

## COMPLEX MANAGEMENT OF FAC ISSUES FOR OPERATING AND NEW NPP UNITS

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### ABSTRACT

Low carbon steel piping and equipment damages due to Flow-Accelerated Corrosion (FAC) are a common issue for Russian and foreign NPPs.

Multi-factor FAC damages of NPP piping and equipment base and weld metal needs complex management including:

- justification of actual loading spectra (revealing of water hammer, non-specified mounting preload, etc.);
- effective non-destructive tools and procedures application, including sophisticated technologies for continuous wall thickness measurement in local FAC damaged zones and under the cap of circumferential welds;
- chemical composition determination of base metal and weld metal (in root zone) because the content of chromium, copper and aluminum affects strongly susceptibility to FAC damages;
- actual water chemistry parameters registration and evaluation during operation for candidate NPP components susceptible to FAC;
- application of methods for conservative FAC damage rate assessment in candidate NPP components susceptible to FAC.

• Operation history of NPP Units gives examples of effective application of Risk-Informed Inspection planning even for components susceptible to FAC.

Practical experience of structural integrity methodology application to prevent double-end-guillotine breaks at stages of design and operation is based on complex technological solutions.

Implementation of listed above measures is necessary for FAC susceptible components of operating NPP Units with the emphasis on effective wall thickness measurement, chromium content determination and registration of actual loading parameters.

Comprehensive inspection of initial (as-built) technical state of FAC susceptible components of new NPP Units should be performed during mounting and commissioning with putting results into component diagnostic passports.

FAC complex management during design and commissioning gives opportunity for operation expenses optimization and high safety level maintaining of new NPP Units.