Press Release: Last Regular Meeting of the VGB Working Group LWR-Chemistry at the NPP Emsland

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On May 3–4, 2022, the last regular meeting of the VGB Working Group Light Water Reactor (LWR)-Chemistry took place at the nuclear power plant (NPP) Emsland, Germany. In addition to the technical experts of most of the German nuclear power plants, experts from all the Swiss nuclear power plants, the Netherlands, Spain and Belgium as well as from Framatome GmbH as consulting plant manufacturer participated. In the wake of the complete phase-out of nuclear energy decided by the German government in 2011 and the associated decommissioning of the last three German nuclear power plants connected to the grid as of December 31, 2022, there will also be restructuring measures at VGB. On the initiative of the German operators, a decommissioning-oriented Working Group will start from 01.07.2022, and the Working Group LWR-Chemistry will be discontinued. Under the leadership of the international VGB members, it is now necessary to create a separate operation-oriented committee structure. In the course of this reorganization, discussions are underway between the power plant operators to continue the successful format of technical exchange of experience in the form of a project group dealing with special issues of chemistry during the dismantling phase of a nuclear power plant.

The Working Group LWR-Chemistry within VGB looks back on more than 40 years of successful activity. In addition to the exchange of experience between the individual power plant representatives regarding current operating events, the permanent feedback of experience to power plant manufacturers has been a constant source of joint innovation and continued development in the areas of chemical operation management, constructive design, as well as material selection in the course of the further development of the individual reactor lines and their operational optimization. These developments have contributed significantly to the high availability and safe and economically efficient operation of the plants concerned.

Examples of such developments in the field of the chemistry of pressurized water reactors are the introduction of

- the use of enriched boric acid on the primary side of pressurized water reactors,
- H-AVT (High All Volatile Treatment) operation by hydrazine/ammonia conditioning on the secondary side, and
- oxidizing chemistry on the cold side of the water separators in the turbine area for improved protection against flow-accelerated corrosion (FAC).

In addition to these developments, international experiences and development trends have always been considered, their advantages and disadvantages as well as technical risks have been evaluated, and – if possible – they have been transferred to the plants united within the VGB. The introduction of the zinc operation mode with the aim of a delayed dose rate build-up is a general example of this, which was introduced in nuclear power plants with pressurized water reactors as well as in boiling water reactor plants.

All this operating experience has been continuously incorporated into VGB Standard S-401-00-2020-05 [1], the latest update of which was published in 2021. This VGB standard serves an increasing number of power plant operators worldwide as a recognized set of rules and a reference for maintaining and updating their own chemical specifications. In addition, the VGB standard for light water reactors also served as the basis for defining the primary and secondary side operation of Framatome's current pressurized water reactor series – EPR™ – in Finland.

[1] VGB – Standard S-401-00-2020: VGB Standard for the Water in Nuclear Power Plants with Light Water Reactors, VGB PowerTech e.V., 2021.

Experts of the VGB Working Group LWR-Chemistry at the NPP Emsland.

Jörg Fandrich (M.S., Nuclear Physics, Technical University Dresden, Germany) works as a fellow expert for Framatome GmbH and since 2020 has been an invited member of the EDF Fellow Expert Group. Since 1986, he has worked in the field of power plant chemistry for several companies, at both nuclear and fossil power plants. His main field of experience is special issues of pressurized water reactor (PWR) chemistry (primary and secondary side), including the development of related monitoring and diagnostic systems. In this sector, Jörg Fandrich holds several patents and has published diverse technical articles. His more than thirty years of experience also covers specific questions related to the commissioning of nuclear power plants with pressurized water reactors of different designs.

Timo Stoll (Ph.D., Chemistry, University of Cologne, Germany) has been working as a chemist at NPP Emsland since 2005. He joined the VGB Working Group LWR-Chemistry in 2009 when he became the head of chemistry at NPP Emsland. In 2014 he was elected chairman of the VGB working group. During his service at the NPP Emsland he has supervised several technical optimizations related to the primary and secondary side chemistry. He also has experience in the field of radiation protection and has been a radiation protection officer at the NPP since 2009. Due to the changes in the nuclear sector, in addition to his chemical activities, he became the head of nuclear waste disposal in 2021.