

# 2<sup>nd</sup> MDEP conference on New Reactor Design Activities : Concluding session.

## Observations from Indian Regulator

S.S.Bajaj, Chairman, AERB, India

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- MDEP is a unique initiative
  - Bringing together regulators from different countries
  - Efforts towards harmonization of safety requirements
- Deliberation in this conference provide ample evidence that the initiative is a success



While aiming for harmonization, we have to recognize that some differences will and should persist:

- National regulators have the final responsibility
- Local factors :
  - Natural External events
  - Cultural & infrastructural differences
  - Security environment
  - Vulnerability to aircraft crash
  - Reliability of offsite electric power supplies
- Many existing requirements based on history, culture and well ingrained practices
- Need for accommodation of existing local good practices



# Regulatory Process in India

- India has long-standing regulatory review experience in different designs of NPPs (PHWRs, FBRs and VVERs)
- Regulatory control for new NPPs involves several consent stages:
  - Siting
  - Construction (typically up-to three sub- stages)
  - Commissioning ( several stages culminating in full power operation)
  - Regular operation
- At each stage comprehensive safety review, in a multi-tier structure, is carried out before clearance.



# India's Nuclear Power Program

- Present generation capacity of around 4700 MWe is derived from 20 reactors,
  - 18-PHWRs (220-540 MWe) and 2-BWRs (160 MWe)
- Plans to add substantial nuclear capacity
- Currently two VVERs (1000 MWe) are nearing completion and under commissioning
- 4 units of 700 MWe Indian PHWRs and one 500 MWe FBR are under construction
- Future plans for expansion includes multiple units of Indian PHWRs imported LWRs, including EPR and AP-1000



# Relevance of MDEP for India

- With large number of facilities and diverse designs to be regulated, AERB needs to optimize its resources
- MDEP could be a very helpful platform for sharing knowledge and review experiences with other regulators
- Review results can be directly adopted in areas which have national requirements similar to MDEP criteria
- Thus India looks forward to very fruitful participation in the activities of MDEP



# Observations

- Some aspects of EPR design reviewed by AERB as part of Technical Assignment review for proposed EPR project at Jaitapur, India
- A few key issues surfaced during such review
  - the use of “break preclusion” concept, safety classification of SSCs and digital C&I for protection system.
- Different regulatory regimes have taken different approach in resolving these issues
- We will be interested to see if convergence in these areas is possible.



# Additional suggestions for enhancement of the scope of MDEP

- Addressing Fukushima type condition for new builds
- Extending the programme to operating NPPs in some areas
  - Review against current standards as a part of periodic Safety Review and handling of resulting safety upgrades
- Sharing of construction experiences
- Continued Involvement of vendors and utilities in some form.

