PEER REVIEW DISCUSSION – OPERATORS GROUP

R2D2P Workshop

Philippines, Manila

15-19 September 2008

Topics

- **Key aspects of the project**: requirements, transition, planning, strategy, spent nuclear fuel management, decommissioning technologies: dismantling&decontamination&reutilization, clearance level, radiological criteria, waste acceptance criteria, radioactive waste management
- **Key aspects of the Decommissioning Plan(DP):** content, approaches, correlations among various parts of DP, chapter by chapter analyze

Key aspects of the project (1)

- **Requirements**: national regulations and Safety Documentation Series of IAEA

- **Transition**: shutdown extended, conservation (Romania), permanent shutdown for decommissioning by Gov. Decision (Romania), elaboration Decommissioning Plan, clean-up of nuclear facility, spent nuclear fuel management: removal the nuclear fuel assemblies from core zone, wet storage AR or AFR ponds, design new facility for storage SNF assemblies (Philipinnes)

Key aspects of the project (2)

- **Transition phase in life of nuclear facility**: elaboration Decommissioning Plan:

Steps:

- establish the radiological **end state** of the nuclear facility and the land associated and future utilization- stakeholders interest, **decommissioning borders**

-make **radiological characterization** of the site and **environmental factors** of the land- environmental impact study- crucial issues

-**solve the SNF** storage or repatriation in the origin countries- regulatory constraints, apply isolation concept for AFR ponds for SNF assemblies(Romanian exemple)

Key aspects of the project (3)

- **Transition phase in life of nuclear facility** : elaboration Decommissioning Plan:

Steps:

- make a **decommissioning team** for the project- recruiting, selection, training, continuity during developing the project and after completion

-solve the **material management- critical issue**: radioactive waste-characterization, route, transport, treatment, conditioning, storage, disposal, nonradioactive but hazardous materials(asbestos), radioactive and hazardous material(lead, berrilium, cadmium,etc), free release, reuse, dilution by melting, seize and volume reduction by compaction, incineration, evaporation, filtration

Key aspects of the project (4)

- **Transition phase in life of nuclear facility**: elaboration Decommissioning Plan:

Steps:

-**solve the material management:** special radioactive waste activated : aluminium and graphyte-for conditioning, storage or disposal; contaminated resins from filters, treatment and conditioning radioactive liquid from primary circuit or organic liquid, special attention for secondary waste rezulted from decontamination or dismantling technologies applied

Key aspects of the project (5)

- **Transition phase in life of nuclear facility**: elaboration Decommissioning Plan:

Steps:

-**solve the material management:**

Demonstrate compliance of the clearance level for free release by proven techniques and associated equipment;

Radioactive waste packages for storage or disposal must be satisfy Waste Acceptance Criteria: technical specification for packages and radiological characterization of the content

Key aspects of the project (6)

- **Transition phase in life of nuclear facility**: elaboration Decommissioning Plan:

Steps:

- elaborate **Safety assessment** for decommissioning
- make the **estimation of costs**
- analyze different options for decommissioning strategies, demonstrate to stakeholders the feseability for **preffered decommissioning strategy and obtain approval for strategy**

Key aspects of the project (7)

- **Transition phase in life of nuclear facility**: elaboration Decommissioning Plan:

Steps:

-Selection and establish decommissioning technologies: for dismantling, decontamination, release, reutilization, recycling, redevelopment, up- grading in the planning process with new proven technologies

-Up-grading Decommissioning Plan

-Maintain permanent contact with regulatory bodies and funding authority: propose, require, negociate, applied, open step and finish step, send documentation for approval to the regulatory body

Key aspects of the Decommissioning Plan(DP)1:

- **Content of DP**: all countries preffered the IAEA SRS 45

- The detailed content must be negociate with regulatory body before to elaborate decommissioning plan

- Status of DP in the countries participated in the workshop:

- Countries with DP completed and approved: Romania
- Countries with DP in progress: Philippines, Egypt, Malaysia, Vietnam, Brasil, Indonesia, Serbia,
- Countries with DP non initiated: Argentina- lack of the operation history, psihological aspects

Key aspects of the Decommissioning Plan(DP)2:

Approaches in elaboration of the DP:

- make a mixt team for elaboration: former operator and new comers;
- each chapter will be elaborated by dedicated team , but for final elaboration need to be only 2-3 specialists for making the necessary correlation;
- each chapter is strong correlated with another chapter
- pay high attention with Ch.2, Ch. 5, Ch. 7, Ch 8, Ch 9, Ch 10
- organize recording and archiving system for all type of activities: radiological characterization data, type and code of varius revision of documentation
-organize archive for hard and electronic documents based of quality assurance and quality control

Key aspects of the Decommissioning Plan(DP)3:

- Analize each Chapter from SRS 45 as peer review of the operators:

- FACILITY DESCRIPTION – records, documentation, institutional memory (lack of data may present additional costs)

- DECOMM. STRATEGY

- identify options vs. cost
- might also be politically influenced and decided by only based on technically support and regulation process

Key aspects of the Decommissioning Plan(DP)4:

- Analize each Chapter from SRS 45 as peer review of the operators:

- PROJECT MANAGEMENT

– definite start date, end date
- budgeting
- expectation of commitment
- necessity of training for personnel who will do the work
- importance of project management tools
- well-established organizational structure
- an organizational chart was presented by Philippines

Key aspects of the Decommissioning Plan(DP)5:

- Analize each Chapter from SRS 45 as peer review of the operators:
- DECOMM. ACTIVITIES

- important inputs: records, results from characterization
- also a consideration: waste routes

- SURVEILLANCE & MAINTENANCE

- S&M requirements depend on the strategy

- WASTE MANAGEMENT

- final destination can dictate how you manage your waste
- packaging considerations (kind of container, approval of regulatory body, quality assurance)
- technologies available for conditioning/treatment
- coordination between operator and waste facility- interfaces

Key aspects of the Decommissioning Plan(DP)6:

- Analize each Chapter from SRS 45 as peer review of the operators:
- COST ESTIMATE

- each item in the plan incorporates cost; each of these inputs would lead to the total cost estimate
- list of costs for decommissioning (elements, categories, cost drivers was presented as practical exemple (Romania)

- SAFETY ASSESSMENT

- presented U.K. process – structured process for assessing hazards (HAZOP), analysis of hazards (HAZAN) for safely developing activities, making operational procedures and emergency planning

Key aspects of the Decommissioning Plan(DP)7:

- Analize each Chapter from SRS 45 as peer review of the operators:
- ENVIRONMENTAL CHARACTERIZATION (practical demonstration provided by Romanian experience),

- important aspect in licensing process, public relations, comunications with local comunity

- QUALITY ASSURANCE

- developing a project-specific (on decommissioning) Quality Assurance Programme

- importance of different procedures: for works, control, audit,compliance, management system, prevention and corrective measures,

Key aspects of the Decommissioning Plan(DP)8:

- Analize each Chapter from SRS 45 as peer review of the operators:
- EMERGENCY PLANNING

– identify potential failed activity and response for each type of abnormal situations

- manage the emergiency situation, organize periodically exercize for training and up-grading of the procedures

- emergency plan is document require by regulatory body during authorization process for unique phase of decommissioning or multiple authorization as graded approach of the decommissioning project

- PHYSICAL SECURITY

Practical Romanian exemple: isolation concept for Research Reactor in the multinuclear facilities site by construction a new fences, with the radiological gate for vehicles and workers, metal detector

Conclusions

- Useful disscusion of the operators from different countries
- Exchange the information, experience and tacit knowledge
- The participants identify the new approaches in elaboration and finalization of DP
- For near future the principal means for assistance from IAEA may be in

- practical applications and exemples
- job training for material management, cost estimates, safety assessment, decommissioning technologies