International Atomic Energy Agency

CUC Stage 2 Activity
Results of Working Groups on Elaboration of Considerations

Technical Cooperation Workshop on
Common User Considerations
Vienna, September 22-25, 2008

IAEA

INPRO
International Project on
Innovative Nuclear Reactors
and Fuel Cycles

General guidance for the discussion

- **Comments and recommendations to the Secretariat should make the difference between those to be taken into account in Stage 2 report and those that could be implemented at a later stage**

Proven Technology

- Provenness : Readiness ? Maturity ? Viability ?
- No absolute numerical criteria
- Depends on User's perspectives (User's technical maturity, level of risk the User is ready to accept) and past operation, demonstration and evolutions
- Innovation needs some definition and the process of deploying innovation needs discussion
- Concept of shared risk for first of kind deployment
- Discuss reference plant concept in the context of PT

Proven Technology (continued)

- Design certification? Link with safety / Licensing
- Explain possible actions by Suppliers to demonstrate provenness
- Not only cover NPP but also fuel cycle

Should be continued because we need more elaboration and clarification/discussion including definition of terms, what information the holders should supply to users and how to incorporate component and system innovation into designs for deployment –support to national decisions at multiple points as INS are deployed

Licensability

- In the rationale include explanation on how licensing and “Provenness” could relate
- Remind that the User is the ultimate decider on the regulation, standards, requirements that should be applicable
- Include examples to illustrate possible scenarios of licensing ?

Licensability (continued)

- Elaborate on the verb “comply”
- Explain that some existing designs in certain countries might not be licensable anymore in these countries even though they are still in operation
- Explain that licensing information is proprietary material and should be protected, who to it could be provided and at what stage

Optimization of National Participation in INS Deployment

- "Optimum" is from User's perspective
- Optimization rather than minimization of changes to infrastructure
- Optimization should be viewed globally (NPP + infrastructure)
- Requires framework of cooperation between user and holder
- What are the opportunities (potential benefits) and challenges of local/domestic participation maybe using case studies
- Users/holders group approach
- Good opportunity to enhance both technical and manufacturing capacity for mutual benefit to users and holders (foundation for future development)

Optimization of National Participation in INS Deployment

- This consideration should be continued with balanced discussion of benefits, challenges, legal framework, timing of decision and when to negotiate, economic tradeoff, etc
- Maybe a workshop on “Optimization techniques”

Cost elements to support decision-making

- Cost is different from Price
- Costs are proprietary and exact costs are sensitive particularly from holders
  - Exact or reliable are adjectives that should not be applied to cost, rather use “best-estimate” in some cases
  - How to encourage suppliers to provide cost elements, e.g. early cost summaries before bid
  - In many cases, costs should be developed jointly with jointly agreed methodologies
- Cost benefit analysis and methodologies are important
- National decisions depend on good cost data, world market analysis (cost inflation), resource strategy, and material requirements for construction
- Advantage of first of a kind plant in terms of cost?

Cost elements to support decision-making

- Complete elaboration in stage 2 report with section on referral to other Agency and non-Agency organizations with a mission to support detailed cost comparisons which can work with users directly to support cost decisions. Final cost information is provided by the holders only when they initiate a specific negotiation.
- Future work would be focused on increased awareness of all the elements in a comprehensive cost decision analysis

Standardization- Standard Plant Design

- Standardization has obvious value but the plant should be flexible to accommodate local/national requirements and design optimization
- Scope of standardization includes Nuclear Island and Balance of Plant
- Agree on a set of standard plant parameters and the ROM cost impact of each parameter and a range of values
- Maybe we should compare with existing requirements documents like the URD

Standardization- Standard Plant Design

- Holders should provide feedback on the list and provide some values with appropriate cost impact of a design change to this parameter. This data would be captured in the Stage 2 report and a decision on how to proceed would be made when the data is collected

Standardization- Components

- Huge scope and more questions than answers
- Nuclear island components and steam turbine would require consensus from vendors (cost and safety issues), other non-nuclear components may be country of deployment specific

Many organizations representing vendors are better prepared to accomplish this activity so no further activity is recommended.

Site Characterization

- Limit size of questionnaire based on input from vendors
- Collect values from users feed-back from suppliers and level of impact on cost of the parameters
- Develop enveloppe(s) of site characteristics (plant parameter envelope PPE) possibly to allow for different climates (or different ranges of unit size ?)

This elaboration has value and should be carried forward as an ongoing area of discussion

New areas that would be useful to elaborate

- Environmental Impact requirements (specific to Nuclear Power Plants) in particular
  - Effluents (env. Protection)
  - Soils, vegetation etc
  - Radiological baseline and monitoring
- CO2 reduction as possible cost credit
- High level waste, storage, treatment, and final disposal, spent fuel strategy and disposition
- HR Requirements Education, Training etc building human capacity
- Emergency Planning requirements
- Institutional and legal and technical/standards requirements
- Preparation for external events (natural and terrorist)
- Non-electrical uses of Nuclear Power
- Innovative financing and shared ownership