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ITTC Quality System Manual Recommended Procedures and Guidelines

Work Instruction for Formatting ITTC Recommended Proce- dures and Guidelines

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4.0	QUALITY MANAGEMENT SYSTEM
4.2	Document and Data Control
4.2.3	Document Control
4.2.3-01	Recommended Procedures and Work Instructions
4.2.3-01-03	Work Instruction for Formatting ITTC Recommended Procedures and Guidelines

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Abstract

The format for procedures and guidelines is described in this work instruction in detail. The format is adapted for Microsoft Word 365. Example windows are included with the explanation. Hyperlinks and examples are provided for equations and captions for tables and figures. A template for a procedure is available from the Quality Systems Group (QSG) Chair.

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Work Instruction for Formatting ITTC Recommended Procedures and Guidelines

1. OVERVIEW

The format for ITTC Recommended Procedures and Guidelines are outlined in this document. To simplify formatting ITTC Recommended Procedures, a template has been prepared by the Quality System Group (QSG), which comes in a file called ProcTemplate_XXXX.dotx. The XXXX group is generally updated according to the year of the next Conference. This template is a Microsoft Word 365 template file that includes the basic elements that constitute a formatted text, e. g. headings, captions etc.

When starting to write a procedure, the ProcTemplate_XXXX.dotx file is double clicked. Microsoft Word will open a new document that will be based on the ProcTemplate_XXXX.dotx model. The new file will contain all formatting styles that have been prepared by QSG, it can be saved as a regular docx file. The right formatting is necessary to transform correctly the text structure, when producing the Portable Document Format (pdf) files containing hyperlinks. The pdf from a docx Word document is published by the selection of File tab in the Tool bar followed by Export, then Create PDF/XPS Document, and Publish.

1.1 General settings

The formatting of ITTC documents rely on the proper application of Styles. The Styles box appears when the Home tab is selected. A detailed pop-up window of Styles is generated, when the lower right corner of the Styles box in Home tab is selected.

The following sections describe the creation of equation numbers and captions for tables and

figures. These items then may be hyperlinked in the text. The hyperlink is highlighted in light grey, when an item number is selected by the cursor.

2. PAGE GEOMETRY

The procedures and guidelines shall be formatted for A4 format (210 mm × 297 mm, 8.27" × 11.69").

2.1 Top and Bottom Margins

The bottom margin for all pages is 25 mm (0.98") for A4 paper. This is the distance between the *bottom* of the last line of text and the bottom edge of the sheet of paper. The top margin is measured from the top edge of the paper to the *top* of the first line of text. The top margin for all pages is 30 mm (1.18") below the top edge of the paper.


2.2 Columns and Side Margins

The document is to be prepared in double column format. The column width shall be 81 mm (3.19"), the spacing between the columns shall be 8 mm (0.31"). The left side margin shall be 20 mm. (0.79") The corresponding right-hand margin for A4 paper is 20 mm. (0.79").

3. STYLES

3.1 Page Header

Fill in the name of the recommended procedure both on first and second page. The procedure number will be filled by QSG.

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3.2 Page Footer

Fill in the name of the Committee and the date.

3.3 Table of Contents

The table of contents (TOC) will be automatically updated. When the procedure is complete, the cursor is positioned on a line in the TOC located on page 2. When the TOC is highlighted the right button on the mouse is pressed. A pop-up window will show, and the Update Field option is selected. A second window, Update Table of Contents, is generated, Update entire table is selected, and then OK.

3.4 Headings

Four levels of headings have been provided to generate automatically the correct numbering. The first three levels have the same appearance, and the corresponding Styles are:

- ITTC-L1
- ITTC-L2
- ITTC-L3

The fourth level format can be chosen between the numbered Style

- ITTC-L4-N

and a style without numbering

- ITTC-L4

3.5 Text Body

The text body shall be written in ITTC-TB style. Two further Styles can be employed for particular needs regarding the text body:

- ITTC-TB-Centered

- ITTC-TB-Left

that produce the following effects respectively:

ITTC-TB-Centered

ITTC-TB-Left

3.6 Lists

Five Styles are available for lists:

L _{PP}	example of ITTC-List Style	
C _B	example of ITTC-List Style	
γ	example of ITTC-List Style	
L _{PP}	example of ITTC-List Rtab Style	[m]
D	example of ITTC-List Rtab Style	[m]
C _B	example of ITTC-List Rtab Style	[-]

- ITTC-List-D
- ITTC-List-D
- ITTC-List-D

1. ITTC-List-N
2. ITTC-List-N
3. ITTC-List-N


- A) ITTC-List-L
- B) ITTC-List-L
- C) ITTC-List-L

4. LEVEL 1 HEADINGS

Major, or Level 1, Headings can be obtained selecting style ITTC-L1 from the Microsoft Word Style list.

4.1 Level 2 Headings

Subheading, or Level 2 headings, can be obtained selecting style ITTC-L2 from the Microsoft Word Style list.

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4.1.1 Level 3 Headings

Sub-Subheading, or Level 3 headings, can be obtained selecting style ITTC-L3 from the Microsoft Word Style list.

Level 4 Headings

Sub-Sub-Subheading, or Level 4 headings, can be obtained selecting style ITTC-L4 from the Microsoft Word Style list.

4.1.1.1 Level 4-N Headings

Numbered Sub-Sub-Subheading, or Level 4 headings, can be obtained selecting style ITTC-L4-N from the Microsoft Word Style list.

5. APPENDIXES

Four Styles are available for dealing with appendixes:

- ITTC-Apdx_L1
- ITTC-Apdx_L2
- ITTC-Apdx_L3
- ITTC-Apdx_L4

For the usage of these four styles, refer to 0.

6. SYMBOLS

The following sections describe the formatting of symbols for ITTC documents. An example list of symbols is located at the end of this work instruction. The list is formulated as follows:

- Symbol is left justified with no space to the left
- Definition is set with Left tab at 6 mm (0.25")

- Physical unit set right justified with Right tab at 81 mm (3.19").

6.1 Symbols contained in ITTC Symbols List

Symbols should comply with the ITTC Symbols List, ITTC (2024). The formatting of the ITTC Symbol and SI Unit columns in the ITTC (2024) follow BIPM (2019), JCGM (2012), and ISO (2013). The seven (7) SI base units are listed in Table 1, while derived units typically applied in ITTC are in Table 2. SI units are in roman font. A space is inserted between the numerical value and the relevant SI unit.


6.2 Symbols not contained in ITTC Symbols List

These Symbols shall also follow the principles of notation given in ISO (2013). For clarification a short excerpt is given also here:

In Figure 1, the principles of notation in according to ISO (2013) are illustrated.

Symbols representing physical quantities normally are one Latin or Greek letter with Subscripts for further identification. They are written in *italic* style letters. As an example, the symbol for mass is *m* in kg. The symbol for mass also appears in the displacement mass as a subscript, Δ_m .

Symbols that represent physical SI units are in roman font. Examples are presented in Table 1 and Table 2. Multiple units such as in SI Base column of Table 2 should have a space between the units or other appropriate operator. For example, torque, *Q*, is in Newton-metre and is marked as N·m with a centre dot. As another example, metre-second should be m·s to avoid confusion with ms for milli-second. The units of velocity may either be m/s or m·s⁻¹.

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Numbers are normally written in **roman** style letters, regular font. Trigonometric functions such as sin and cos are also in roman font. The following rules with numbers shall be followed.

- Decimal fractions. Numbers with absolute values with less than 1 should have a leading zero (0), e. g. 0.5.
- Significant figures. Ambiguity in the number of significant figures is eliminated by reporting the number as a power of ten (10^n). For example, from ISO (2013), 401 000 should be 401×10^3 for three significant figures. An uncertainty estimate should be reported to two significant figures. A value should be indicated to the same number of digits.
- Groups of digits. A number should be reported in groups of three (3) digits with a space between each group. For example, from BIPM (2019) and JCGM (2013), the value for the standard acceleration of gravity is 9,806 65 m/s².
- SI units. A space is inserted after the numerical value and before the SI unit as indicated in the example for standard gravity.

Superscripts signify Operators, ITTC (2021)

- exponentiation
- the various aspects of complex quantities
- the various aspects of spectra and
- the various aspects of random quantities and stochastic processes e. g. probability operators.

Subscripts signify Identifiers, ITTC (2021)

- matrix components
- identifiers tested, e. g. ship S or model M, appendages (APP) or the various bodies in a multi-body problem. As an example, scale ratio is defined as $\lambda = L_S/L_M$, where L_S is ship length and L_M is the model length.

- identifiers of coordinate systems and of the reference points, quantities (L_{PP})

Table 1: SI base units

Quantity	ITTC Symbol	SI Unit	
		Name	Symbol
Length	<i>L</i>	metre	m
Mass	<i>m</i>	kilo-gram	kg
Time	<i>t</i>	second	s
Electric current		ampere	A
Thermodynamic temperature	<i>t</i>	kelvin	K
Substance amount		mole	mol
Luminous intensity		candela	ca


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Table 2: SI derived units with special names and symbols

Quantity	ITTC Symbol	SI Unit			
		Name	Symbol	SI Base	Other
Energy	<i>E</i>	joule	J	kg·m ² /s ²	N·m
Frequency	<i>f</i>	hertz	Hz	s ⁻¹	
Force	<i>F</i>	newton	N	kg·m/s ²	
Power	<i>P</i>	watt	W	kg·m ² /s ³	J/s
Pressure	<i>p</i>	pascal	Pa	kg·m ⁻¹ s ⁻²	N/m ²
Temperature	<i>t</i>	degree Celsius	°C	K	

Superscripts signify Operators:

Numbers in roman

(power of *n*)

Symbols representing numbers

(*n* = 1, 2, 3 etc.) in *italic*

SYMBOLS
in *italic*

$$K_{TM}^2 \times 10^n$$

NUMBERS
in roman

Subscripts signify Identifiers:

Symbol for **physical quantity** in *italic*

(*T* = Thrust)

Other symbols in roman

(*M* = Model)

Figure 1: Principles of notation

7. TABLES AND FIGURES

7.1 Tables

When a table is inserted, the usual procedure can be followed. In the Tool bar, Insert tab is selected, then Table, and Insert Table. The following window appears. The “Number of columns:” and “Number of rows:” is selected. The result is in Table 3.

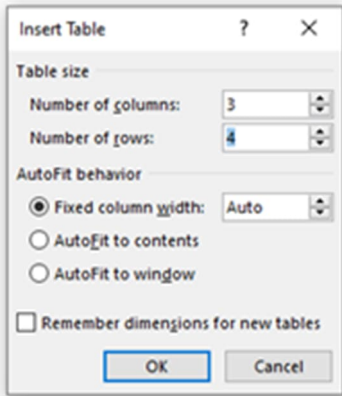


Figure 2. Insert Table window

Tables should have captions. For the table caption, References tab is selected in the Tool bar, then Caption, and Table. Then, OK is pressed. The Caption window is in the following figure. The font in the table is selected with the Style ITTC-Table-Content. The font in the table is New Times Roman 10 point with no spacing before and after.

Table 3: Example table and caption

Column 1	Column 2	Column 3
C1R1	C2R1	C3R1
C1R2	C2R2	C3R2
C1R3	C2R3	C3R3

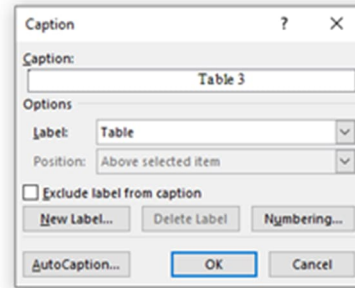


Figure 3: Caption window

A caption will appear over the table. The correct caption font is selected, when the whole line (or lines) is highlighted and ITTC-Caption is selected from the Style list.

Table 3 at the beginning of the next paragraph is hyperlinked to the table and should appear shaded in grey, when selected. The hyperlink is created when Insert and then Cross-reference are selected. Table is selected in the drop-down window Reference type, and Only label and number are selected in the drop-down window Insert reference to in the following figure. Finally, Table 3 is highlighted, and Insert is selected.

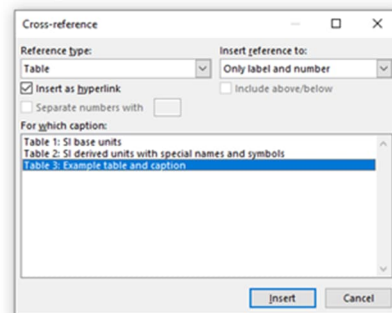


Figure 4: Cross-reference window

Table 3 illustrates This is a reference to a numbered object. It is automatically updated in case another element of the same kind is added before this reference.

7.2 Figures

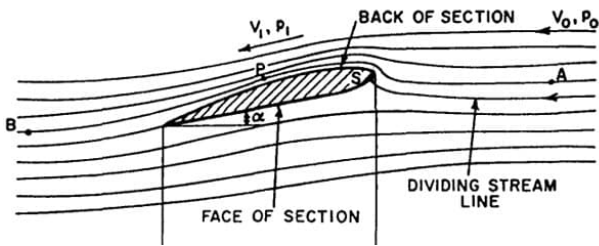


Figure 5: Example figure and caption

To insert a figure, first the style of the paragraph that will contain the figure shall be changed to style ITTC-TB-Centered. After that, the figure can be inserted in the usual way.

Figures should have captions. The same method is followed as described for tables. Figure is selected in the Label drop-down menu in Figure 3. Figure captions are below the figure.

Figure 5 at the beginning of the next paragraph is hyperlinked by Cross-reference described for tables in Figure 4 and should appear shaded in grey when selected. For Reference type in the drop-down menu, Figure is selected.

Figure 5 illustrates This is a reference to a numbered object. It is automatically updated in case you add another element of the same kind before this reference.

8. MATHEMATICS

All equations should be numbered consecutively, beginning with (1), down to the end of the report, including any appendices. The equation is left justified with the number, right justified in parentheses on the same line. This is achieved by locating them in a two column, single line table as described in the following section. Examples are given below with the equation format from Microsoft Office 365.

$$\frac{\partial \phi}{\partial t} = \frac{1}{2} |\Delta \phi|^2 + \frac{P}{\rho} + gy = C(t) \quad (1)$$

where g is the gravity acceleration.

The law of propagation of uncertainty from JCGM (2008) for uncorrelated parameters and combined standard uncertainty is

$$\begin{aligned} u_c^2 &= \sum_{i=1}^n [(\partial f / \partial x_i) u(x_i)]^2 \\ &= \sum_{i=1}^n [c_i u(x_i)]^2 \end{aligned} \quad (2)$$


Results in the procedure should include uncertainty estimates at the expanded uncertainty $U = ku$, where k is the coverage factor. Usually, $k = 2$.

The style ITTC-TB-Left should be applied in case the sentence has to be continued without starting a new paragraph, such as the line after Equation (1).

8.1 Equation Format

Equations (1) and (2) above were formatted as follows:

1. Table is inserted with 2 columns and 1 row.
2. Size the right column as 13 mm (0.5").
3. Left justify the first column and right justify the second.
4. Remove the border lines from the table.
5. With the Equation tool (Insert, then Equation in the Tool bar), insert the equation in the first column.
6. Place equation number in second column.

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8.2 Equation Number

Equation numbering is performed in the following step sequence after having placed the equation. With the cursor in the second column in Equations (1) and (2), select Insert tab, then Quick Parts, and then Field. In the dropdown menu, select Seq. In the window after SEQ, type Equation and press enter. Add parentheses to the equation number.

For referencing the equation number in the text, perform the same steps for Table. Go to Insert tab and select Cross-reference. In the Cross-reference window in Figure 4, Equation is selected in the drop-down window Reference type, and then the appropriate equation number. The equation is now hyperlinked to the equation. An example is in the first paragraph of this section.

9. REFERENCE LIST FORMAT

References should look like the following example. To obtain this select style ITTC-R1 from the list. Books and reports should include the name of the publisher, city, and country. References are listed alphabetically.

Author, A. B., and Author, C. D., 2005, “Something Funny,” ITTC Journal of Extreme Fluid Dynamics, Vol. 1, pp. 1 - 100.

10. TEMPLATE

A template in word format has been prepared. To write a new procedure open the new file using the following template:

[ProcTemplate_XXXX.dotx](#)

The file ProcTemplate_XXXX.dotx is available from the ITTC QSG Chair.

11. LIST OF SYMBOLS

11.1 English

g	Acceleration of gravity	m/s ²
k	Coverage factor, usually	k = 2 1
t	Time	s
U	Expanded uncertainty, U =	ku
u	Standard uncertainty	
y	Depth	m

11.2 Greek

φ	Velocity potential	1
ρ	Density	kg/m ³

12. REFERENCES


BIPM, 2019, “The International System of Units (SI),” 9th Edition, Bureau International de Poids Mesures (BIPM), Sèvres, France.

ISO, 2013, “Quantities and units,” ISO 8000-1, International Standards Organization, Geneva, Switzerland.

ITTC, 2021, “ITTC Symbols and Terminology List – Alphabetic,” 29th International Towing Tank Conference.

JCGM, 2012, “International vocabulary of metrology – Basic and general concepts and associated terms (VIM),” 3rd Edition, JCGM 200:2012, Joint Committee for Guides in Metrology (JCGM), Bureau International de Poids Mesures (BIPM), Sèvres, France.

JCGM, 2008, “Evaluation of measurement data – Guide to the expression of uncertainty in measurement,” JCGM 100:2008 GUM 1995 with minor corrections, Joint Committee for Guides in Metrology, Bureau International des Poids Mesures (BIPM), Sèvres, France.

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A.1.1.1. Style ITTC-Apdx-L4

A.2. Appendix Figures and Tables

Appendix A. STYLE ITTC-APDX-L1

Examples of usage of the appendix styles.

A.1. Style ITTC-Apdx-L2

The text body shall be written using ITTC-TB style.

The text body shall be written using ITTC-TB style.

The text body shall be written using ITTC-TB style.

A.1.1. Style ITTC-Apdx-L3

Two further styles can be used for particular needs regarding the text body:

- ITTC-TB-Centered
- ITTC-TB-Left

that produce the following effects respectively:

ITTC-TB-Centered

ITTC-TB-Left

Examples of a table and figure are in the following. The same methodology is followed from the body of this document.

Table A-1: Example appendix table and caption

Column 1	Column 2	Column 3
C1R1	C2R1	C3R1
C1R2	C2R2	C3R2
C1R3	C2R3	C3R3

Figure A-1 illustrates

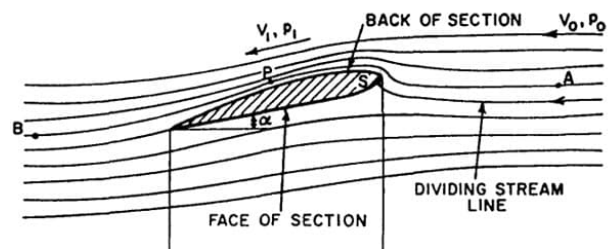


Figure A-1: Example appendix figure and caption.