IEEE Task Force 1564, Voltage Sag Indices

Minutes of meeting 16 July 2003, Toronto, Canada

Attendance:

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Minutes of previous meeting

Nobody had any comments on the minutes of the January 2003 meeting in Las Vegas. The minutes were accepted

Paper on Task Force

A paper on the status of the discussion within Task Force 1564 was written by Math Bollen, Dan Sabin and Thallam Rao, for presentation at the IEEE/CIGRE conference on power quality in Montreal, October 2003. The paper was written on personal title.

Discussion of draft 3

The major part of the meeting was spent on discussing draft 3 of the document. Draft 3 contains 21 questions, embedded in the text, on unresolved issues. The discussion concentrated on these questions.

Question 1 (page5): It was decide to co-ordinate with IEEE Std. 1366 to ensure that no gap would appear between the documents. As 1366 starts at 5-minute duration, 1564 will cover all events up to 5-minute duration. Mark McGranaghan will check at the 1366 working group[1]. Math Bollen will make necessary changes in 1564.

Question 2 (page 9): It was decided to repeat relevant parts of IEC 61000-4-30 in 1564.
Question 3 (page 11): Different options will be given to chose the reference voltage; 1564 will recommend the use of a nominal voltage in distribution systems and mention that sliding-reference voltage (pre-event voltage) would be a better choice for transmission systems. As our scope is only distribution systems we cannot make recommendations for transmission systems.

[1] After the 1366 meeting, Mark McGranaghan reported that the new version of 1366 (being re-balloted at the moment) contains momentary interruptions as well

Question 4(page 11):. The need for multiple thresholds should be explained in the document. Where possible examples should be included to show when it makes a difference.

Question 5(page 12): see question 2.

Question 6 (page 13): The discussion on reference voltage and choice of threshold (Section 5.2.1) will be moved to an Annex.

Section 5.3. A discussion started on the need to keep the voltage-sag energy index. It was decided to keep it because the index is being used already. Our task is to define the index in such a way that those who use it will use it all in the same way.

Question 7 (page 15):. We will not define a "most-severe sag" for use with the voltage-sag energy index. There will thus be no upper limit of the index for individual events. A paragraph will be added to Section 5.3. on the use of voltage-sag energy indices for short interruptions.

Question 8 (page 17): The SEMI curve will be recommended as a reference curve for calculating the "voltage-sag severity index".

Question 9 (page 18): A paragraph will be added to Section 5.4.on applying the voltage-sag severity index to short interruptions.

Question 10 (page 19): The upper limit for SARFI calculations will be increased to 5 minutes to make it consistent with the 5-minute lower limit in 1366.

Question 11 (page 20): It was decided to keep the half-cycle minimum duration for clarity.

Question 12 (page 21): see Question 10

Question 13 (page 23): The scatter plot will not be included as an index. The scatter plots will remain in the text, but only as an example of the calculation of SARFI_curve.

A discussion started on the definition of the CBEMA curve. None of those present was aware of an exact definition of the CBEMA curve (more than just a graph). It was felt that we could solve this dilemma by leaving out the CBEMA-example, but no conclusion on this was reached.

Question 14 (page 25): Different examples of voltage-sag tables will be presented, with a short discussion on the differences between them.

Question 15 (page 25): The upper limit in all the tables with be increased to 5 minutes (see Question 10).

Question 16 (page 25): Events at the border of a cell will be moved to the cell with the least severe dips. Math will check how this is done in 493 and 1346.

Question 17 (page 25): The table based on IEC 61000-4-11 will be included, again with a short description.

South-African Table: The latest version of NRS 048-2 uses another table. Math will check and include the newest table.

Question 18 (page 28): An annex will be added discussing various aspects of time aggregation. The discussion is still too much ongoing to include this in the normative part of the document.

Atef Morched presented a document on time aggregation and some of the unresolved issues they came across at his company. The relevant conclusions of the document will be included in the informative annex on time-aggregation.

Section 6.5.2. is a general discussion on aggregation, it fits better before 6.5.1. Math will check with Dan Sabin.

Question 19 (page 29): We will recommend a threshold level of 90 percent for all indices The triggering level could be higher however.

Question 20 (page 31): The choice of weighting factors will be discussed in an informative annex. Possible weighting factors are: number of customers (as in 1366); rated power or annual energy consumption; and costs associated with a sag. The discussion on weighting factor is related with the discussion on the choice of monitoring location. Dan Sabin was again mentioned as the right man to write this part.

When discussing system indices stochastic prediction should be mentioned as an alternative to monitoring. Reference can be made to 493 (Gold Book).

Question 21 (page 33): more examples are needed on the calculation of system indices. At the moment there is no example on voltage-sag severity.

Voltage swells: Voltage swells are not discussed in this document but they may be seen as natural part of the document. Math will try to add some comments on the use of the proposed indices for voltage swells. This should however not delay the final document.

Next meeting

The next meeting of task force 1564 will be held September 2003 during the Transmission and Distribution Conference in Dallas, Texas. Dan Sabin will chair that meeting. Mark McGranaghan will inform that meeting about the conclusions of the Toronto meeting.

Math Bollen will include the comments from this meeting into a new working-group document and distribute this before the next meeting. He will set up an agenda for the next meeting together with Dan Sabin.