

The Specialist Committee on Trials and Monitoring
Final Report and Recommendations to the 22nd ITTC

Discussion by Michael Schmiechen

retired from VWS, the Berlin Model Basin

Berlin, 30.08.1999

**On 4. Speed/Power Trials and Analysis and
On 9. SC Contributions to ISO Standard
for Speed Trials' Evaluation**

With great interest the discussor has read the sections on Speed Trials in the Report of the Specialist Committee on Trials and Monitoring. In view of his involvement in the discussion of the Japanese ISO/CD (Committee Draft) 15016, the discussor feels that most of the discussions on the fundamental problems in Section 4 remain very vague, maybe too vague for practical applications, and concerning these matters they are not up-to-date.

The discussor only mentions the problem of determining the current velocity, which has been discussed at great length without mentioning the rational procedure proposed by the discussor. The propeller performance in the behind condition, i. e. in the full scale wake (!), and the current velocity can be identified simultaneously by solving one set of linear equations. After the 'calibration' the propeller power characteristic in the behind condition can be used for monitoring purposes, e. g. to determine the value of current velocity from measured values of the rate of revolution and the torque.

It is important to note here that in view of the ill-conditioned problems arising there is no chance to solve the equations with do-it-yourself algorithms, singular value decomposition is an absolute requirement. In a great number of examples, based on actual data from industry, it has been shown that this procedure is superior to the traditional procedures of solving eight or ten simultaneous equations iteratively. The author has no idea how this can be done reliably!

All groups and colleagues considered to be concerned, engaged and interested in the subject matter have been asked for further data on February 10. Further all parties have been given detailed information on the identification of power required due to wind resistance on March 04 and the extension of the technique to include the identification of the power required due to wave resistance on August 29, 1999. And everybody has been invited to inspect the contributions to the discussion including the above letters and all examples among the recent papers on the website of the discussor at <http://www.t-online.de/home/m.schm>.

The discussor fully endorses Recommendation 5 to the Conference concerning the recording of 'time histories'. Even if runs are considered stationary sound performance and confidence analyses have to be based on instantaneous values of the data. It needs to be stated that many problems in the evaluation of trials are due to waiting for steady conditions and using ill-defined average values. In the METEOR and CORSAIR trials quasisteady test manoeuvres have been shown to be much superior to steady testing, providing not only much more information, but at the same time the necessary references for the suppression of the omnipresent noise, even at service conditions in heavy weather.

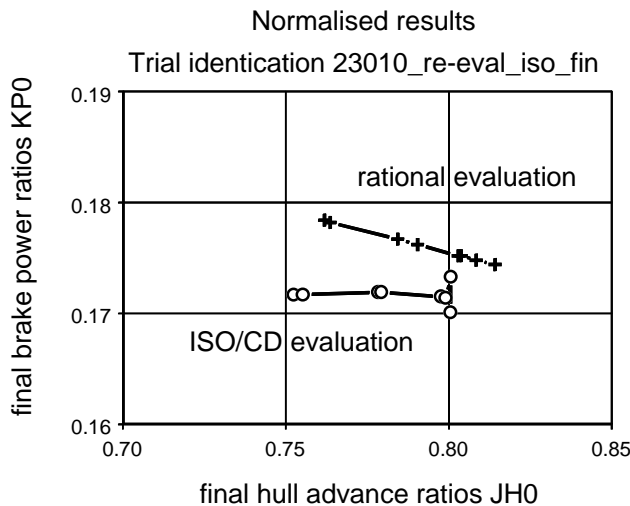
The statements of the Specialist Committee concerning the ISO/CD 15016 in Section 9 of their Report are extremely short, particularly in view of the fact that on 1999.07.29 the secretariat of ISO/TC8/SC9 at JSMA (Japan Marine Standards Association) has circulated a revised version of ISO/CD 15016 "for voting by P-members until 1999.10.10 concerning distribution of the draft as an ISO/DIS (Draft ISO Standard) according to ISO/IEC, part 1, section 2.6.1."

The new Example of the method of analysis in Section 7 of the ISO/CD has been re-evaluated by the discussor and the comparison of results with the 'ISO results' has been widely circulated; TID (Trial Identification) 23010_reval_iso_fin. In order to improve the readability and direct comparability, and thus hopefully the acceptability, the format and the notation of the re-evaluation are different from all former examples, a change to a one-file organisation, without intermediate storage of the data in 'standard' format, and a change to the symbols of the ISO/CD 15016 having been made.

The advantages of the rational procedure are a minimum number of simple conventions and the consistent application of systems identification methods requiring no reference to model test results

and any other prior information, as it should be. Of course the rational method proposed does not yet cope with all the problems and details, being still in its infancy and needing the joint effort and agreement of all experts before it can be established as a reference and, maybe later, as a standard.

Even if one does not (yet) follow and agree with the simple rational method of analysis one will notice the encouraging agreements and disturbing discrepancies between the results of the re-evaluation and of the underlying ISO example. The remaining differences in the evaluations will still have to be analysed. But the plot of the normalised final results according to the proposed ISO method



shows a 'behaviour', to be attributed to inconsistencies of the ISO method, that nobody can seriously consider it as acceptable and meriting to be standardised!

In view of this state of affairs the discussor would like to know the opinion of the Specialist Committee on Trials and Monitoring concerning the course of action to be taken by the ITTC in view of the responsibilities of its member organisations. The opinions expressed in the Conclusions and Recommendations are more than unsatisfactory!

of the inconsistency of the procedure proposed so far; and concerning the Recommendation 1 for Future Work requiring the Specialist Committee to be continued, even though it will not actively contribute to work of the ISO/TC8/SC9/WG2. And that may be too late anyway if the ISO schedule mentioned and known, to the members of the Advisory Council at least since their Copenhagen meeting, is being followed and not disrupted by the shipbuilders, and the ITTC?

The discussor is surprised at Conclusion 2 leaving the evaluation of speed trials to ISO/TC8/SC9/WG2, particularly in view

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