Form of Written Discussion at the 27th ITTC Conference

Discusser	
Name	Dr. A. S. A. Kader
Affiliation	Director, Marine Technology Centre, UTM, Malaysia

Name of Technical Committee or group to be discussed	Quality Systems Group

Written Discussion (within 1,000 words of length)

1. Since many of the works/activities carried out at towing tanks contribute to research outputs, hence it is proposed or suggested for ITTC to formalise the ??? of ITTC journal which carry out the ISI status.

   All good and selected ??? can be decided and ??? by the editorial board and the journal is to be published on a quarterly basis.

2. Annual ITTC seminar/conference can also be considered to be organised especially for works related to academic and research outputs.

The Group thanks Dr. Kader for the proposals.
Both of them are interesting and are worth the consideration of the Advisory Committee, which has the ultimate right of decision on this matter.

In any case ITTC could consider getting a ISSN or ISBN number for the Proceedings.

Form of Written Discussion at the 27th ITTC Conference

Discusser	
Name	YAN Kai
Affiliation	CSSRC

Name of Technical Committee or group to be discussed	Quality Systems Group

Written Discussion (within 1,000 words of length)

The report say that there ia s conflict of definition in the symbol and terminology list of ITTC with the relevant ISO standards.

Do you suggest to revise the definition of ITTC terminology or pass the information to ISO/TC 8 – Ships & marine technology to revise the relevant ISO standards?

The Group thanks Dr. YAN for the question.

For the time being it has been decided to keep the ITTC definitions, mirroring the ISO behaviour. In its documents, in case of differing definitions or conventions, ISO inserts a warning like the following example:
“NOTE Coordinates of the ship given in this figure are marked with subscript s [deviating from the International Towing Tank Conference (ITTC), agreement].”

To this effect in ITTC documents when a definition is given in a way differing from ISO the warning “NOTE: This definition deviates from the ISO Definition.” has been inserted.

The point has been raised in the QSG final report to the 27th ITTC, but it is in the Advisory Council power to act on this matter.

Form of Written Discussion at the 27th ITTC Conference

Discusser	
Name	Joel T. Park, Ph. D., FASME
Affiliation	Naval Surface Warfare Center Carderock Division

Name of Technical Committee or Group to be discussed	Quality Systems Group

Written Discussion (within 1,000 words of length)

Errata

Some errors were discovered in the QSG report, Volume I, p. 429, after publication. The corrections follow:

- G = 8.0 x 10^{10} Pa
- ρ = 7800 kg/m^3
- V_s = 3200 m/s

As a preliminary estimate, the uncertainty G is computed from Equation (7), where the uncertainties in the shear wave velocity and density are assumed as ±0.10 and ±0.20 %, respectively. The uncertainties in G from these two elements are, respectively, ±160 x 10^6 and ±164 x 10^6 Pa. The combined expanded uncertainty is then ±229 x 10^6 Pa or ±0.29 %. An accurate assessment of density uncertainty is then necessary. If G is the dominant term in the uncertainty estimate, the uncertainty in torque and power is approximately ±0.29 % of maximum torque and full power. With the inclusion of the other terms ±0.50 % expanded uncertainty at full power appears to be reasonable.

Table 3. Uncertainty estimates for elements of torque calculation.

Symbol	Units	Value
C	mm	1.0
Di	mm	0.025
Do	mm	0.025
L	mm	0.10
R	mm	0.025
t	mm	0.025
Vs	m/s	3.2
ρ	kg/m^3	16

The QSG thanks Dr. Park for his contribution.

Form of Written Discussion at the 27th ITTC Conference

Discusser	
Name	David Murdey
Affiliation	NRC, Canada

Name of Technical Committee or group to be discussed	Quality Assurance

Written Discussion (within 1,000 words of length)

I have two questions for the Quality Assurance committee:

1. The ??? from the ??? committee just presented three good examples of guidelines. When the QA committee review procedures and guidelines, I suggest they check to see if existing guidelines meet the definition???.

2. I suggest that the committee include a closed loop in their new template for procedures. This will be very useful to readers of a revised procedure.

The Group thanks Dr. Murdey for his proposals.

As far as the first proposal is concerned, the formal check of the documents it is indeed in the Quality Systems Group duties, while the general control of the contents pertains to the Advisory Council. To this effect some documents that where classed as Procedures has been redefined as Guidelines and vice-versa on the basis of QSG input.

As regards the second proposal, the ITTC policy is to modify the documents keeping track of the changes by way of the revisions feature provided by the word processor. In this way the reader can readily assess the proposed revisions.

Form of Written Discussion at the 27th ITTC Conference

Discusser	
Name	Arthur M. Reed
Affiliation	David Taylor Model Basin (NSWCCD, USA)

Name of Technical Committee or group to be discussed	Quality Systems Group

Written Discussion (within 1,000 words of length)

The QSG has performed extensive work on uncertainty, however all of this effort has focused on deterministic processes where one is interested in the uncertainty of a quantity with a nonzero mean. However, the "Seakeeping" Committees—the Seakeeping, Ocean Engineering and Stability-in-Waves Committees are dealing with stochastic processes with zero mean, and in fact what we are interested in the standard deviation of our signal and its uncertainty. Before the "Seakeeping" Committees can determine uncertainty, the methodology needs to be defined. This is a problem whose resolution needs to be found before the "Seakeeping" Committees are tasked with determining uncertainty and providing examples.

There are statistical methods for determining quantities like the variance of the mean and the variance of the variance. These methods could form a basis upon which the uncertainty of the stochastic results from the "Seakeeping" Committees could be established. It would seem that there should be some sort of subcommittee/working group composed of members from the Quality Systems Group, Seakeeping, Ocean Engineering and Stability-in-Waves Committees which is tasked with coming up with a recommendation regarding the uncertainty associated with seakeeping measurements and predictions.

Additionally, one can determine the uncertainty associated with the mass properties of a model used in a seakeeping experiment—this is deterministic, but there is no means of determining the impact of this uncertainty on the uncertainty of the results of the seakeeping experiment. This issue also needs to be addressed.

Finally, stability failures are binary, there either is a failure or there is not. There is no uncertainty associated with this, although when there is a failure, there is uncertainty associated with quantities like time-to-failure

The Quality Systems Group of the 27th ITTC thanks Dr. Art Reed for his question regarding the scope and application of uncertainty analysis techniques to stochastic processes; such as typically encounter when dealing with Seakeeping, Offshore Engineering and Stability-in-Waves type analyses.

The issues raised by Dr. Reed are very important and should be considered by the ITTC; however, a distinction should be made between uncertainty as described by the JCGM GUM [1] and the random processes in seakeeping and waves or signal processing.

The QSG agrees that it is not an entirely eccentric proposition to tackle stochastic processes using uncertainty analysis techniques. One very good example is provided by Tucker [2], wherein he examines the accuracy of estimates of the power spectra and r.m.s. amplitudes of stationary random Gaussian processes. Or in other words, the uncertainty in a given frequency amplitude for a finite measurement of an irregular wave-form.

As regards the establishment of a sub subcommittee/working group composed of members from the Quality Systems Group, Seakeeping, Ocean Engineering and Stability-in-Waves Committees which is tasked with coming up with a recommendation regarding the uncertainty associated with seakeeping measurements and predictions, the suggestion is acknowledged and will be passed to the Advisory Council for consideration.

As regard the impact the uncertainty associated with the mass properties of a model used in a seakeeping experiment on the uncertainty of the results of the seakeeping experiment, the assessment of the effect of model properties on a seakeeping experiment would require a significant research project which will probably be beyond the financial resources of ITTC.

References

[1] ISO 17025:2005, “General Requirements for the Competence of Testing and Calibration Laboratories,” International Organization for Standardization, Geneva, Switzerland.

[2] Tucker, M.J., 1957, “The analysis of finite-length records of fluctuating signals. Br. J. Appl. Phys. 8.

Form of Written Discussion at the 27th ITTC Conference

Discusser	
Name	Prof. As Saman Abd. Kader
Affiliation	Director, Malaysian Marine Technology Centre, UTM

Name of Technical Committee or group to be discussed	Quality Systems Group

Written Discussion (within 1,000 words of length)

I would like to propose for ITTC to establish accreditation system/??? for towing tank facilities for certification/recognition similar to accreditation to an academic program.

Being a centre of excellence (R&D), sometimes R&D partners and some clients on consultancy work ask or require accreditation status.

Elements of audit can cover the following:

i. Certified and adequate staff
ii. Training for staff
iii. Maintenance system
iv. HSE practices
v. Inspection/calibration??
vi. Etc.

The group thanks Dr. Kader for the proposal.
Towing Tanks have implemented different practices in that respect. Some holds certification for their calibration departments through which they have guaranteed the metrology chain respect to the national reference at least for certain physical quantities such as length, weights, time, pressure, etc.

The Energy Efficiency Design Index regulation adopted at the IMO is a new element which needs to be taken into consideration as the regulation laid down in the MARPOL ANNEX VI mandates that a "Verifier" has to check the testing procedure of the Towing Tank when performing tests for the EEDI verification. This regulation is relatively new but towing tanks are already in connection with the "Verifiers" (mostly Classification Societies) to be "accredited" for the EEDI testing procedure. This accreditation is not yet institutionalized and it is at moment based on mutual agreements between the Verifiers and the Towing Tanks.

The general issue of accreditation requires a broad approach and it should be addressed using the legislation that is already in place in several geographical areas (US, Europe, etc.) where the accreditation system is part of the general requirements for organizations dealing with products and services to be placed on the market (such as our Towing Tank services). ISO/IEC 17025 (General requirements for the competence of testing and calibration laboratories) is the main standard used for accreditation of laboratories to verify their competence in performing their tasks. Although this is a universally recognised standard largely used by several industrial sectors, it has been only rarely (not to say never) used in the Towing Tank sector so far. This standard has been brought to the Conference attention in the Group final report.