



**Nuclear Innovation Conference (NIC)
topical workshop on effectiveness of
ageing management programmes
(AMPs) and plant level AMP**

MEETING MINUTES

Organized by Nuclear Research and consultancy Group (NRG) in
cooperation with International Atomic Energy Agency (IAEA)

18-19 January 2023
NRG, Petten
- THE NETHERLANDS –

Type of event: international workshop

Hosting organization: NRG Petten

Venue address: NRG, Westerduinweg 3, 1755 LE Petten, The Netherlands

NRG event host: Mr. Robert Krivanek, International Ageing Management and LTO Projects Manager, NRG, Petten, The Netherlands, cell phone: +31 6 1532 1927, email: krivanek@nrg.eu

The event has the following primary objectives:

- To discuss existing methods, tools and approaches to monitor the effectiveness of AMPs and plant level AMP;
- To share experience, lessons learned, challenges and further needs in monitoring and enhancing the effectiveness of AMPs and plant level AMP;
- To share and discuss perspectives of both nuclear industry and regulatory authorities.

Presentations as presented according to the workshop agenda (see Appendix 1) are available on:

Link to NRG NIC website – <https://www.nuclearinnovationconference.eu/workshops>

(You can find presentation from NIC2022 and associated webinar on <https://nic2022.eu/presentations/> .)

Conclusions and further needs

- 1) The event primary objectives (see above) have been achieved.
- 2) Monitoring, measurement and proof of effectiveness of individual AMPs and Plant Level AMP is a complex task.
- 3) Guidance on effectiveness of individual AMPs and Plant Level AMP is provided in IAEA SSG-48, IGALL Safety Report Series No. 82, Rev.2 and Safety Report Series No. 106.
- 4) The activities typically taken into account for evaluation of the Plant Level AMP and individual AMPs effectiveness are provided in IGALL Safety Report Series 82, Rev.2, section 5. Activities with periodicity greater than 5 years are:
 - Periodic Safety Review (every 10 years)
 - Regulatory body review (at least every 10 years within PSR)
 - Peer Reviews (e.g. SALTO)
 - Benchmarking with other NPPs and international practices (e.g. IGALL)
 - Periodic Ageing Management Review (every 5-10 years)
 - Periodic evaluation of TLAAAs (every 5-10 years)

Activities with periodicity less than 5 years or continuous are:

- Internal and external operating experience and R&D feedback (annually)
- Performance indicators for plant level AMP and individual AMPs (annually)

- PLAN–DO–CHECK–ACT approach (continuously)
 - Use of nine attributes for AMPs (continuously)
- 5) Development and implementation of performance indicators (qualitative and quantitative) is of high interest among the workshop participants.
 - 6) Proven performance indicators (qualitative and quantitative) will be collected for existing IGALL AMPs during IGALL Phase 6 (2022-2023) and Phase 7 (2024-2025).
 - 7) International platforms (IAEA IGALL, IAEA LMNPP, OECD/NEA WGIAGE, OECD/NEA CODAP) are in place to facilitate exchange relevant OPEX and R&D feedback to support AMPs effectiveness.
 - 8) Approaches to AMPs effectiveness vary among workshop participants (e.g. applied activities and their periodicity, use of performance indicators).
 - 9) Understanding of AMPs effectiveness objective still needs to be discussed and uniform understanding achieved. This would allow better international cooperation in this area. Definition of effectiveness of AMPs and plant level AMP (including difference between effectiveness and efficiency of AMPs) could be included in IAEA Safety Glossary and IGALL Safety Report SRS 82, section 5.
 - 10) Qualitative performance indicators can be developed for every AMP but quantitative performance indicators can be developed only for limited amount of AMPs. This can be also described in IGALL Safety Report SRS 82, section 5.
 - 11) NRG invites potential contributors to collaborate and provide inputs to research task ‘LTO beyond 60’. Further details will be provided upon request.



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Appendix 1 – Workshop agenda

AGENDA	
<i>Day 1, Wednesday, 18 January 2023</i>	
09:00	Workshop opening - host representative
09:30	01_ NRG introductory presentation, objectives, schedule - Mr. Robert Krivanek, NRG, The Netherlands
09:30 10:15	02_ NRG activities in ageing management and LTO – Mr. Robert Krivanek, NRG, The Netherlands
<i>Coffee break</i>	
10:45 11:30	03_ Effectiveness of AMPs and plant level AMP in IAEA publications and ongoing activities – Mr. Martin Marchena, IAEA
11:30 12:15	04_ Effectiveness of AMPs and plant level AMP – NRC regulatory perspective – Mr. Steven Bloom, NRC, USA
<i>Lunch break</i>	
13:15 14:00	05_ Effectiveness of AMPs and plant level AMP – ASN regulatory approach and expectations – Ms. Rachel Vaucher, ASN, France
14:00 14:45	06_ Plant level AMP and assurance of effectiveness by using a mechanism matrix - Mr. Rob Bollen, Borssele NPP, The Netherlands
<i>Coffee break</i>	
15:15 16:00	07_ Effectiveness of AMPs and plant level AMP at Swedish NPPs – current status, lessons learned, challenges – Mr. Tommy Holm, Oskarshamn NPP and Mr. Karel Fors, Ringhals NPP, Sweden
16:00 16:45	08_ Effectiveness of AMPs and plant level AMP at Czech NPPs – current status, lessons learned, challenges – Mr. Pavel Hala, CEZ, Czech Republic
16:45 17:00	09_ Questions and answers, discussion – moderated by Mr. Robert Krivanek

<i>Day 2, Thursday, 19 January 2023</i>	
09:00 09:30	01_ NRG PIONIER research project – LTO Beyond 60 – Ms. Corina Mocanu, NRG, the Netherlands
09:30 10:15	02_ Effectiveness of ageing management in IAEA Nuclear Energy Series and ongoing activities – Ms. Annie Yu, IAEA
<i>Coffee break</i>	
10:45 11:30	03_ Effectiveness of AMPs - OECD/NEA safety research activities and analysis of database on the Component Operational Experience, Degradation and Ageing Programme (CODAP) – Ms. Keiko Chitose, OECD/NEA
11:30 12:15	04_ Effectiveness of AMPs at Krsko NPP – current status, lessons learned, challenges – Mr. Stanko Manojlovic, Krsko NPP, Slovenia - cancelled
<i>Lunch break</i>	

13:15 14:00	05_Effectiveness of ageing management programmes for mechanical components at NPP Paks – Mr. Janos Pinczes, Paks NPP, Hungary
14:00 14:45	06_I&C ageing management programmes indicators – Mr. Balazs Kocsis, Paks NPP, Hungary
<i>Coffee break</i>	
15:15 16:00	07_Effectiveness of AMPs and plant level AMP at HFR research reactor (NRG) – current Status, lessons learned, challenges – Ms. Ledia Hasa, NRG, the Netherlands
16:00 17:00	08_Questions and answers, discussion, further needs, conclusions – moderated by Mr. Robert Krivanek, NRG, The Netherlands