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DIN/NSMT WG on Ship Speed Trials
ITTC Trials and Monitoring Committee
ITTC Propulsion Committee
and, for information,
ITTC Symbols and Terminology Group
ITTC Quality Systems Group

Berlin, 10.02.1999

Sub.: Evaluation of ship speed trials
here: **Request for data**
Ref.: Examples on my website

Dear Colleagues,

it took me nearly two years after retiring from VWS, the Berlin Model Basin, before I found the time to continue my evaluation of data from ship speed trials. But in the meantime, on occasion of the ONR Symposium in Washington 1998, I had the opportunity to explain my ideas and the first two examples published earlier to a group of colleagues. A paper 'On the Logics ...' with presentation prepared for that purpose can be found on my website under the 'Recent Papers' in the section 'On the Evaluation of Ship Speed Trials', containing my earlier proposal for a rational standard as well as the updated and new examples.

One problem in carrying out the study, which aims at the comparison of the results of traditional evaluations with those of the rational evaluation proposed, is that many of the data sets provided are incomplete. Consequently **I am asking kindly for more and complete data sets in a format discussed below and the permit to publish the results on my website in the format of the examples, which I was permitted to publish so far.** Concerning sets of data maybe you just point out published collections of those, which I am not yet aware of.

The data made available so far are very different not only in extent, but in layout, including the proper identification of the data. Evidently there is a **very strong demand for a standard concerning this format**, long before any standards concerning the perfomance and evaluation of full scale trials and model tests. Such rigorous standards, i. e. conventions, will be necessary as well due to the fact that in the presence of noise, the results strongly depend on the procedure.

The differences in the presentation of model test results has in fact been the reason for the formation of the former, famous ITTC Presentation Committee, the name of which has been changing through Information Committee to, presently, Symbols and Terminology Group. The uniformity of presentation is required more than ever before for the purposes of quality assurance according to ISO 9001 and for the purposes of product data model technology (PDT) aiming at the exchange of data in neutral formats. **Evidently this format is not concerned with neither the generation nor the use of the data.**

A a later stage the format will have to be linked up with the ISO STEP Shipbuilding activities and the emerging Application Protocol Ship Hydromechanics. But before this the fundamental questions associated with the change in paradigm promoted have to be solved with a mi-

nimum of overhead and as convincingly as possible. The environment of Mathcad (7.03) is considered to provide a particularly intuitive access to problems and solutions.

From my exercises in conjunction with the creation of the rational theory of ship hull-propeller interaction and for the purposes of the present study the following format appears to be **the minimum necessary**.

Identification

The code presently used for the data consists of five digits: two digits for a given yard or other institution, two digits for a given ship, one digit for a given load condition or other modifications concerning the same ship.

Each yard or institution, which has provided data, will on individual request obtain the identifications of its data. New data can then be coded by the yard or institution itself in order to secure the privacy of the data.

Measured values

displacement, density of water, propeller diameter, time, speed over ground, rate of revolution, shaft power

Reduced values

current speed over ground, ship speed against water, shaft rate of revolution, shaft power at no wind and no wave condition.

According to one or various methods the results of each to be listed separately and identified. The traditional methods of analysis are evidently different from institution to institution.

Very desirable data are:

Contracted values

displacement, density of water, propeller diameter, ship speed against water, shaft rate of revolution, shaft power at no wind and no wave condition.

Predicted values

displacement, density of water, ship speed against water, shaft rate of revolution, shaft power at no wind and no wave condition.

According to one or various methods: based on past experience, on model test results and/or on computational results the results of each method to be listed and identified separately. The traditional methods of prediction are different from institution to institution.

In the present study predicted values have not been made available and contracted values only on a very limited scale.

One observation in analysing the data is that very often the quality of the data is very 'poor', i. e. that they exhibit systematic errors. This would not matter if this would happen randomly, i. e. if the samples would be large enough for a statistical treatment proper. In case of the small samples available other methods have to be relied upon. In fact some yards and institutions appear to use normalized data in the way proposed to scrutinize the data.

According to the comparisons available so far the current velocities and the powering characteristics in the behind condition can be identified without any reference to resistance and model data very close to the values obtained by traditional methods. And the technique proposed permits to establish transparently the conformance with conditions predicted and contracted on the basis of model tests or determined by other procedures as e. g. the traditional method and detect inconsistencies in the latter. Please, inspect the examples yourselves.

With best regards and looking forward to your response yours sincerely,

Michael Schmiechen.