SEJV2 Software Package for Radiation Monitoring System of VVER 440 NPP.

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Introduction

The main part of radiation monitoring system at VVER 440 NPP with type 213 reactor is a centralized 400 channel monitoring system "SEJVAL" servicing twin reactor units. The data presentation and signalling is performed by hardwired devices linked to a proprieatary synchronous serial bus. A microprocessor based interface has been developed [1] providing the access to monitored data via standard asynchronous serial port thus enabling a convenient link between radiation monitoring system and any suitable computer. A PC software package designed to handle and present the radiation monitoring system data is described.

Software functions

Radiation monitoring software package SEJV2 had been designed on top of three main system components: QNX multiuser, multitasking network operating system, QNX Vindows and C-tree file manager system. It runs on high performance PC computer. The main functions of the software are briefly summarized as follows:

- data acquisition and alarm signals generation
- radiation monitoring channels status overview with colour status coding
- full identification of selected monitoring channel with regularly updated numerical data output

- "strip chart recorder" type analogue presentation of selected monitoring channel last 24 hours data with 5 minutes updates
- over 30 diagrams of technological subsystems and layouts with indicated position of monitors, updated numerical data output and with either identification information or analogue presentation of selected monitoring channel
- group of ten selected monitoring channels presented both in numeric and bar diagrams. Up to ten groups can be configured for this type of presentation
- mainteinance of data stored in two archives - a short term archive (at least 7 days or longer depending on disk capacity) with 5 minutes resolution and an archive of shift averages (8 hours) maintained for 365 days
- viewing system of archived data with up to ten selected monitoring channels drawn simultaneously with scaling possibilities. Ten groups of channels can be configured.
- handling of shifts manually gathered data to be used in reports
- generation of the radiation protection department dayly report or an instantenous data printout.

A single colour display, a keyboard and a mouse are used for the man - machine interface. The communication with program is selfexplanatory however helps are also provided. Special attention has been paid to the alarm signals generation (audible and visual) and to operator acknowlidging procedures. Provisions have been made to clearly distinguish between different type of alarms and to their prioritization.
Important events are logged into a file to enable managerial supervision and performance analysis .

The prime goal of the SEJV2 software package development was to unburden a health physics shift from routine work of record keeping, to make the radiation monitoring system data presentation more convenient and to provide and efficient tool for there analysis. It is believed also that the system will provide a reasonable start for the future knowledge based

system.

The software is developed in a highly modular manner to facilitate its update and possible modifications as experience with its usage will be building up as well as future development. All the infirmation relevant to the radiation monitoring system is stored in editable files enabling its tailoring to the particular power plant.

Conclusion

SEJV2 software package has been developed to run on PC with IFS2 interface to radiation monitoring system of VVER 440 NPP "Sejval". It provides an enhanced data presentation, record keeping and report generation improving the efficiency of health physics shift. The first implementation has been made on Jaslovské Bohunice V2 NPP with encouraging results. Close cooperation of NPPs staff and number of suggestions especially from Mr. Ľ.Dobiš and Mr.J.Svitek are gratefully acknowledged.

References

1. S.Tomek, V.Kapišovský, Š.Ševečka, V.Kremničan :
   An intelligent interface to radiation monitoring system "SEJVAL", VÚJE, in preparation.
2. QNX and QNX Vindows are trademarks of Quantum Software Systems, LTd.
3. C-tree is a trademark of FairCom.