## DISCUSSION RECORD

Session No. 14 – STATISTICAL PROBLEMS

PAPER No. 142
Author: A DESCLOUX

Question by V B IVERSEN
In your excellent paper you make some assumptions and approximations, which for me are difficult to estimate with respect to practical applications.

Your formula are correct for overflow traffic. Are they also correct or are approximations made for trunk groups where the arrival process and the holding times are correlated, e.g. in case of congestion?

Answer
The formula of my paper are all asymptotic and thus do not apply unless the observation interval is sufficiently long. They are all derived under the assumption that there is no interaction between the arrival process and the service times (which are mutually independent). It is, however, always possible to allow the service rates to depend on the state of the system.

PAPER No. 143
Author: R SOLEM

Question by V BENEŠ
1) Using the entropy functional $\Sigma\, a_{ij} \log a_{ij}$ instead of the "permutability" eliminates the approximation in the maximization and arrives at the same result.

2) Similar ideas are in paper No. 531 by Mr. D Bear.

Answer
1) This is true, in the continuous case, as also remarked in a private communication from the delegate E Jensen, Norway.

2) I am glad to observe that.

PAPER No. 144
Authors: E OBERER and G W RIESZ

Question by V BENEŠ
I recall some "old" results by W L Smith on the convergence of a superposition of renewal processes to a Poisson process; do these have a relevance or application to your problems of "phasing" and peakedness?

Answer
With relation to the case I have analysed – of test calls between only two points in a network – the answer is NO. However, for a test call experiment consisting of a small number of calls between each of many point-pairs for the purpose of estimating an "average" network grade of service superposition should hold. Thus for this case the many renewal processes may well converge to a Poisson process, thus eliminating the error described in my paper.