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PROTECTION, AUTOMATION & CONTROL WORLD

Cigre Session 2008

Paris, France. 24 - 29 August

Cigre Session 2008

Special reports are prepared by industry experts and are available in advance at the CIGRE web site in order to allow participants to prepare and submit their contributions for the Discussion Meeting.

A zipped file containing all special reports can be downloaded at: http://www.cigre.org/gb/events/ session.asp

The file is: B5_Special_Report_2008.pdf.

For the CIGRE 2008 Session the protection and automation papers are focused on two preferential subjects:

- **PS1**: Impact of process-bus (IEC61850-9-2) on protection and substation automation systems
- **PS2**: Life Cycle Management of Protection and Control Systems

Summary of the PS1 Special Report

prepared by Christoph Brunner, Switzerland

The title of preferential subject 1 was "Impact of process-bus (IEC61850-9-2) on protection and substation automation systems". It was asked to cover aspects like system reliability, system architecture and experience so far.

A total of 6 papers with authors from 8 countries where submitted in response to this subject. In addition, 1 paper allocated to preferential subject 2 (B5-206) is discussing the testing aspects of an IEC 61850 based process bus. The discussion is grouped in the following five main topics:

- System architecture considering system reliability
- Benefits of the technology
- Practical experience
- Condition monitoring of primary equipment
- Testing of a process bus based system

A special thank is given to Fred Steinhauser for his assistance in the evaluation of the submitted papers and in the writing of this special report.

1 The Congress Palace in Paris

One introductory remark needs to be made related to the preferential subject and the term process bus. The term process bus does not exist officially in the norm since the norm is open concerning the structure of the communication network. It originates from the view of a substation automation system with three hierarchical levels (station, bay and process) and two levels of communication network connecting these hierarchical levels - the station bus and the process bus. In that view, the process bus is the communication network connecting the bay level to the process level. IEC 61850-9-2 defines the mapping of one specific set of services required on the process bus: the transmission of sampled values as it is used typically between voltage and current transformers and bay level devices as a replacement for the analogue signal. A process bus normally will support services defined in IEC 61850-9-2 as well as in IEC 61850-8-1. From the papers that have been submitted, some of them focus on connections to current and voltage transformers using IEC 61850-9-2 only, others address the complete process bus, i.e. all connections between bay level devices and process equipment including breakers and switches.

Summary of the PS1 Special Report

prepared by Iony Patriota de Siqueira, Brazil

This report reviews the contributions for the 42th Cigré Session related to Preferential Subject 2 of Study Committee B5 - Protection and Automation, on Life Cycle Management of Protection and Control Systems. Fifteen countries (Austria, Brazil, Canada, China, France, Germany, Japan, Malaysia, Romania, Slovenia, Spain,

Switzerland, The Netherlands, UK and USA) have submitted seventeen papers covering a wide range of issues on asset and life cycle management of protection and control systems (PCS). For discussion, the papers and associated questions are organized in five general topics common to Life Cycle Management.

Protection and control systems must be managed considering that they have a finite life cycle, like any other asset of modern power systems. Obsolescence or end of life of PCS devices may stem from different causes, ranging from physical deterioration or functional inadequacy up to market inability to provide sufficient spare parts for maintenance.

Asset management, as applied to PCS, comprises the set of technical and administrative actions taken to maximize return on investment and to exploit asset full capacity during the whole life cycle while minimizing cost and risk to power systems. Return can be measured in economic terms or other technical aspects like reliability, dependability, security etc.

The papers submitted to this session cover different aspects of the subject. For the purpose of discussion, they are organized in five key topics:

- Testing methods for protection and control systems
- Impact of IEC 61850 on testing and asset management
- Lifetime management of protection and control systems
- Remote management of protection and control systems
- Exploitation of protection and control systems.

Ten questions have been raised to motivate the discussion on these topics, after a brief summary of each paper.