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CIGRE Advisory Group A1.01 of Study Committee A1  
***Turbogenerators***

**Meeting Notes**  
**Tuesday 24 August 2010**  
**Paris, France**

1) This was the first meeting since Sydney, Australia in September 2009. There were 65 members and Experts representing 23 countries.

2) **Active Working Groups**

a) Guide: Generator Coil Retaining Ring – A Literature Survey and General Guideline  
Gert Coetzee (ZA)/Robert Fenton (USA). (WG SC-A1.16) – This work was first presented in Paris in 2002. The final wording was approved under the six weeks rule on 23 August 2010. There were minor suggestions that will be considered for the published document. The work remaining and schedule is as follows:

- Reformat into the CIGRE Technical Brochure format. John Linton (AU) has previously agreed to format for a Technical Brochure - 15 November 2010.
- Prepare a Summary to be published in ELECTRA - 15 November 2010.
- Prepare a PowerPoint presentation for presenting these results by 31 December 2010.

**SC-A1 will be asked to approve this plan at the meeting on Friday 27 August 2010.**

b) Guide on Stator Water Chemistry Management – François Duffeau (FR)/Robert Fenton (USA) (WG SC-A1.15) – This work was agreed to in Swindon in 2003. Revision 6 was distributed at the end of August. The final wording has been approved under the six weeks rule. The Summary was completed by the end of July 2010. The work remaining and schedule is as follows:

- Reformat into the CIGRE Technical Brochure format. - 30 November 2010.
- Prepare a PowerPoint presentation for presenting these results - 31 December 2010.

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c) Update on On Line Monitoring – Dan Zlatanovici (RO) [Trevor Stokes (UK), Oscar Martinez (Spain) and Robert Fenton (USA)]. (WG SC-A1.11) – The final wording was approved by SC-A1. The Summary and Power Point Presentation are both complete: This will be the final Report for this Working Group. The Summary is scheduled for the December issue of ELECTRA.

- d) Guide on Economic Evaluation Refurbish/Replace Decisions, (WG SC-A1.05) Sam Salem (US). (WG A1.01-21). Sam had distributed several sections for review and comment prior to the meeting in two distributions. There are several sections remaining to be completed including the need for case studies. There was a significant and interesting discussion with members volunteering to support the additional sections. Sam has received only one comment to date, but as the sections were recently issued more time is required. It was agreed that Sam would reissue the existing sections as one document for review. The proposed schedule is:

**Existing Sections:**

- Reissue the existing sections as a single document, possibly incorporating the comments to date. - 20 September 2010.
- Comments by members (and Experts through the members) - 30 November 2010.
- Issue revision of existing sections - 15 January 2011
- Final comments on existing sections - 30 April 2011
- Issue one integrated document - 15 August 2011.
- Discussion of the complete document at the meeting in China 2011.

**New Sections:**

- Issue remaining sections - 15 December 2010
- Comments on new sections - 28 February 2011.
- Revision of new sections - 30 April 2011.
- Final comments on the revised new sections - 30 June 2011.
- Issue one integrated document by - August 2011.
- Discussion of the complete document at the meeting in China 2011.

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- e) Guide on Over fluxing Generators (WG SC.A1.01). Neil Connolly (UK), H. Shimada (JP) and David Wallis (UK). The draft distributed prior to the Paris 2008 meeting received many comments following the meeting. The WG has met following the meeting in Paris. There was a significant discussion on the suggestions to expand the scope in Australia. It was agreed that the scope would be limited to the period when the generator is “off line”, prior to start-up or following shut down. Other issues related to electromagnetic flux risk while under load would need to be addressed in a separate study and/or Guide. Volunteers are welcome to contact the convener with a proposed scope. Neil issued a revised version just prior to the current meeting, but it has been observed by some that a further revision is required. It was agreed to have the current version reviewed quickly by a small group before issuing to the full Study Committee and Experts. On the current project the schedule agreed to is:

- Mr Connolly to issue the current draft for a quick review to Mr. Shimada (JP), Dr Brian Gott and Robert Fenton (both US), Lon Montgomery (US via Jurgen Weidner), Klaus Sedlaczek (DE via Jurgen Weidner), Geoff Klempner and Greg Stone (Both CA) and a French expert (FR via Michel Berlelont) by 5 September.

- Comments for this quick review - 30 September 2010.
  - The next draft will be issued -30 November 2010
  - Comments from members and experts by -January 2011.
  - Final Report -30 April 2011 - for final approval in China 2011
  - Summary and Power Point -15 August 2011 **SC-A1 will be asked to approve this plan at the meeting on 27 August 2010.**
- f) Guide on Generator/Power System Interrelationship Issues (WG-A1.03). Dr Rouco (ES) .The Scope is to create a Guide to follow up, combine and expand on the results of the Network Consideration and Grid Code questionnaires by Trevor Stokes and Brian Gott respectively. A revised TOR was discussed at the meeting and agreed to. Proposed Schedule as agreed in Sydney in 2009:
- First Draft of Guide– 28 April 2011
  - Comments by members and experts – 30 June 2011
  - Second Draft of Guide – 31 August 2011 (for China meeting)
  - Comments by members and experts – 30 November 2011
  - Final Draft of Guide – 30 March 2012
  - Minor comments if any – 30 June 2012
  - Final approved draft issued – 31 July 2012
  - Final approval Paris August 2012
  - Technical Brochure and Tutorial – 31 December 2012
- SC-A1 will be asked to approve this plan at the meeting on 27 September 2010.**
- g) Guide- Consideration of Duty on Windings (WG SC-A1.22) Michel Berlamont - This Guide will be based on the results of 3 previous CIGRE Questionnaires. (Report on Stressing Turbo-generators Beyond their Established Thermal Limits By R Joho/R Fenton combined with the responses to the earlier questionnaires on Stator Winding Integrity by Albert Huber and Aging of Field Windings by R. Fenton/BEB Gott. A TOR and a Scope were prepared and approved. National Members have identified members for this working Group. A first draft was distributed prior to the meeting. Working Group members and National members should provide comments. It was agreed that Advisory Group A1.02, Hydro-Generators will address this topic once the Advisory Group A1.01 Turbo-Generators completes this work. The schedule is:
- Initial draft was issued 3 August 2010
  - Comments by members and experts – 31 October 2010
  - Second draft – 31 January 2011
  - Comments by members and experts- 30 March 2011
  - Final version issued -31 May 2010
  - Approval under the 6 weeks rule
  - Summary for Electra – 31 August 2011
  - Final discussion in China 2011
  - Power Point Presentation 31 October
- SC-A1 will be asked to approve this plan at the meeting on 27 August 2010.**

h) Questionnaire – State of the Art and Capability for Robotic Inspection of Turbo-Generators. (WG SC-A1-23) Marcio Siniscalchi (Brazil) This project was proposed in 2009. At this meeting, it was agreed that this may be addressed as both a Questionnaire and a Guide. The schedule is:

- Draft Questionnaire issued -30 November 2010
- Comments on questionnaire by members and experts – 31 December 2010
- Final questionnaire issued -31 January 2011
- Responses by members and experts – 15 April 2011
- Draft Report issued - 30 June 2011
- Comments on draft Report – 31 August 2011
- Discussion in China 2011 – Report or Guide decision
- Final Report for Approval under 6 weeks rule – 31 October 2011
- Summary for Electra – 15 December 2011

**SC-A1 will be asked to approve this plan at the meeting on 27 August 2010.**

i) Proposal for New work—Guide for TVA/Corona Probe Testing. Rodica and Dan Zlatanovici (RO). (WG SC-A1.xx). Rodica made a presentation and following discussion, it was agreed to recommend this TOR to the Study Committee and CIGRE Technical Committee. The proposed schedule is:

- First draft questionnaire – 31 January 2011
- Distribute the draft and request comments -15 February 2011
- Approval of TOR by Technical Committee - April 2011
- Comments to Draft Questionnaire – 30 April 2011
- Distribute final questionnaire – 15 July 2011
- Discussion of Status and comments to date - China 2011
- Responses to questionnaire – 31 October 2011
- Synthesis answers & First Draft of Guide – 28 February 2012
- Comments -31 May 2012
- Second Draft of Guide – 31 August 2012
- Discussion of Status and comments to date – Paris 2012
- Comments on Second Draft – 30 November 2012
- Final Guide for approval – 31 March 2013
- Approved under 6 weeks rule 15 June 2013
- Technical Brochure and summary for Electra -- Bucharest 2013

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j) Proposal for New work- Guide for Cleanliness and Proper Storage of Generators and Components – Kevin Mayor (CH). (**Working Group SC A1.YY**). This will focus on generators and components assembled or disassembled, in long term or short term storage, etc. It will address cleanliness during assembly, storage and maintenance. The proposed schedule is:

- Draft TOR by end of September 2010
- Final TOR by 15 November 2010.

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- Draft questionnaire by 31 January 2011 for comments
  - TOR approval by Technical Committee April 2011
  - Issue Questionnaire for responses 30 May 2011
  - Responses due 31 August 2011
  - Discussion at China Meeting – decision on Report VS Guide
- 3) **Proposals for other new topics of Study.** It was agreed in Paris 2002 that a series of Guides aimed at Generator breakdown/failure mechanisms should be created and would be beneficial to the industry. The goal is to present information that will stimulate informed discussions between plant operators and manufacturers/ service providers. Each guide should include a listing of important ideas and information, potential negative consequences, references on where to find information to avoid potential disaster (references) and as appropriate comments on current industry practices. The list of suggested topics will be periodically reviewed and updated. Currently on the list are:
- Energization at standstill. (Generator Considerations at Startup)
  - Generation operation on grids with high harmonics
  - Air Cooled Generator technology
  - Hydrogen application, handling and safety for generator cooling
  - Operation without cooling water
  - Other?
- 4) An overview presentation was made by Bob Fenton on the International Generator Technical Community sponsored by National Electric Coil of the USA. This website facilitates the exchange of **technical** information among members from around the world. ([www.GeneratorTechnicalForum.org](http://www.GeneratorTechnicalForum.org))
- 5) .
- 6) Next meeting-China 2011 as part of the SC-A1 meeting.

Robert E Fenton-Convener

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R1 27 August 2010