - Saint-Laurent A (2 GCRs)

Initially, the management of the projects was under the responsibility of three Operations Departments: one for "Water" reactors, one for the Fast Breeder reactor and the last one for Gas-Graphite reactors.

A Project Manager was appointed in the Operations Department for each project. He reported to the Head of the Operations Department with responsibility for that particular type of reactor. Each Operations Department had its own scheduling and cost control capacities and was in charge of coordinating the design activities performed by the Engineering Department.

This organization has recently been changed in order to clarify the responsibility of the Project Managers (see the new CIDEN organization chart below). One of the main aims of this reorganization was to avoid overlapping of Project Manager and Head of the Operations Department project management functions. As the Project Manager was in the Operations Department, he was also very busy with the day-to-day activities on the site, operation and work supervision. Consequently, he did not have enough time to work on the near-term program and anticipate difficulties.

The current organization is a matrix in which two Departments are responsible to the Project Manager for the engineering and works activities

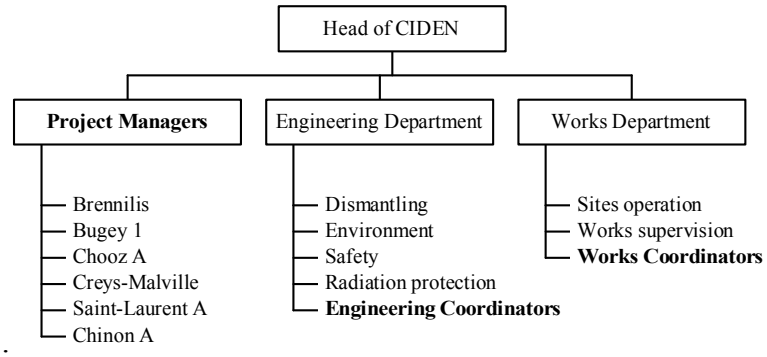


Figure 2 - CIDEN current organization chart

At present the Project Managers report directly to the Head of CIDEN who is responsible for the application of the Program. Each Project Manager is seconded by a representative from the Engineering Department, called the Design Coordinator, and a representative from the Works Department, called the Works Coordinator. Together they constitute a dedicated Project Team working full time on the Project. This team is supported by cost and scheduling controllers shared with other projects teams.

The Project Manager is not responsible for day-to-day plant operation. Plant operation and works supervision are managed by a Decommissioning Site Manager who reports to the Head of the Works Department. A budget for plant operation and works supervision is allocated to the Decommissioning Site Manager by the Project Manager.
A Project Contract is signed between the Project Manager and the Head of CIDEN. It defines the project work structure, the budget, the main milestones, the deadlines and the quantity and type of waste to be produced.

An Engineering Activities Program defines the design work to be performed by the Engineering Department and details the resources allocated by the Project, the deadlines and the deliverables. This program is managed by the Design Coordinator who reports to the Project Manager.

The conflicts between the projects, such as the availability of resources, are arbitrated by the Projects Committee, chaired by CIDEN Deputy Head with the participation of the Heads of the Works and the Engineering Departments.

III. Program Management

An overall program was initially established by CIDEN with the aim of providing a global and optimized approach to important issues such as waste management and resources allocation (financing, engineering and work capacity). It has to be completed by 2025 and consists of two waves:

1. First "wave"
   - **Brennilis:** regional park of Armorique
   - **Chooz A**: first-of-a-kind for PWRs
   - **Bugey 1**: first-of-a-kind for GCRs
   - **Creys-Malville**: early elimination of sodium risk
2. Second "wave"
   - GCRs of **St-Laurent A** and **Chinon A** The Program was prepared, and is regularly updated, by a Program Coordination Working Group (PCWG) comprising the Project Managers. The PCWG was also a forum for the Project Managers to exchange the feedback of their respective project. At that time, the program was mainly the consolidation of the individual projects.

The Program is funded through a provisions mechanism. That is directly from EDF current operating account according to the disbursement programme of figure 3.

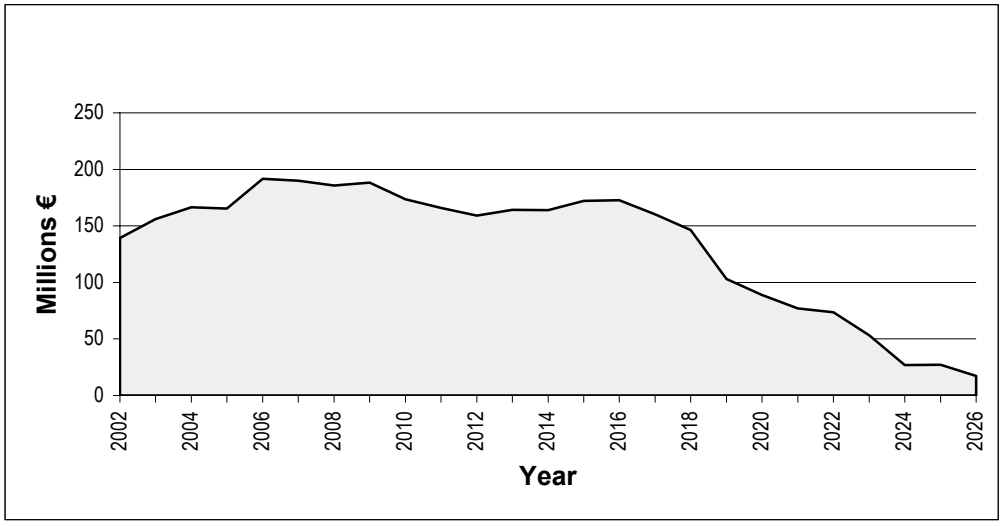


Figure 3 - Yearly expenditure on the program

In order to meet these requirements, it was decided to introduce some flexibility into Program implementation. Each project was broken down into sub-projects, each one with its own budget. Flexibility is achieved by postponing a sub-project in order to meet the available cash flow rather than having to stop an ongoing activity, which is not considered cost-efficient due to the demobilization and remobilization costs involved. Once a sub-project has been started, it has to be taken through to completion without interruption.

At the present time, the Program comprises 44 sub-projects. Usually, each project comprises:

- Completion of the activities started under the previous strategy and/or preparatory works
- Dismantling of auxiliaries buildings
- Dismantling of the reactor
- Site remediation and rehabilitation

So far, 12 sub-projects have already been started with another 11 to be started in the next two years. A dedicated team manages the whole program as a project in its own right. This team also supports the Head of CIDEN, who reports to the owner of the program (EDF Nuclear Engineering Division).

Another method of bringing flexibility to the program implemented has been achieved through the simplification of the licensing process. As part of the consultation procedures prior to revising the previously licensed decommissioning process, EDF structures all the work in several stages. This introduces significant changes (major impact on the radiological inventory, leading to modifications to the GOR or the safety rules, for example), which will be submitted to the Safety Authority for approval.

Other milestones might be subjected to internal authorization through the Deconstruction Safety Committee or the Local Safety Committees. These committees, which can be audited by the Safety Authority, are used to validate the design work and authorize the work performed within the scope of the regulatory authorizations.

The various milestones of each project involving regulatory authorizations will therefore come under the responsibility of the safety authority or EDF, and form part of the scope of the new regulations. These were issued in February 2003 and make provision for a single ministerial decree for all deconstruction operations, associated with milestones at the different stages of deconstruction.

In accordance with the proposals contained in the new regulatory procedure relating to the dismantling of basic nuclear installations, EDF set up an organization that enabled changes to the reference system that do not bring into question the safety demonstrated by internal authorization. This organization is based on an independent committee (referred to as the Deconstruction Safety Committee), the independence of which relative to the departments responsible for the design and the execution of the works is ensured by the participation of external consultants.

At a local level, all the elementary operations on the facilities are defined in a work file, the first section of which, referred to as the “technical safety assessment file”, is the subject of final checking by a Local Safety Commission (supervised by the Plant Manager on sites which have reactors in commercial operation and subject to decommissioning work). This commission may, in the event that a difficulty is encountered concerning the observance of the reference system, call in the Deconstruction Safety Committee.

This internal authorization process was formally approved by the French Nuclear Safety Authority in February 2004. So far, 6 Deconstruction Safety Committees have met and 8 internal authorization issued.

IV. CONCLUSION

During the 4 years that have elapsed since the creation of CIDEN in 2001 to implement EDF’s new decommissioning strategy, its organization has constantly improved to ensure success of its

decommissioning projects. The aim has been to build an efficient organization with clearly defined roles for the key players.

Simultaneously, the Program Management activities have received increasing consideration and specific mechanisms have been implemented to bring financing and licensing flexibility to the program.

The continuous improvement of its organization and the development of new project or program management methodologies is a constant preoccupation of EDF. Its aim is to successfully implement its decommissioning strategy, one of the key issues for guaranteeing the future of a safe economic and environment friendly nuclear energy in France.

VIEWS FROM STAKEHOLDERS REGARDING STAKEHOLDER INVOLVEMENT AND THEIR OWN ROLE

Views from Operators

Axel BÄCKER
EWN, Germany

The German unification caused enormous economical and social impacts on the previous East German state. The nuclear power plant complex in Greifswald and the surrounding region was no exception.

Energiewerke Nord GmbH (EWN) as owner of the NPP site in Greifswald must stop the operation of all fife operating 440 MW units with Russian type rectors and also all construction works on the other three NPP units and the decision was taken to decommission all plants, mainly due to a lack of political acceptance and secured financial basis.

Thus, EWN was faced with a formidable task, virtually from one day to another, to close down and decommission a major nuclear site under the mentioned boundary conditions. Initially, difficulties were caused by massive personnel reductions (from around 4900 operational and 8000 construction staff to just 1200 employees), in combination with the introduction of a market economy and West German laws and procedures.

In a closed co-operation with all stakeholders EWN has now reached an optimal size for its decommissioning tasks as well as for the future industrial use of the former NPP site.

1. Site description

On the site in Greifswald, located on the Baltic coast in a basically agricultural region, there are in total eight reactor units of the Russian pressure water type WWER-440. The basic data are given in table 1.

The units 1 - 4 are of the model 230 and the units 5 - 8 of the more recent model 213. The reactors are configured on a double-unit basis, i.e. two reactors are arranged in one reactor hall with certain mechanical equipment and secondary systems together. There is only one turbine hall (roughly 1200 m long) for all reactors.

The basic data are given in table 1

Table 1: **Basic data on the reactor units in Greifswald (KGR)**

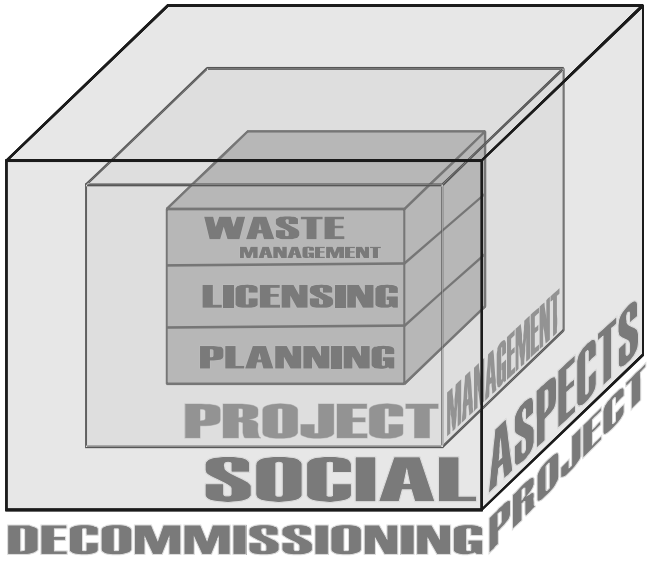
unit	type	power [MWel]	operation	shut down	produced energy [GWh]
1 KGR	WWER 230	440	1973	18.12.90	41321
2 KGR	"	"	1974	15.02.90	40040
3 KGR	"	"	1978	28.02.90	36028
4 KGR	"	"	1979	02.06.90	32077
5 KGR	WWER 213	"	1989	29.11.89	240
6 KGR	"	"	ready for commissioning		
7 KGR	"	"	building erected, major components installed		
8 KGR	"	"	" " " " "		

2. Decommissioning Strategy

From the initial conditions on site, EWN was faced with a complicated multi-facetted situation, thus it was necessary to develop a strategy covering the following key areas (Picture 1):

- Decommissioning strategy including a new project management,
- Dismantling planning
- Licensing procedure and
- waste management.

Picture 1



EWN has to solve also the social aspects in the frame of the decommissioning as:

- Development of a personnel strategy

and in this context to consider additionally a complex

- Site development strategy.

All these issues are very closed interrelated and must be solved in an integrated and iterative manner, embedded in a necessary financial frame.

In the decommissioning strategy the following corner stones were fixed:

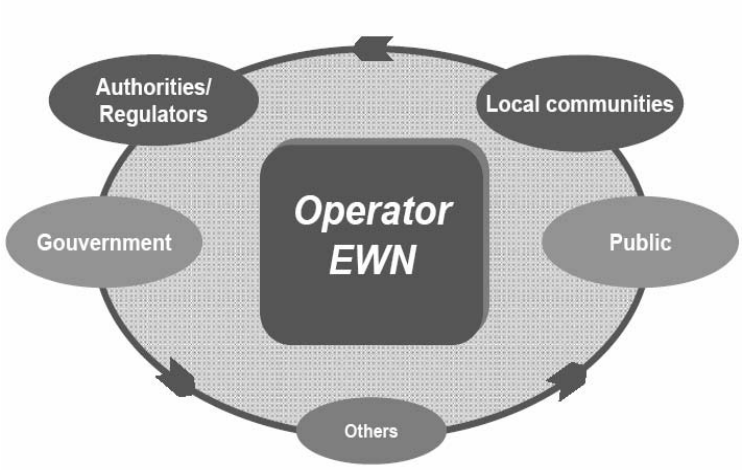
- complete direct dismantling (i.e. no safe enclosure period),
- construction of an intermediate storage for waste and fuel onsite (to achieve independence),
- transfer of operation license into decommissioning license,
- removal of nuclear fuel from the reactor units into the wet fuel storage on site,
- conditioning and removal of all operational waste,
- establish on overall technical concept,
- perform as much as possible of all activities with existing personnel and
- reuse of the site (nuclear or conventional).

Since no funding had been foreseen under the former East German circumstances for the decommissioning, the Federal Government took over the responsibility. This gave EWN a certain financial security at first for all decommissioning tasks as well as afterwards for the future site development as a basis to solve the additional task to develop a new industry area on the Greifswald site.

3. Stakeholder Involvement

In the process of the EWN decommissioning including the site development for future industrial use every times all relevant stakeholders (see picture 2) were involved.

Picture 2

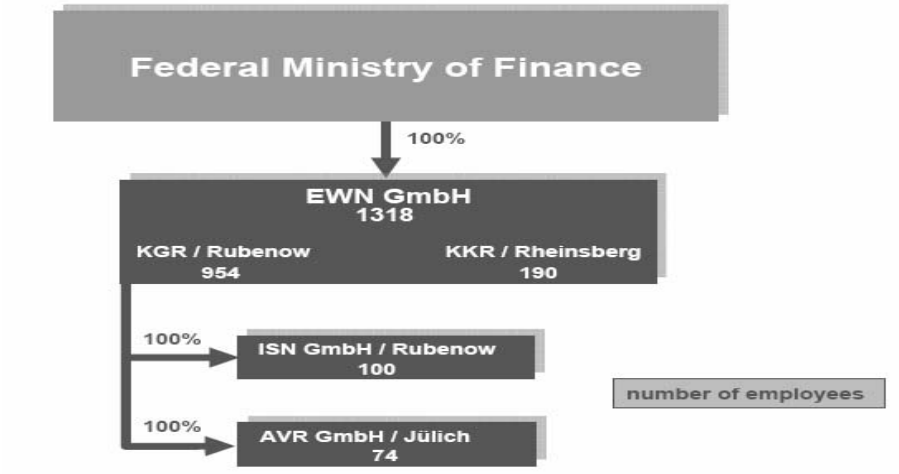


Co-operation with government and regulators (authorities)

EWN is owned by the Federal Republic of Germany (Ministry of Finance). The Federal Ministry of Finance is responsible to give EWN the necessary budget for the tasks has to be solved, as described above.

The shareholder structure of EWN can be seen in picture 3

Picture 3



The Federal Ministry of Environmental is in charge for all licensing aspects to assure realization of the decommissioning in a safe and secure way. The responsible authorities are the Ministries of Environment in the 16 German lands, in the case of EWN in Mecklenburg/Western-Pommerania.

To taken into account are also the territorial authorities in the communities. In the licensing process (decision taking) the local authorities are involved as the expert organizations for the Ministry.

As a summarising of the EWN experience for a successful co-operation with the authorities can be seen the following so called **"10 Golden Rules":**

Lessons learned by EWN - "10 Golden Rules"

1. The applicant presents the project and the licensing strategy to the authority
    a. before the application will be made and also consults the authority.
2. The applicant confines to the relevant licensing aspects in the licensing
    a. procedure and submits, as far as possible, complete, checkable and
    b. consistent documents.
3. The applicant defines the start and goal situation oriented on the protection
    a. aims and thus, reduces the necessary efforts for authorized opinions.
4. The participants in the procedure (operator licensing authority and experts)
    a. send all papers in parallel to all other persons involved so that time consuming
    b. detours can be excluded and everybody will have the same information level.
5. The participants in the procedure agree on a definite time schedule. The
    a. licensing authority binds its expert to check the documents on completeness
    b. and to list the additional requirements in an appropriate time.
6. The participants in the procedure regularly organize status discussions to
    a. explain the status of the procedure, to define weak points and to specify
    b. time scheduling.
7. The licensing authority invites to technical discussions. Technical discussions are also allowed between applicant and expert; the authority
    a. decides in the individual case on the participation.

8. The participants in the procedure read the expert opinion draft together to
    a. clear up differences of opinions as fast as possible.
9. The authority only itemizes the relevant documents in the granted licence.
10. The participants agree on the necessary details and timely integration of the required documents necessary for the fulfilment of the additional requirements.

Co-operation with public/public involvement

For the public information, especially to organize public hearings the following documents are necessary to prepare on a basis for an easy understanding and in a very transparent manner:

- Application;
- safety report;
- short draft of overall project;
- environmental impact assessment.

A key point is an open and easy understandable public information on all decommissioning activities and other important items regarding the activities on site, also a comprehensive information of all site development activities.

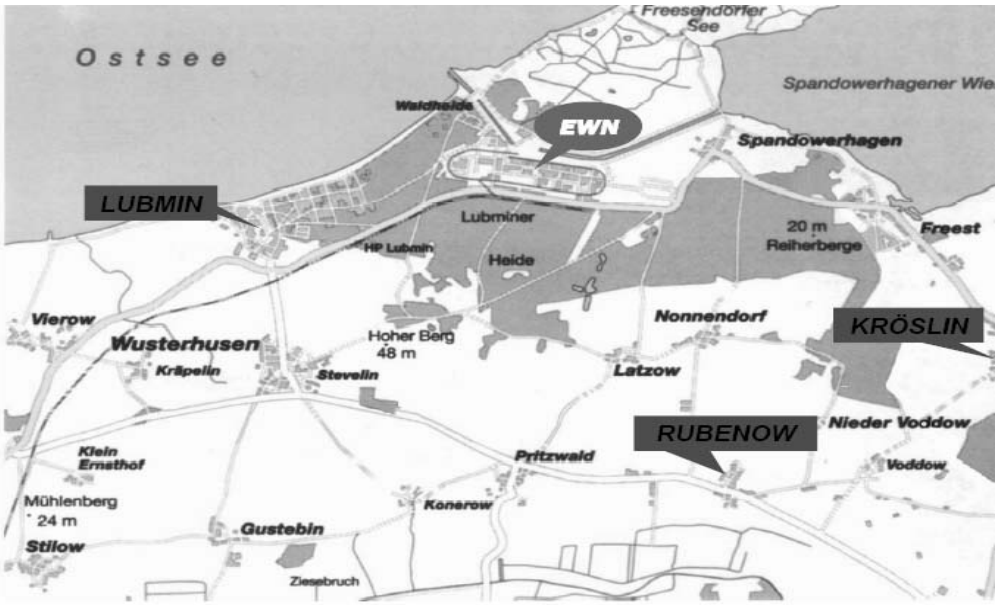
In this context a very closed co-operation with the local News Papers is also necessary.

Co-operation with local communities

A closed co-operation with the local communities is a precondition to realize a optimal site development for the future industrial use.

The Joint Body of the EWN's neighbor communities can be seen in picture 4.

Picture 4

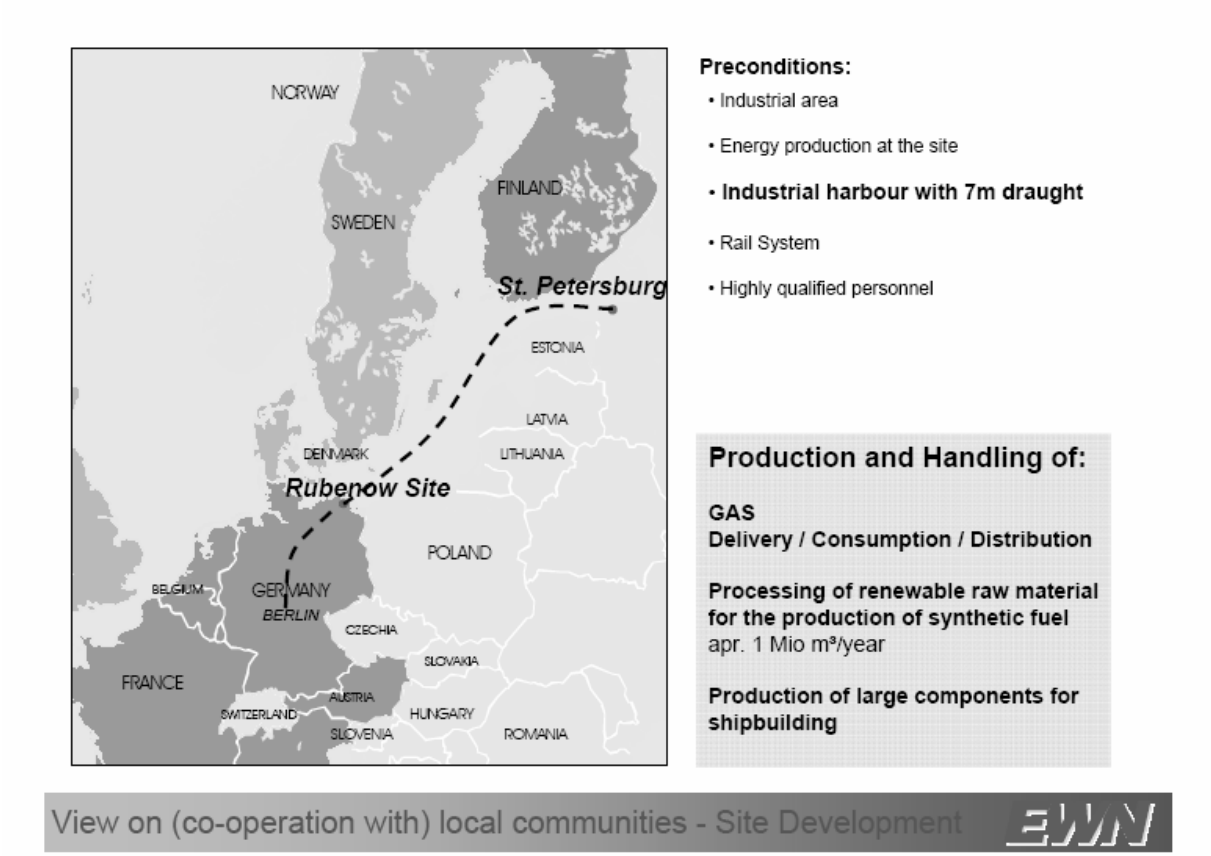


It comprises the communities of Rubenow, Kröslin and Lubmin, and EWNs activities for the site development are and will be realised only on basis of a common work with this Joint Body of neighbor communities.

As can be seen in picture 5, EWN's future industrial prospect is:

- to deliver, consume and distribute GAS;
- to process renewable raw material for the production of synthetic fuel apr. 1 Mio m³/year; and
- to produce large components for shipbuilding.

Picture 5



The preconditions for such huge projects are to prepare the infrastructure for an industrial area, like an available rail system for big goods-trains (up to 300 m), heating system, water supply, electrical energy production and supply and last bud not least high qualified personnel on site. Additionally, due too the site location closed to the Baltic See, EWN constructed, as a big advantage for future industries, an industrial harbor with a draught of 7m (see picture 6).

Picture 6

STAKEHOLDER INVOLVEMENT IN THE DECOMMISSIONING OF DOUNREAY

Norman HARRISSON, June LOVE and Marc MURRAY
United Kingdom Atomic Energy Authority (UKAEA)
Dounreay, by Thurso, Caithness, KW14 7TZ – Scotland

1. UKAEA – The Company

The United Kingdom Atomic Energy Authority (UKAEA) was established in the 1950s to pioneer the development of nuclear energy within the UK. Today its primary mission is to decommission our former nuclear research sites and restore its environment in a way that is:

- Safe and secure.
- Environmentally friendly.
- Value for money.
- Publicly Acceptable.

Recent developments within the UK nuclear industry have heralded the formation of the Nuclear Decommissioning Authority (NDA) on 1st April 2005, to take strategic responsibility for the UK's civil nuclear legacy. In response to the establishment of the NDA, UKAEA is undergoing a significant transformation, from being a company responsible for managing its sites on behalf of the UK government to a commercially orientated company capable of competing with the world's best, in site restoration and other environmental challenges. Real excitement has been generated within the company about having the opportunity for the first time in a generation to expand UKAEA's role and growing its business both within and outside of the UK.

At present UKAEA's operations are based on four key areas of business delivery:

Nuclear Clean Up	Nuclear clean-up is UKAEA's core business. With over a decade of experience in managing the environmental restoration of nuclear sites, UKAEA is established as one of the worlds leading decommissioning businesses. We have decommissioned more nuclear reactors than anyone else in Europe, and we are keen to export our talent and experience in nuclear decommissioning outside of the UK, to the rest of the world. Currently, the UKAEA operates sites at Dounreay, Windscale, Winfrith, Culham and Harwell. Approximately half of UKAEA's annual turnover is taken up on the site restoration programme at Dounreay. UKAEA manages its sites under contract to the Nuclear Decommissioning Authority (NDA) which took over responsibility for all the civil nuclear liabilities within the UK (including BNFL's) in April 2005.
Fusion Research	UKAEA has the task of implementing the UK's contribution to the fusion research programme at Culham. UKAEA also has responsibility for the safety and operation of the Joint European Torus (JET) facilities on behalf of its European partners under the European Fusion Development Agreement (EFDA). UKAEA is committed to assisting the realisation of nuclear fusions potential as a sustainable energy source for the future.

Property Regeneration	UKAEA is committed to regenerating its sites in ways which support communities at a local level and provide economic and national benefit. Over the past decade we have lead the way in converting civil nuclear sites for sustainable use, demonstrated by the creation of business centres at Harwell, Winfrith and Culham.
Pension Administration	UKAEA is a leading public service pension provider. We manage pensions for 47,000 members across nuclear sector employers including BNFL, the Health Protection Agency's Radiation Protection Division, the Ministry of Defence and some research Councils

2. UKAEA at Dounreay

UKAEA Dounreay celebrates its 50 birthday this year, having pioneered the development of fast reactor technology since 1955. Today the site, situated in the north of Scotland, is now leading the way in decommissioning. The Dounreay nuclear site licence covers an area of approximately 140 acres and includes 3 reactors:

- The Dounreay Material Test Reactor (DMTR).
- The Dounreay Fast Reactor (DFR).
- The Prototype Fast Reactor (PFR).

In addition there are 180 facilities on site which have supported the fast reactor programme, including a fuel reprocessing capability, laboratories and administration buildings. The reactors are now all in advanced stages of decommissioning.

In October 2000 the Dounreay Site Restoration Plan (DSRP) was published to provide a framework for the site's restoration. The plan's objective was to reduce the site's hazards progressively by decontaminating and dismantling the plant, equipment and facilities, remediating contaminated ground and treating and packaging waste so it is suitable for long term storage or disposal. Whilst hailed as the most detailed plan integrating some 1500 activities and spanning 60 years it was criticised for having no stakeholder involvement.

In response to this criticism, UKAEA developed a process for public participation over the following 2 years and launched its stakeholder engagement programme in October 2002.

3. The Community around the Dounreay Site

UKAEA Dounreay is situated on the north coast of Scotland in the County of Caithness. The most northerly county in mainland Britain, it has a population of less than 30,000. The two main towns are Wick, the former County town and Thurso approximately 15 miles from the Dounreay site. The county is well known for its rugged natural beauty and has often been described as the lowlands beyond the Highlands owing to the large expanse of open farmland and peatlands (the world famous Flow Country).

The 1951 population census of Thurso stood at 3000. Twenty years late it had tripled to 9000 almost wholly as a direct result of establishment of the Dounreay Nuclear Reactor Test Establishment. At present the Dounreay site employs approximately 2,300 people, of which some 1200 are employed by UKAEA. Dounreay contributes approximately £80M into the Highland region in Scotland in nett salaries, pensions, contract and sub-contracts. One in every three jobs in Caithness depends on the decommissioning activities at UKAEA Dounreay.

4. The launch of UKAEA's public participation at Dounreay

When UKAEA launched its stakeholder engagement programme in October 2002, the company had a register of 250 individuals and organisations it regarded as Dounreay stakeholders. In order to provide a larger platform for the engagement process an advertisement was placed in the Scottish media inviting people to register as stakeholders in the Dounreay Site Restoration Plan. The advert attracted over 150 responses. In addition to the media adverts, posters were put up in Doctor Surgeries, dentist's waiting rooms, libraries and community halls throughout Caithness and Sutherland. UKAEA still maintain an active ongoing registration process via our website.

In parallel letters were written to all known stakeholders and organisations inviting them to become registered stakeholders and we continue to encourage registration today. The stakeholder list now total over 1000 and we regularly review our database and actively seek more interested parties to ensure our current information is up to date.

In October 2002 UKAEA launched their commitment to public participation by the publication of Public Participation Newsletter No 1 [1].

Public Participation Newsletter 1

The newsletter outlined the progress expected at the site over the coming years and described the criteria and methodology used for involving stakeholders. Basically the newsletter was a very simple summary of the DSRP and set out the methodology and criteria for stakeholder involvement.

The methodology adopted was the BPEO (Best Practical Environmental Option) method recommended by The Royal Commission on Environmental Pollution in 1988. The aim of a BPEO is to make sure that all feasible options have been identified and compared on the basis of their effects on the health and well-being of people and their environment ("environmental" factors) as well as on their technical features and financial costs ("practicable" factors).

The criterion for public participation was for major projects with significant environmental effects off site where difficult choices have to be made between a number of viable options.

The newsletter also listed the attributes used within a BPEO study and asked people to indicate which attributes were most important to them or whether additional attributes were favoured.

Twenty-eight responses were received and public health and safety, worker health and safety, water quality, radiological issues and flexibility were the options most selected. Security of the site was brought up as an additional attribute but we believe that security of our site is a given and will retain the high standards set on a daily basis and therefore does not need to be considered as an attribute.

Involving stakeholders

The process adopted was a two-stage process.

- Stakeholder panels (internal and external).
- Summary paper for wider distribution.

4.1 *Stakeholder panels*

The *internal panel* was made up of a cross-section of staff who were not directly involved with the project and was made up of a range of grades, age, home town, etc. We firmly believe that our staff are one of our most important stakeholders and their views are equally important.

The *external panel* consisted of 3 to 5 members of the Dounreay Local Liaison Committee (DLLC) and dependent on the make up of these participants invitations to other organisations not represented were sent out. Typically panels have consisted of Council, Tourism, Non-Government organisations, Scottish Executive, Educational, National Farmers Union, Fisheries representatives and students.

Members of both panels received an information folder in advance of the meetings. The folder contained a contents page, agenda, executive summary, draft BPEO document, summary of options, summary of scoring, sample questions, additional relevant information, glossary and feedback form.

An informal evening was organised for all panel members to allow them to meet the project team in advance of the meeting and to discuss or clarify any relevant issues. Posters were exhibited summarising the different options and panel members could, at their leisure, write up comments on "post-it" notes and deposit comments on the poster.

The panel meetings were independently facilitated and the day was structured to allow the project team to outline the work that had already been done and explain in greater detail how the BPEO process was used. The panel members had the time to question the project team and enter into debate if necessary.

The afternoon session was used to discuss the value of weightings for the different attributes and software was used to show the panels how different weightings of attributes can affect the front running options.

Both meetings were recorded by the independent facilitator and sent to panel members for their approval before being published.

4.2 *Summary paper*

All information made available to the stakeholder panels and the reports of the panel meetings are posted on our website [2]. A summary paper is published which takes the reader through the issue, the options available, how the final list of options were arrived at, the scoring of options and a brief outcome of the panel meetings. A set of questions are also listed inviting interested parties to respond with their views whether it is by responding to the questions posed or a more in-depth submission.

The summary paper is distributed to all our registered stakeholders and posted on the website with an electronic questionnaire if participants wish to respond electronically. The document is also distributed to local libraries.

4.3 Information

Throughout the 12 week period we will, if necessary, provide interested parties with further information or enter into dialogue to address relevant issues that are raised in order that participants can respond in a more informed way.

The Dounreay Bulletin is our main vehicle for promoting and updating specific issues for the site. It is issued to all staff and registered stakeholders on a fortnightly basis and highlights the main activities of the site. Throughout the 12-week period the bulletin is used to give updates, where appropriate, on the status of public participation projects and this is also placed on the website.

Once the 12-week period is closed all responses are acknowledged. The Project Team review all responses and address them accordingly whilst updating the BPEO. Once all responses are reviewed and the BPEO is revised noting views given and our response a further document is issued with the results of the consultation. This document concludes with the recommended way forward that UKAEA wish to pursue and explains the next steps in the process.

Before publishing the document individual responses, where appropriate, are sent to those who participated giving details of our response.

The results of the consultation are then published with a press release or via the Dounreay Bulletin.

5. Learning from the Process

In July 2004 UKAEA asked Faulkland Associates to carry out a review of our process. A summary of the review can be found on the website [3]. Recommendations were made on strategic issues, panel expectations, timely information and updates, clearer feedback, website and the like. However there was also positives such as use of the newsletter, project team involvement, information packs, downloadable spreadsheet, running of panel meetings and the genuine commitment shown by UKAEA team.

The report also acknowledges that *"UKAEA was in many ways leading the way in this area within the UK nuclear industry"*.

6. Forward Programme

We have begun to address some of the recommendations in the external review already. With the establishment of the NDA, UKAEA are considering how to address new revisions to the Dounreay Site Restoration Plan (currently being revised and will be renamed as the Dounreay Site Restoration Strategy) to bring it into line with NDA contract requirements whilst retaining our high reputation in stakeholder involvement.

In 2004 UKAEA announced a new decommissioning plan, which improved on the DSRP, by providing more details on our approach to decommissioning, accelerating the programme from 2060 to 2036 and providing around £1billion savings from the previous programme. We intend to remain aggressive with our programme by striving for further acceleration of decommissioning and identifying further cost savings. However UKAEA recognises that we need to retain support from our local community and stakeholders if we are to achieve our acceleration goals.

In response to the NDA's Stakeholder Charter, UKAEA has facilitated the set up of an independent Dounreay Stakeholder Group, which is chaired by a local councillor, with the aim of involving them in our consultations and programme proposals at the strategic level.

In addition, we are about to embark on probably our biggest consultation to date – How to deal with radioactive particles in the marine environment. Last year we set up an independent Consultation Steering Group to oversee the consultation process for this project. This group is chaired by a local Councillor and is represented by an MP, consultant expert, UKAEA TU/Safety representative, a NGO representative and an academic expert.

For the particles project, we have taken on board the need to get stakeholders involved at the earliest opportunity. An extra stage in the process has been included to allow earlier discussion on all the options available and the attributes we proposed for the BPEO study. We will make more use of the website, local exhibitions and outreach meetings for updating information and informing people of the issues.

7. Concluding Remarks

UKAEA recognises that if we are to retain our status as a world leading environmental restoration company, we need to have the ability to engage, consult and listen to our stakeholders; in fact it is one of the reasons why we are successful. UKAEA remains committed to public consultation with an open and honest approach and will continue to include and encourage stakeholder input. Indeed we have found the experience to be beneficial to our operations and programmes.

UKAEA also recognise that there is no one solution to stakeholder engagement, so we will continue to learn lessons and implement those learning points into our engagement process. Other companies believe that stakeholder consultation is a PR exercise and all that is required is lip service. This was UKAEA's position some 10 years ago. However UKAEA has learned from bitter experience that unless stakeholders, both internal and external, are given the opportunity to input into decommissioning programmes, those plans will fail.

Success however, is born from adversity and UKAEA have developed and demonstrated a track record in stakeholder communications that is second to none. We believe that our process sets a benchmark for the nuclear industry. We will continue to strive to raise the bar, so that local communities can be given a voice on strategic and individual decommissioning projects that has a potential to impact their lives and the environment around them.

References

[1] Public Participation Newsletter 1: Dounreay Site Restoration Plan – Looking forward, Making choices. UKAEA Communications, October 2002.

[2] UKAEA's website can be found at www.ukaea.org.uk

[3] Faulkland Associates: R01, D2014 R01-1, August 2004: Evaluation of the Dounreay BPEO Stakeholder Programme for UKAEA: A summary report.

Further Information

To register as a Dounreay Stakeholder please log on to the UKAEA website on:
www.ukaea.org.uk/news/dsrp.htm

By registering you will receive a fortnightly bulletin which details up to date activities of the Dounreay Site. You will also receive public participation documents when appropriate.

We endeavour to keep the information contained on these pages as up to date as possible. If, however, you cannot find the information you require or would like to query any issue regarding the decommissioning of our site please contact June Love who will be happy to assist. You can contact June at Dounreay Communications, D2003/Zone 9, Dounreay, Thurso, Caithness, Scotland, KW14 7TZ or email june.love@ukaea.org.uk.

STAKEHOLDER INVOLVEMENT IN THE DECOMMISSIONING OF TROJAN AND MAINE YANKEE NUCLEAR POWER PLANTS

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Trojan Nuclear Plant (Trojan) and Maine Yankee Nuclear Plant (Maine Yankee) were the first two power reactors to complete decommissioning under the U. S. Nuclear Regulatory Commission's (NRC's) License Termination Rule (LTR), 10 CFR Part 20, Subpart E. The respective owners' decisions to decommission the sites resulted in different approaches to both the physical aspects of the decommissioning, and the approach for obtaining approval for completing the decommissioning in accordance with regulations. Being in different States, the two single-unit pressurized water reactor sites had different State requirements and levels of public interest that impacted the decommissioning approaches. This resulted in significant differences in the decommissioning planning, the conduct of decommissioning operations, the volume of low-level radioactive waste, and the final status survey (FSS) program. While both licensees have Independent Spent Fuel Storage Installations (ISFSIs), Trojan obtained a separate license for the ISFSI in accordance with the requirements of 10 CFR Part 72 and terminated its 10 CFR Part 50 license. Maine Yankee elected to reduce the 10 CFR Part 50 license to only the requirements for the ISFSI. While the NRC regulations are flexible and allow different approaches to ISFSI licensing, there are separate licensing requirements that must be addressed.

In 10 CFR 50.82, the NRC mandates public participation in the decommissioning process. For Maine Yankee, stakeholder and public input resulted in the licensee entering into an agreement with a citizen group and resulted in State legislation that lowered the dose limit below the NRC radiological criteria of 0.25 milliSievert/year (mSv/yr) (25 mrem/yr) in 10 CFR 20.1402 for unrestricted use. The lowering of the radiological criteria resulted in a significant dose modeling effort using site-specific Derived Concentrations Guideline Levels (DCGLs) that were well below the NRC DCGL screening values. This contributed to a longer than anticipated period to obtain NRC approval of the Maine Yankee License Termination Plan (LTP).

While both licensees provided final status survey reports (FSSRs) for NRC approval, the Trojan approach to decommissioning and data management allowed NRC to review FSS records and supporting documentation more efficiently. This paper will describe the stakeholder and regulatory impacts of the differing approaches to decommissioning, development of licensee required plans, decommissioning operations and records, and the differences in licensing processes.

Introduction

The NRC regulates the decommissioning and license termination of approximately 80 complex, commercial nuclear facilities, including power, research and test reactors, material sites and fuel cycle facilities. The LTR provides requirements for either unrestricted release or restricted use. Specific requirements for power reactor "Termination of License" are described in 10 CFR 50.82, whereas 10 CFR 50.83 defines the requirements for the "Release of part of a power reactor facility or site for

unrestricted use." Portland General Electric Company (PGE) elected to pursue license termination for the Trojan site in accordance with 10 CFR 50.82. Maine Yankee Atomic Power Company (MYAPC) chose to use 10 CFR 50.83 to release the site backland areas and use 10 CFR 50.90 to reduce the Maine Yankee site footprint through a license amendment request.

Both Trojan and Maine Yankee had public, operational, and economic issues that caused the two respective Boards of Directors to elect to close the plants. PGE faced the cost of replacing the Trojan steam generators and the lost power generation, and was affected economically by the less expensive hydro-electric power in the Northwest. Maine Yankee had operational issues with fuel performance and fire protection issues that would be expensive to resolve. These issues, coupled with the on-going opposition to nuclear energy in Maine, caused the MYAPC Board to close the plant.

Trojan was shutdown in November 1992. In January 1993, PGE decided to permanently shutdown the plant in order to begin decommissioning with the intent to terminate the Part 50 operating license with no restrictions on the future use of the site. Trojan proceeded to license its ISFSI in accordance with 10 CFR Part 72, and followed the requirements of 10 CFR 50.82 process for license termination. The Trojan LTP called for dismantling theradioactively contaminated steam supply and auxiliary systems while retaining the non- radioactive secondary systems, including the turbine and condenser for future re-use or re-cycling. In addition, all concrete structures including the containment, fuel and auxiliary buildings, were decontaminated for unrestricted release. Since there was no groundwater contamination found during site characterization prior to major decommissioning activities, PGE elected to use the NRC's Screening Level – Derived Concentration Guideline Levels for demonstrating compliance with the 10 CFR Part 20, Subpart E.

Maine Yankee was shutdown in December 1996, with the MYAPC Board of Directors electing to permanently shutdown the plant in August 1997. Unlike Trojan, Maine Yankee had well established intervener groups that solicited the State of Maine to impose lower dose criteria on Maine Yankee. The stakeholders included the Friends of the Coast, the Chiwonki Group, and numerous individual citizens. The State of Maine passed legislation that required that Maine Yankee comply with a 0.04 mSv/yr (4 mrem/yr) drinking water limit and a 0.1 mSv/yr (10 mrem/yr) limit from all sources. The State of Maine also required additional long term ground monitoring, and the out-of-state disposal of decommissioning concrete waste. In order to fulfill the State requirements, the Maine Yankee LTP called for the removal of all site structures to approximately 1 meter (3 feet) below grade and the removal of all debris from the State.

Decommissioning Performance

Table I shows general comparative decommissioning information for the Trojan and Maine Yankee projects. A discussion of the information follows:

Trojan: Trojan permanently shutdown in January 1993. Being one of the first large nuclear plants to start decommissioning, PGE had to address new issues, such as steam generator and reactor vessel removal and disposal, the LTP approval process and its approach to decommissioning. PGE chose to perform the radiological decommissioning while leaving major structures intact, including the containment, auxiliary, and turbine buildings, and while leaving the major non-contaminated secondary steam system; turbine, condenser, moisture separators, and piping, in place. One objective was to minimize radioactive waste volumes and recycle as much material as practical. Trojan generally has met this goal based on only having to dispose of 12,375 cubic meters (m^3) of radioactive waste, and plans to recycle concrete and metal when the industrial demolition of the site is performed. The total worker dose for completing the radiological decommissioning was 3.35 Sv (335 Rem) and

was well below the decommissioning estimate. The NRC terminated the Trojan 10 CFR Part 50 license on May 23, 2005.

Maine Yankee: Maine Yankee was shutdown in August 1997 and started decommissioning in the same month. To achieve unrestricted use, the decommissioning approach focused on removal of all site structures to 3 ft below grade. All above-ground structures were removed, and approximately 100,000 m^3 of radioactive waste was disposed of offsite. During its eight year decommissioning period, Maine Yankee had a total worker dose of approximately 5.15 Sv (515 Rem), and was well below the Generic Environmental Impact Statement goals. Maine Yankee incurred more dose than Trojan, due in part to a higher radiation source term and the shorter time period from the shutdown to the start of decommissioning activities. On September 30, 2005, the NRC amended MYAPC's 10 CFR Part 50 general license reducing the site to a 12 acre parcel of land with an ISFSI.

Table 1. **Comparative Decommissioning Project Data for Trojan and Maine Yankee**

ISSUE	**Trojan**	***Maine Yankee***
Shutdown Date	November 1992	*August 1997*
Decommissioning Started	January 1993	*August 1997*
Decommissioning Completion Date	January 2005	*October 2005*(1)
Total Time for Decommissioning	12 Years	*8 Years*
OSHA Reportables	83	*65*
OSHA Rate	<< 7.8	*2.6*
Total Dose	3.35 Sv (335 Rem)	*5.15 Sv (515 Rem)*
Radioactive Waste	12,375 m^3	*100,000 m^3*
Cost	~ $ 422 M	*~ $420 M*
NRC Licensing Action	*10 CFR Part 50 License Termination May 23, 2005*	*10 CFR Part 50 License Amendment September 30, 2005*

Note: (1) Maine Yankee had contaminated soil/debris from decommissioning stored at ISFSI for shipment offsite.

Reactor Decommissioning Regulatory Processes

The decommissioning process for reactor licensees is outlined in Table II. This table compares the decommissioning process for reactors with 10 CFR Part 72 specific ISFSI licenses to the process for 10 CFR Part 50 general ISFSI licenses. The process is principally the same with some minor differences. After the ISFSI is completed and decommissioning activities are complete, licensees with 10 CFR Part 72 specific ISFSI licenses may request to terminate the 10 CFR Part 50 license. On the other hand, licensees with 10 CFR Part 50 general ISFSI licenses may request a license amendment to reduce the boundary of the license to the footprint of the ISFSI. In both requests, the licensee must demonstrate that the LTR requirements have been met. The NRC handles both requests by noticing the request in the *Federal Register*, reviewing the FSSR, issuing a Safety Evaluation Report (SER), and issuing the respective approval, either for the amendment or termination. One additional

administrative action required for the Part 72 specific ISFSIs, is that licensees must request an exemption from 10 CFR 72.3(c)(5), to transfer financial assurance methods from the 10 CFR Part 50 to 10 CFR Part 72 license. The NRC staff completes the SER and environmental review, publishes a Notice of the licensing action in the *Federal Register* and approves the request. Each licensee must continue to maintain $100 M in nuclear liability insurance for the ISFSI. One final internal action for 10 CFR Part 50 licensees is the transfer of project management responsibilities from the Division of Waste Management and Environmental Protection (DWMEP) to the NRC Spent Fuel Project Office (SFPO). From the NRC perspective, the differences between the two licensing processes are very minor.

Table 2. **Reactor Decommissioning Licensing Process**

10 CFR Part 72 Specific ISFSI License	**10 CFR Part 50 General License**
Licensee obtains 10 CFR Part 72 license. Licensee completes decommissioning.	Licensee completes decommissioning.
Licensee submits FSSR to NRC for approval.	Licensee submits FSSR to NRC for approval.
Licensee submits request to terminate Part 50 license. Licensee requests exemption from 10 CFR 72.30(c)(5) to transfer financial assurance methods from 10 CFR Part 50 to 10 CFR Part 72. ISFSI is licensed under specific 10 CFR Part 72 license.	Licensee submits license amendment request to shrink boundary of site to the footprint of the ISFSI.
NRC notices licensee's request in *Federal Register*.	NRC notices licensee's request in *Federal Register*.
NRC approves FSSR, prepares license termination letter, SER, and *Federal Register* Notice. • licensee required to maintain $100 million in nuclear liability insurance until all spent fuel removed from the ISFSI.	NRC approves FSSR, prepares license termination letter, SER, and *Federal Register* Notice. • licensee required to maintain $100 million in nuclear liability insurance until all spent fuel removed from the ISFSI.
SFPO has project management responsibility for the 10 CFR Part 72 ISFSI license.	Project management responsibility for the 10 CFR Part 50 generally licensed ISFSI transferred from DWMEP to SFPO.

Lessons Learned

The NRC is always seeking ways to improve the decommissioning process. Because Trojan and Maine Yankee were decommissioning at the same time, the NRC staff was able to compare the decommissioning processes used by both reactors and identify a number of lessons learned that can be used by other licensees to improve the decommissioning process. In the following discussion, the staff offers lessons learned in the areas of communications, LTP development and implementation, and FSS records. Maine Yankee, in conjunction with the Electric Power Research Institute (EPRI), also documented lessons learned from its entire decommissioning experience which is available from EPRI at www.epri.org and www.MaineYankee.com. The NRC staff is using the feedback from stakeholders

to revise decommissioning guidance, and to evaluate rule changes to improve the decommissioning process as part of the Integrated Decommissioning Improvement Plan (IDIP).

Stakeholder Communications

The NRC License Termination Rule requires that the NRC solicit comments from the public, and 10 CFR 50.82 requires that a public meeting be held prior to the License Termination Plan approval for power reactors. This meeting allows for the public to present concerns to the NRC staff for consideration of the License Termination Plan. The stakeholder participation can vary widely. This may result in significant actions being taken by the stakeholders that may impact a licensee's decommissioning plan.

Trojan: The NRC-sponsored Trojan public meeting was well attended. The meeting was more of a briefing for the interested public participants. The State of Oregon did not impose any additional requirements on the plant owner. However, at the end of the decommissioning, the NRC was invited to provide a presentation to the Oregon Energy Siting Board (OESB) on the status of the Trojan decommissioning. The OESB was also a public-invited meeting at which the NRC staff provided the conclusions that the site had been cleaned up well below the 0.25 mSv/yr (25 mrem/yr) release criteria and the 10 CFR Part 50 license would be terminated for free release with no site restrictions.

Maine Yankee: The NRC-sponsored Maine Yankee public meeting attracted a number of non-government authority groups and resulted in over-capacity crowd. The forum allowed the public and group representatives to express their views regarding the utility's ability to complete the decommissioning safely and the decommissioning process. This resulted in the State of Maine passing legislation with the specific requirements for Maine Yankee. These included a lower dose release criteria, waste disposal requirements and the final end state of the property. Included in the State of Maine legislation was the requirement for Maine Yankee to create a Citizens Advisory Panel (CAP). Many stakeholders were invited to participate on the panel. The NRC attended many of the CAP meetings and frequently provided information on the decommissioning progress and the NRC inspection program for overseeing the decommissioning.

LTP Development and Implementation

The lesson learned is that licensees need to produce a clear, concise, and detailed LTP, because it results in quicker approval. Further, a clearly written LTP requires less interpretation and allows the NRC to easily verify compliance with approved LTP requirements. The following discussion describes how the Trojan and Maine Yankee LTPs affected the decommissioning process.

Trojan: PGE took a straightforward approach to the Trojan LTP and the decommissioning. In the original site characterization, no groundwater contamination was found, so Trojan adopted the NRC Screening level DCGLs versus the development of site specific DCGLs. This simplified the approach for demonstrating that the residual radioactivity would be less than the 0.25 mSv/yr (25 mrem/yr) criteria. Trojan's goal was to release the site for unrestricted use. The Trojan FSS Plan employed an approach which required a minimum of 30 samples to be taken in each survey unit. Most radiological measurements did not subtract background. In addition to the beta surface measurements, Trojan recognized the importance of performing gamma surveys to determine the presence of contamination-at-depth on concrete structures and in the floor-wall interfaces. PGE also planned for the future removal of the spent fuel from the site and performed FSSs of the ISFSI footprint prior to construction. The Trojan LTP was approved by the NRC in 18 months and over the course of the decommissioning, there were no major revisions to the LTP.

Technical issues that were resolved during the decommissioning included:

- Paint Removal
- Embedded Pipes

Maine Yankee: Maine Yankee's LTP was written with very broad and general methods for demonstrating compliance with NRC requirements and guidance. Although licensees generally believe that a less specific LTP allows for greater decommissioning flexibility, the potential for differing interpretations of the LTP commitments by NRC and licensee staffs is increased. The different interpretations during the LTP review lead to numerous meetings and teleconferences to resolve NRC questions, which required 37 months for LTP approval.

Technical issues that were resolved during the decommissioning included:

- Fore Bay Underwater Measurements
- E-600 Survey Instrument Issues
- Determination of Background Radiation Activity
- Groundwater Modeling

As permitted by the NRC in 10 CFR Part 50, licensees can revise the LTP using 10 CFR 50.59. During the course of the decommissioning, the LTP was revised by Maine Yankee three times. Most of the changes were updates to the LTP citing the physical progress in the decommissioning the site. However, there were changes to the technical methods and survey requirements that impacted the staff review of FSSRs.

FSS Records and Confirmatory Surveys

The FSSR demonstrates that residual radioactive material at the site does not exceed the NRC criteria for release of the site. NRC reviews the FSSR to verify that the results of the FSSs demonstrate that the site meets the radiological criteria for license termination. As part of the FSSR review process, NRC may review a variety of records associated with the FSSR such as actual survey data packages, FSS instrument calibration records, and survey technician qualification and training records.

The lessons learned regarding FSS records include:

- The licensee and regulator should agree on the format and content of the FSSR
- Records that support the FSSR (i.e. FSS data, instrument calibration logs, and technician qualification and training records) should be readily retrievable for inspection
- FSSR supporting records should be of high administrative quality.

Trojan: Trojan submittals followed the original agreed-upon format, were consistent, and of high administrative quality, which allowed the NRC staff to review the information efficiently. Of the 10 FSSR Supplements containing 510 FSS records submitted by Trojan, the NRC staff had three formal Requests for Additional Information (RAIs), which were promptly resolved. Overall, the Trojan staff designed quality survey packages, managed the survey data and documentation, and provided FSSRs that were consistent with the agreed upon format and content. In addition, the records that supported the FSSRs were complete and comprehensive. The NRC confirmatory surveys were scheduled with Trojan and were performed as planned.

Maine Yankee: The content of the FSSR was described in the LTP. However, because the LTP was general in nature, Maine Yankee provided general FSS records. In response to review of the 12 FSSR Supplements, containing 180 FSS records submitted by Maine Yankee, the NRC staff submitted 21

RAIs. In addition, the NRC staff raised questions regarding the quality of the FSS supporting documentation. Maine Yankee was able to resolve these issues, but it took time to recover archived information due to data management practices. To facilitate the NRC review, technical reviewers conducted two additional site inspections to specifically review Maine Yankee records that supported their FSSR submittals.

The NRC had difficulty in scheduling confirmatory surveys and scheduled surveys resulted as in-process surveys being performed at Maine Yankee. At the time, the in-process surveys were not thought to be as valuable to the NRC staff as confirmatory surveys. However, the in-process surveys can confirm that the licensee is performing the surveys adequately since the surveys are conducted side-by-side with the licensee.

Table 3 summarizes the review of Trojan's and Maine Yankee's FSSRs.

Table 3. **Final Status Survey Report Data Summary**

	Trojan	**Maine Yankee**
LTP Approval	18 Months	37 Months
FSSR Supplements	10	12
FSS Release Records	510	180
Formal RAIs Submitted –	3 RAI	21 RAIs
Avg Time to Resolve Issues	Less than 1 Month	15 Months
Public Invited Meetings to Discuss Technical Issues	0	3
FSSR Review Schedule	3 months ahead of original schedule	8 months behind original schedule
Final Dose	Less than 0.01mSv/yr (1 mrem/yr)	Less than 0.01 mSv/yr (1 mrem/yr)

Conclusions

- From an NRC perspective, there is no significant difference in the two licensing approaches at the completion of decommissioning.
- The NRC License Termination Rule mandates the opportunity for stakeholder involvement.
- Individual States may vary in their role in the decommissioning process.
- Stakeholder interest can vary and must be addressed.
- High quality decommissioning submittals from the licensee to the NRC are critical.

References

NUREG 1757, Consolidated NMSS Decommissioning Guidance, September 2003,

NRC Proceedings - Decommissioning Workshop, University of Maryland at Shady Grove, Maryland, April 2005.

APPENDIX 3:

PAPERS RELATING TO STAKEHOLDER INVOLVEMENT GIVEN AT WPDD MEETINGS TO THE END OF 2005

- **WPDD-1; Paris, May 17-18, 2001**
  - Mariano Vila d'Abadal – The perspective (on decommissioning) from Civil Society

- **WPDD-3; Karlsruhe, June 17-19, 2002**

  Topical Session - "Buildings & Site release and reuse"
  - Philip Moding – The local community role "Barsebäck after Barsebäck NPP, a case study of land re-use conflict in southern Sweden"

- **WPDD- 4; Tarragona. September 1- 4, 2003**
  - Mariano Vila d'Abadal – "Social aspects of decommissioning and dismantling in Spain"

  Full Session - "Social Aspects", Moderator: Mariano Vila d'Abadal, (Association of Spanish Municipalities)
  - Paul Woollam – "Experience from the Trawsfynydd public inquiry"
  - Joseph Castellnou - "Local information committee and social repercussions of the closure and dismantling of Vandellós-I"
  - Kevin Hayes – "Groundwater contamination and community relations" (Hematite plant in Missouri, USA)
  - Philip Moding – "Some expectations from European municipalities hosting nuclear facilities"
  - Larry Kraemer – "Community expectations" (Canadian Nuclear Municipalities)

- **NEA Workshop on "Safe, Efficient, and Cost-effective Decommissioning" Rome, September 6-10, 2004**

  Full Session: "Management of transition and change throughout decommissioning", Chair: Albert Frischknecht
  - Almeida, Gil, Lekberg, Hansson, Frischknecht, Pyy – "Early planning and transition management from operation into decommissioning. Vision on future work in this area based on experience."
  - Alejandro Rodriguez – "Proven approaches to organizing and managing a large decommissioning project"
  - Dale Keyes – "Effective and less effective interfaces with local stakeholders. Best practice, including from the host communities point of view"
  - Laraia, Gordelier – "Transition from a nuclear to an industrial site-managing change in the re-use of sites including a UK example"

- **WPDD-6; Brussels, November 14-16, 2005**

  Topical Session on "Stakeholder involvement in Decommissioning"
  - Yves Le Bars – " Stakeholders involvement & role of actors"
  - Claudio Pescatore – "Stocktaking Tarragona/Rome on stakeholder involvement"

- Roland Palmqvist – “Experiences within GMF”
- Rick Austin – “Experiences from Port Hope, Canada”
- Stuart Walker – “The role of local communities & public in the USA”
- Elisabeth Gray – “Views from a policy maker”
- Bob Lojk – “Views from nuclear & environmental regulators”
- Jean-Paul Chatry and Axel Baecker – “Views from operators”
- Norman Harrison – “Dounreay case study”
- Bruce Watson – “Trojan/Maine Yankee case study”

APPENDIX 4:

LIST OF PARTICIPANTS

Topical Session on Stakeholder Involvement in Decommissioning Projects

November 14, 2005

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