RUSSIAN MARITIME REGISTER OF SHIPPING

VOLNA SOFTWARE

USER'S MANUAL (PART I)

BASIC MANUAL

2020

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PART I GENERAL PROVISIONS

1 General particulars

"VOLNA" software, is a software developed by the Russian Maritime Register of Shipping, for the collection, storage and assessment of defects parameters (wear, deformations, cracks etc.) of ship's hull structures, ship's arrangements and pipelines.

2 System requirements

Minimum system requirements:

- Windows 7 and further versions;
- Display dimension 1280 x 720 pixel (15');
- Processor (CPU) 1,0GHz or higher;
- RAM 1 Gb or higher.

Recommended system requirements:
- Windows 7 and above;
- Display dimension 1600 x 900 pixel (17');
- Processor (CPU) 2,0GHz or higher;
- RAM 4 Gb and above.

During installation of this software the following additional components will be installed to a computer:
- MS Framework 4.0
- SQL compact 4.0

3 Terms and abbreviations

"VOLNA" software, is a software developed by the Russian Maritime Register of Shipping, for the collection, storage and assessment of defects parameters (wear, deformations, cracks etc.) of ship's hull structures, ship's arrangements and pipelines.

RCSSS – Rules for classification surveys of ships in service

RS – Russian Maritime Register of Shipping

RS surveyor – member of Russian Maritime Register of Shipping

System Administrator - member of Russian Maritime Register of Shipping, responsible for setting up and maintenance of "VOLNA" software

TM – thickness measurements

TM operator – TM firm specialist

4 User's responsibilities

Software users' categories are distributed as follows:

TM Operator
RS Surveyor
System Administrator

TM operator

- Free access
- Limited software interface

Tasks: Drawing up of table forms upon the results of defects parameters measurements
Development of the Report on defects parameters

RS Surveyor

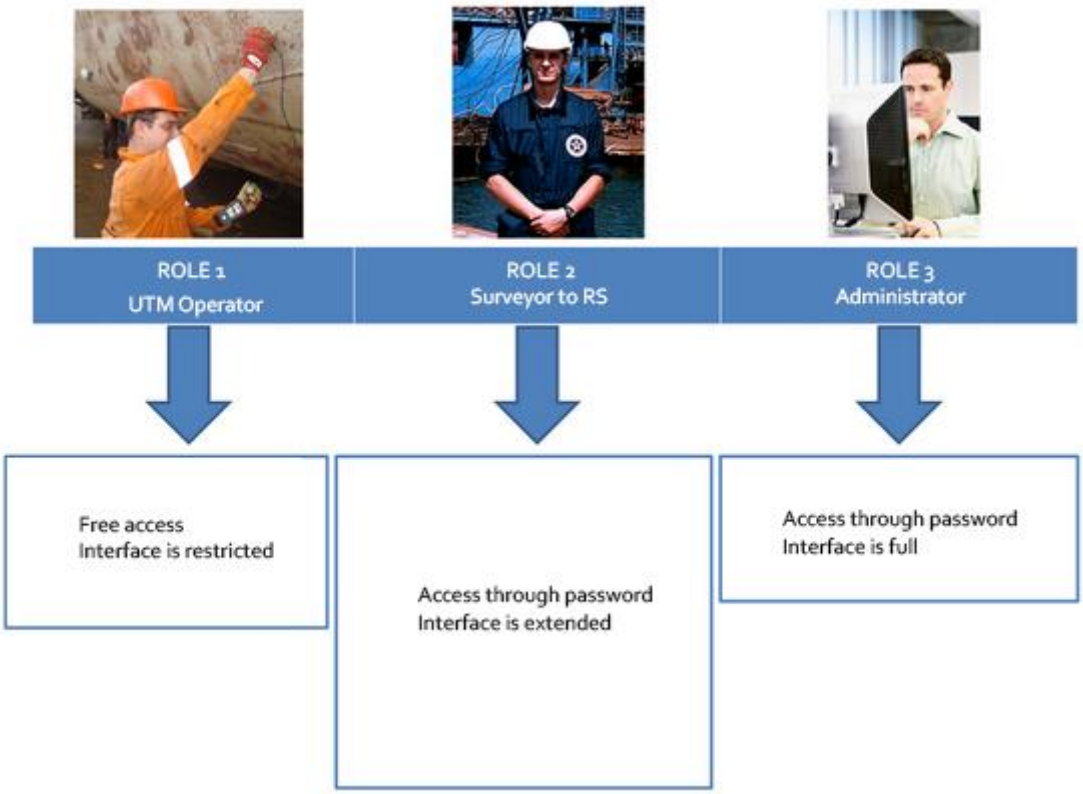
- Password-based access
- Extended software interface

Tasks:
Drawing up of permissible thickness diminution allowances;
Thickness measurement scope assignment for TM operator;
Verification of the Report prepared by TM operator
Information export/import to RS Head Office server;
Drawing up of table forms upon the results of defects parameters measurements and development of the Report on defects parameters if acting as a TM operator
Development of a technical condition assessment report (non-mandatory application).

System Administrator

- Password-based access
- Full software interface.

Tasks: Software setting up and maintenance
Internal and outer software sites maintenance



5. Operation principles

5.1 General principles

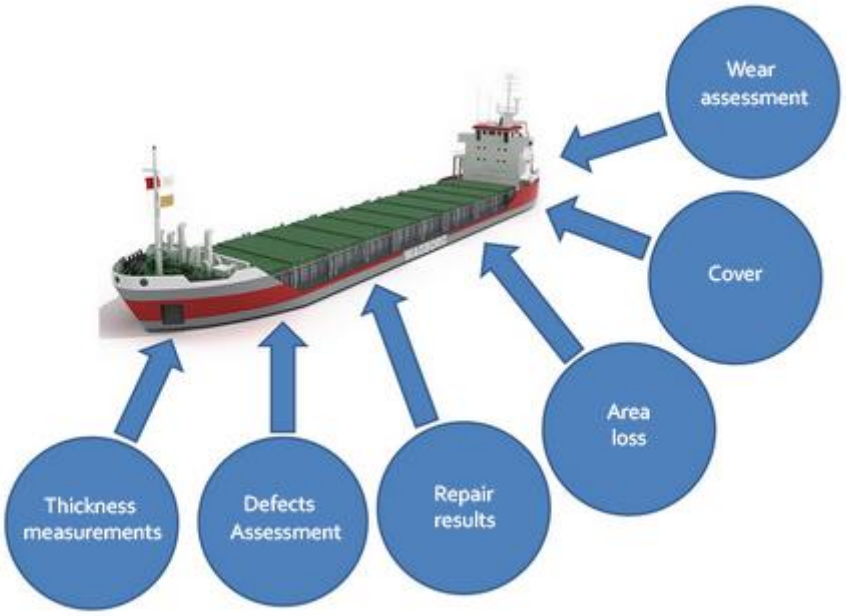
"VOLNA" software allows to perform and draw up all set of works regarding technical condition assessment.

Using «VOLNA» software it is possible to register the following information for technical condition assessment:

1.1 Residual thickness measurements;
1.2 Measurements of defects parameters (pitting, deformations, cracks etc.);
1.3 Description of repair performed;
1.4 Condition of hard protective coating in ship's spaces.

As a result of assessment of technical condition «VOLNA» software generates the following:

- Report on defects parameters together with the results of assessment of cross-sectional reduction area if applicable;
- Technical condition assessment report containing information on substantial corrosion zones, average wear of all items measured etc.)



5.2. Collaboration of the software users.

5.2.1 By using software the collaboration of a TM operator and RS surveyor is performed as follows:

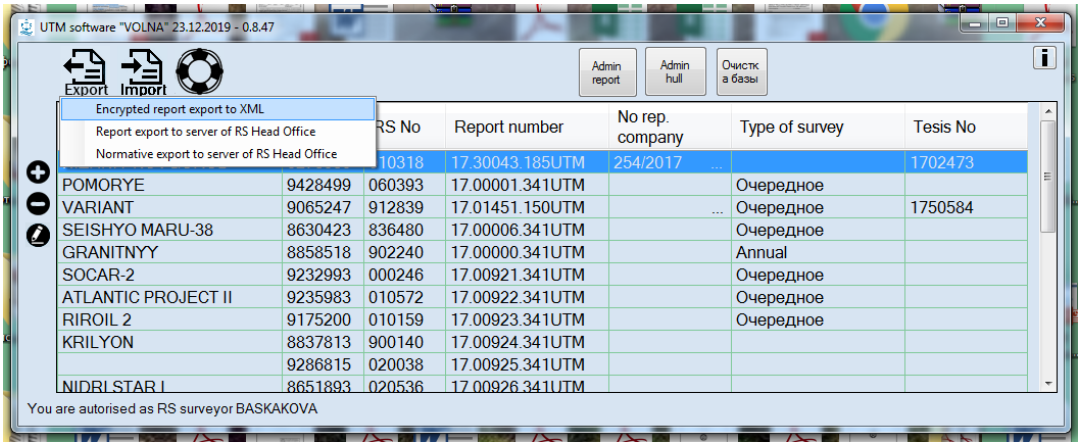
.1 Creation of a measurement/survey session. First steps are to be done by RS surveyor. RS Surveyor enters general particulars of current survey (imports ship's data, TM firm data, shipowner's data, permissible residual scantling information, if created earlier, from RS Head Office server and/or enters missing information in relevant sections/fields by himself/herself).
Than RS surveyor assigns the scope of thickness measurements. In case of creation of file containing permissible residual scantling information RS surveyor is to forward it to RS Head Office server (using function "Export" of VOLNA" software).

.2 If the vessel is not registered in RS database (in case of acceptance of a vessel to RS class). All necessary information for VOLNA software is filled in manually using available ship's documents.

.3 RS Surveyor forwards electronic file created by himself/herself to the TM operator. XML file has internal encryption and may be opened using VOLNA software only. File transmission is carried out in any way convenient for TM operator and RS surveyor (electronic mail, external storage medium, etc.)

.4 Upon receipt of a file from RS surveyor a TM operator downloads mentioned above electronic file using "VOLNA" software and draws up relevant tables on the basis of measurements done (refer to para 3.3 of this Manual).

.5 Upon completion of drawing up of report tabular forms, TM operator creates new electronic file and forwards it to RS surveyor. For these purposes it is necessary to choose relevant option in the second software window and click the button "Export" – "Encrypted report export to XML" (refer to figure below). Generated file is transmitted to RS surveyor in any way convenient and agreed by RS surveyor (e-mail, external storage medium, etc.).



.6 Upon receipt of a file from TM operator, RS surveyor checks information in it and then completes the session by verification of deck and bottom with bilge cross-section area reduction (if applicable) and, in case of positive results of review, forwards the file to RS Head Office server.
RS surveyor enters the following additional information in this file before sending (on repairs carried out, hard protective coating condition etc.) and creates the ship's hull technical condition assessment report (as an additional information on survey).

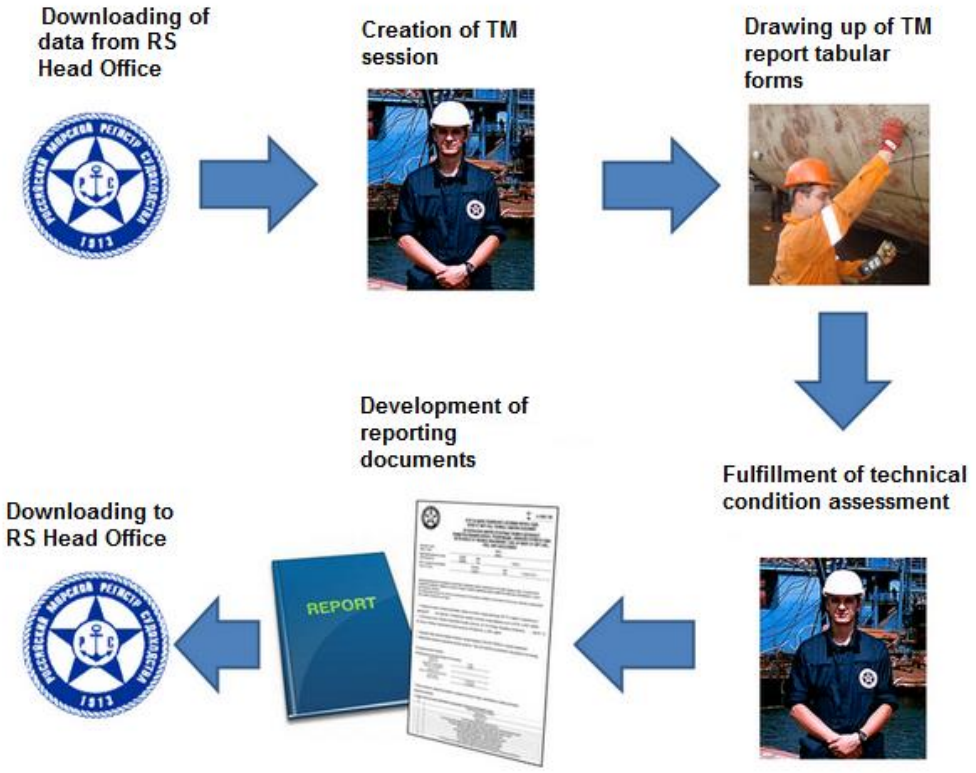


Figure 1 General scheme of development of TM report

6. Thickness measurement data input

6.1 To Input TM it is necessary to perform the following:

.1 to import general data on current survey from RS Head Office server (ship's data, TM firm data, shipowner's data, permissible residual scantling information, if created earlier, from RS Head Office server. Missing information is entered in relevant sections/fields manually).

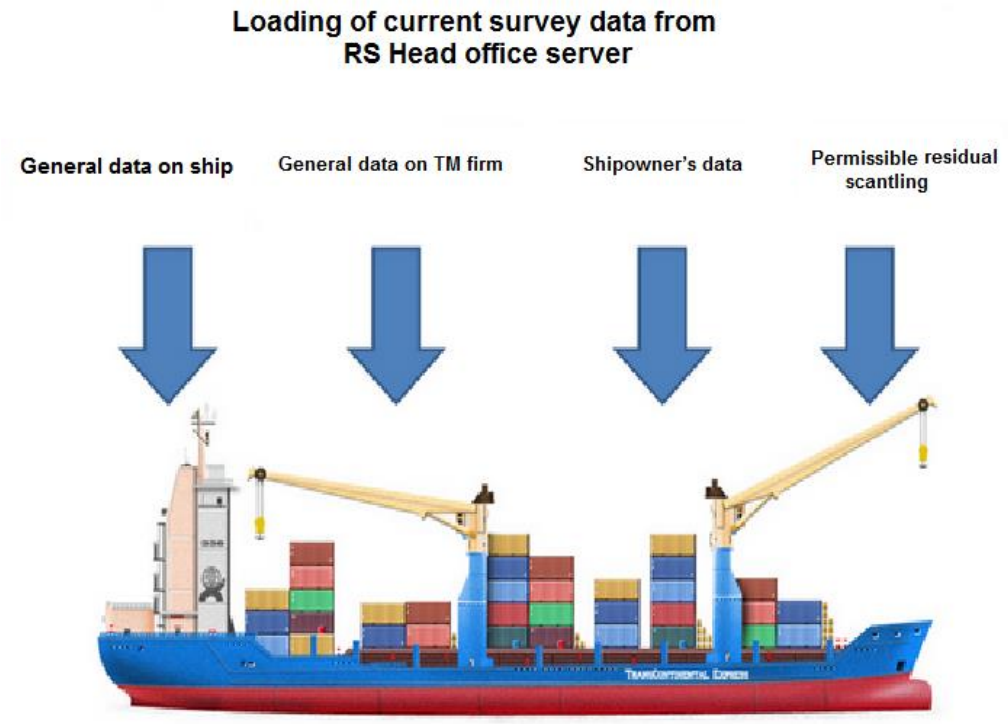


Figure 2 Information required for development of TM report by “VOLNA” software

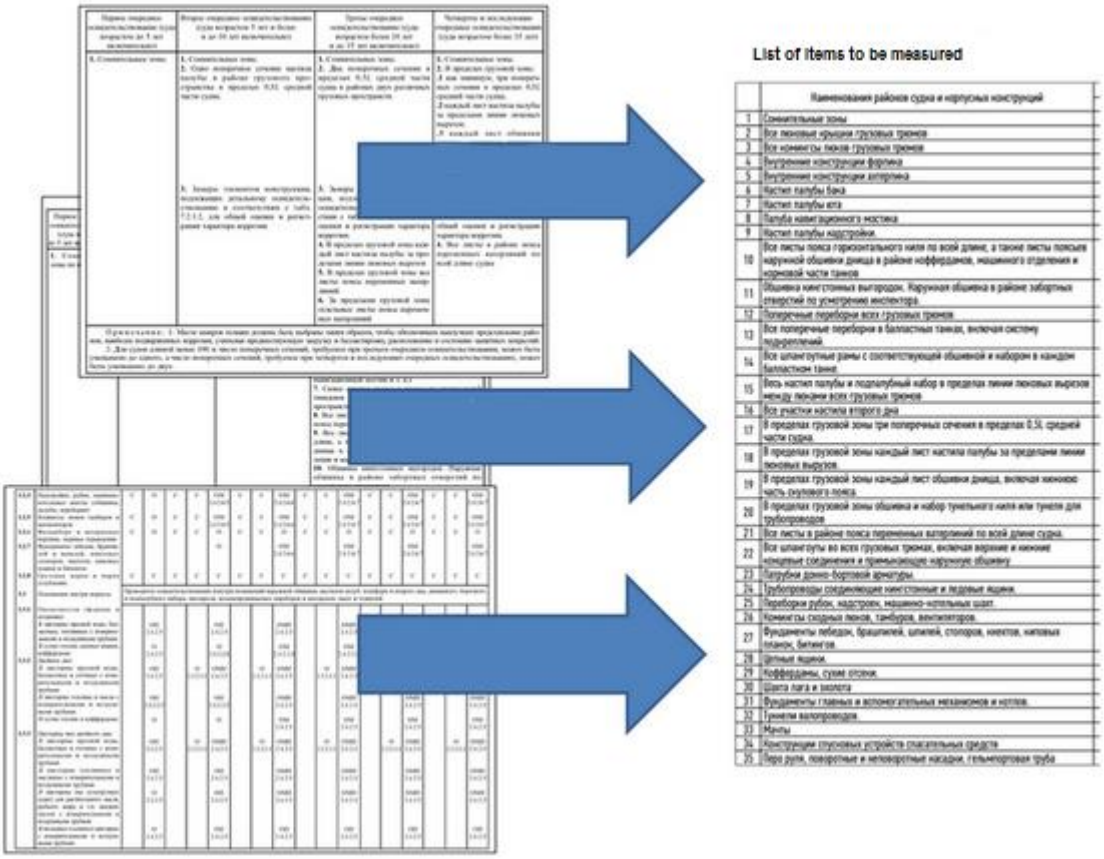
6.2. Creation of the list of items to be gauged at current survey.

Creation is carried out on the basis of applicable requirements of the RS Rules for classification surveys of ships in service depending on the following criteria:

-ship’s age;

- ship’s type;

- survey type.



7 Creation and using of database with as-built and permissible residual scantlings of ship's items required to be measured.

Software allows to create permissible residual scantling (further – norms, wear limits) regarding the following cases:
.1 for ships which Register class has not been modified since their construction, as well as to ships built to the RS class and which have not undergone major repair or modification upon completion of construction (refer to 4.2.6 of Annex 2 to the RCSSS);
.2 for ships, having calculation of permissible thickness diminution elaborated in accordance with RS Rules and agreed by RS (refer to 4.2.1-4.2.5 of Annex 2 to the RCSSS);
.3 for ships, to which norms according to losing society -IACS member Rules applies (refer to 5.12.2 of part I "General provisions" RCSSS);
.4 for ships built under CSR;
.5 for ships for which IACS UR S19 applies;
.6 for ships for which UR S21/S21A applies;
.7 for ships for which IACS UR S31 applies.

Norms are created in one consolidated electronic file, stored on RS Head Office server for further using during development of relevant reports.

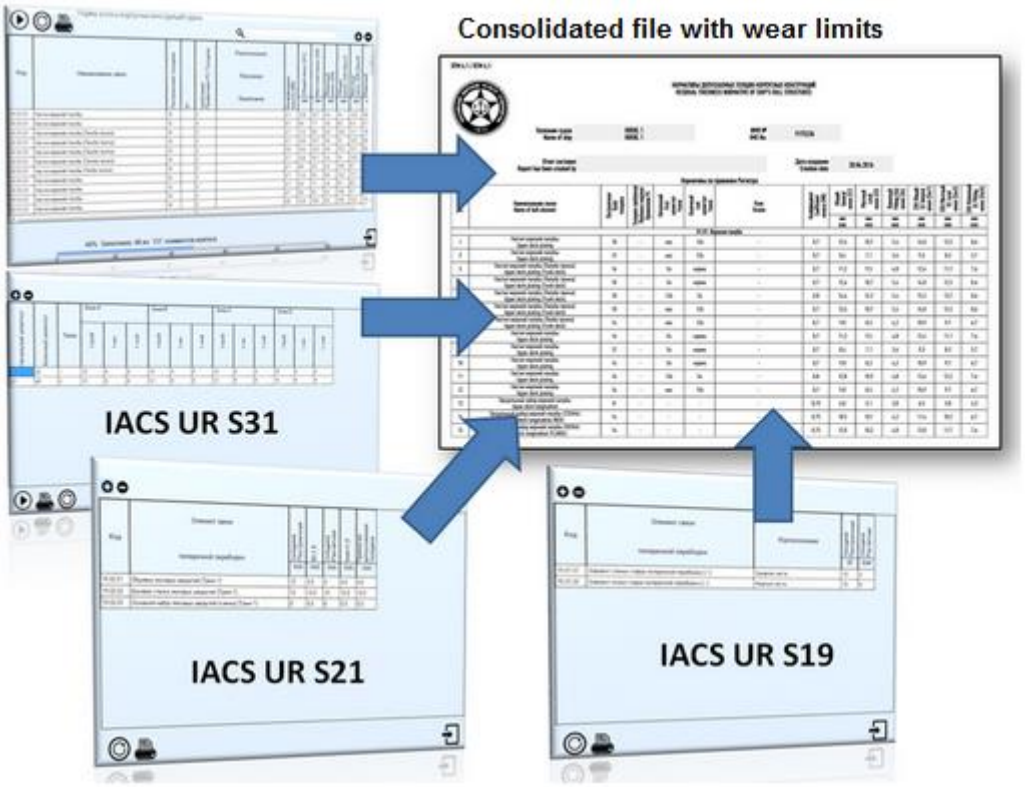


Figure 3 Content of file with wear limits

8 Tabular forms for reporting of the results of defects parameters

8.1 Three groups of tabular forms are used in the software:

.1 forms RTM1.1 - RTM1.7 applies for drawing up of TM report for all ships, except those which are built under CSR Rules;
.2 forms, recommended by IACS (TM1 - TM7) are applied when RS rules allow to use recommended forms of IACS UR Z7, Z10.1, Z10.2, Z10.4, Z10.5.
.3 forms for ships, built under IACS Common Structural Rules.

For more information – refer to Instruction for drawing of TM tabular forms.

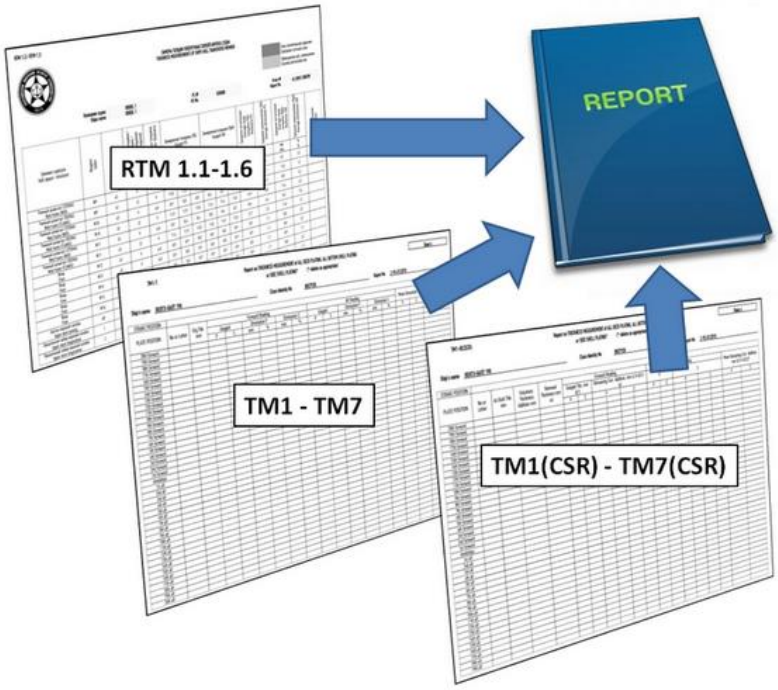


Figure 4. Three groups of TM report offered by the software “VOLNA”

8.2 Representation of defects parameters measurements on sketches.

The results of measurements put into tabular forms are to be shown additionally on sketches attached.

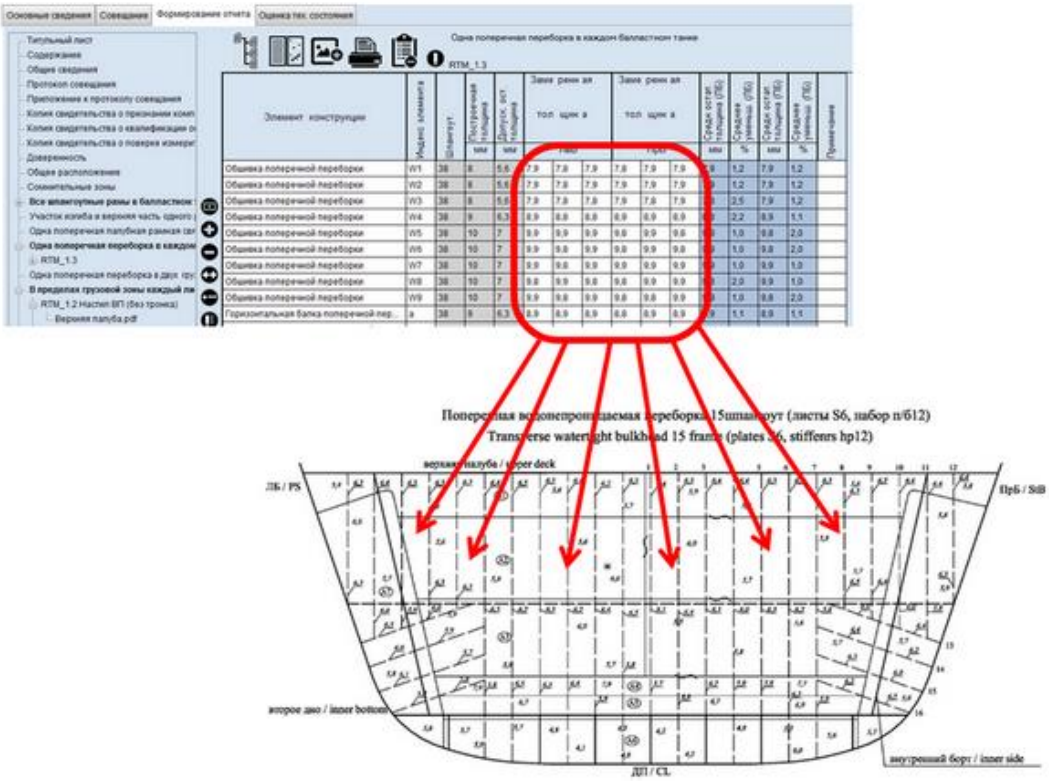


Figure 5. Representation of defect on sketches

9. Software help messages for users.

Text and graphic help messages are provided for the software users.

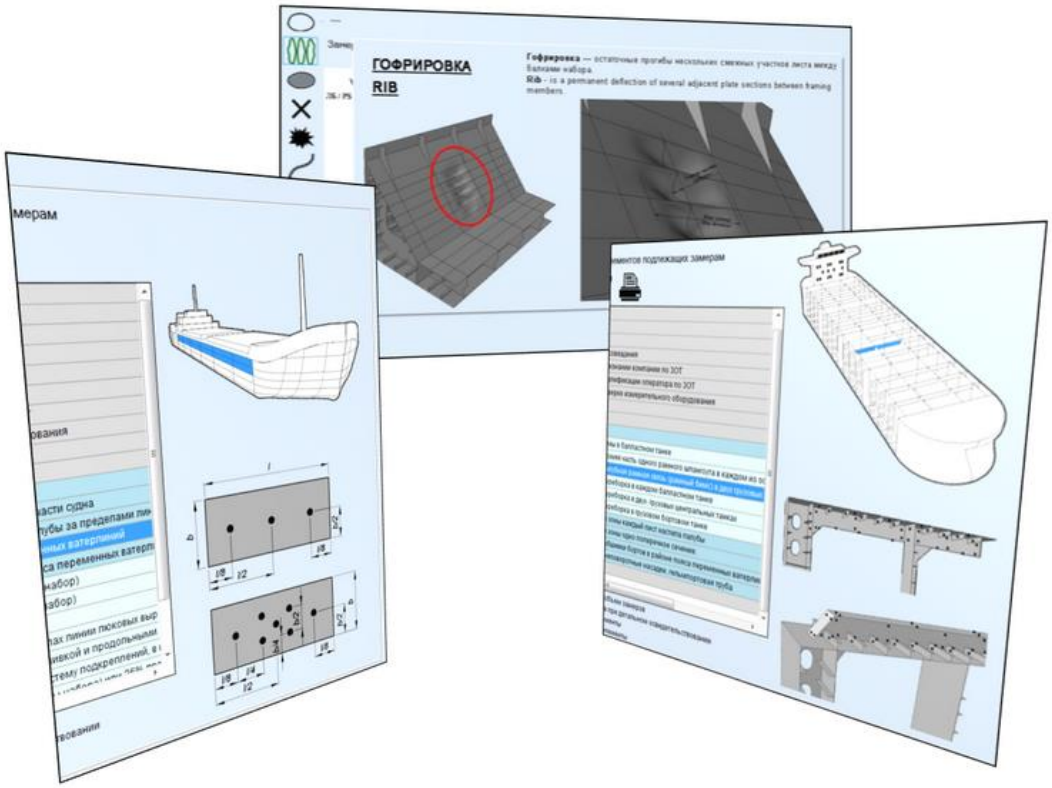


Figure 6. Example of help messages

10. Assessment of defects parameters (wastage, deformations, cracks etc.)

10.1 Assessment of defects

Procedure for registration of defects parameters revealed during surveys on sketches, their assessment and creation of a report containing defects criteria (refer to fig. 7)

Software contains simple interface for registration of defects and their parameters. Permissible criteria of defects are calculated using software in accordance with the RS rules and the relevant report of assessment is created automatically (see forms RTM2.1 and RTM2.2).

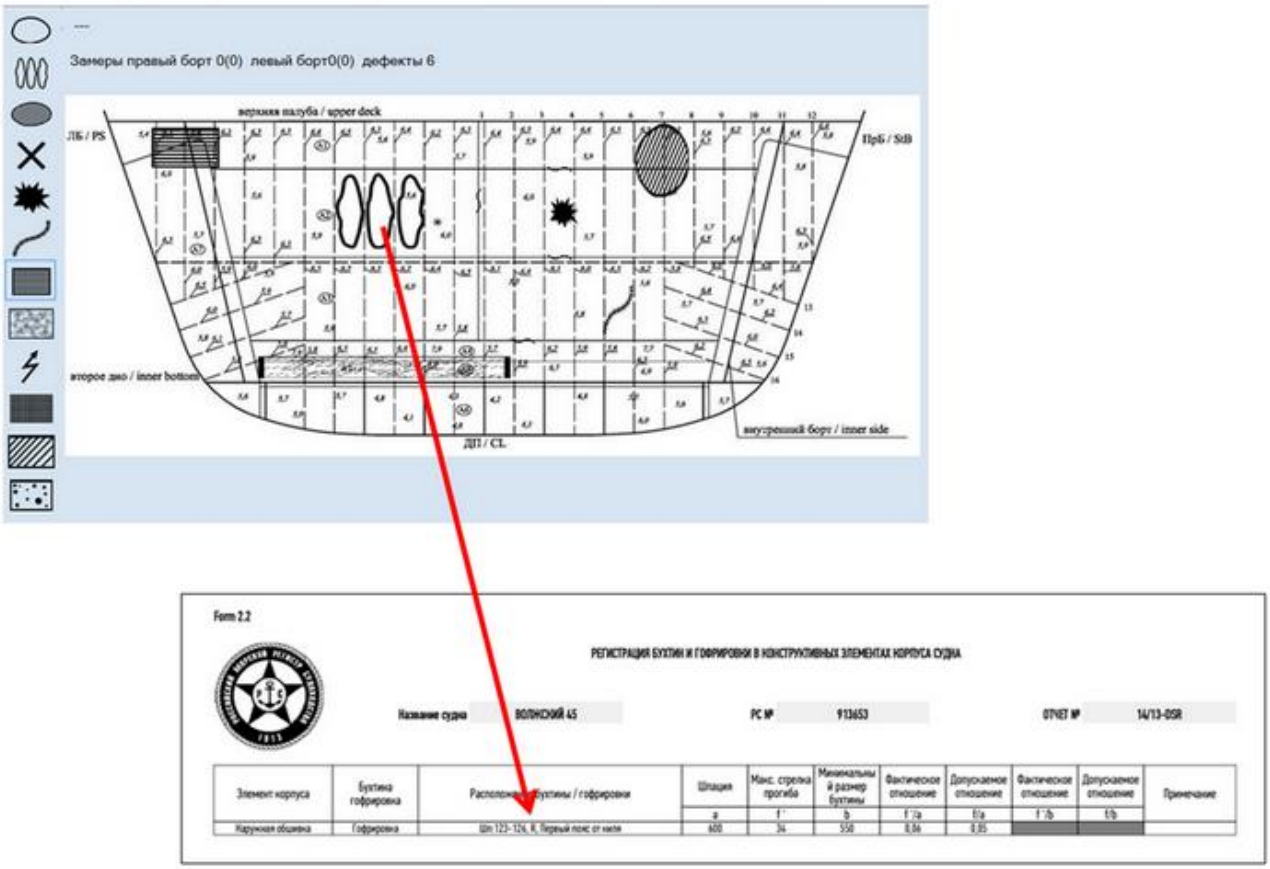


Figure 7. Example of sketch containing information of defects registered by “VOLNA”

10.2 Assessment of the cross-section area reduction of deck and bottom with bilge

Assessment of cross-section area reduction of deck and bottom with bilge is to be carried out using the software according to the requirements of the RS Rules for classification surveys of ships in service (refer to Annex 2, para 2.2.1). The results of hull structures measurements within transverse sections are registered in form RTM1.1 and then the software determines and calculates the magnitude of reduction on the basis of data for the hull members relevant to appropriate groups of structures (i.e. deck and bottom groups of structures).

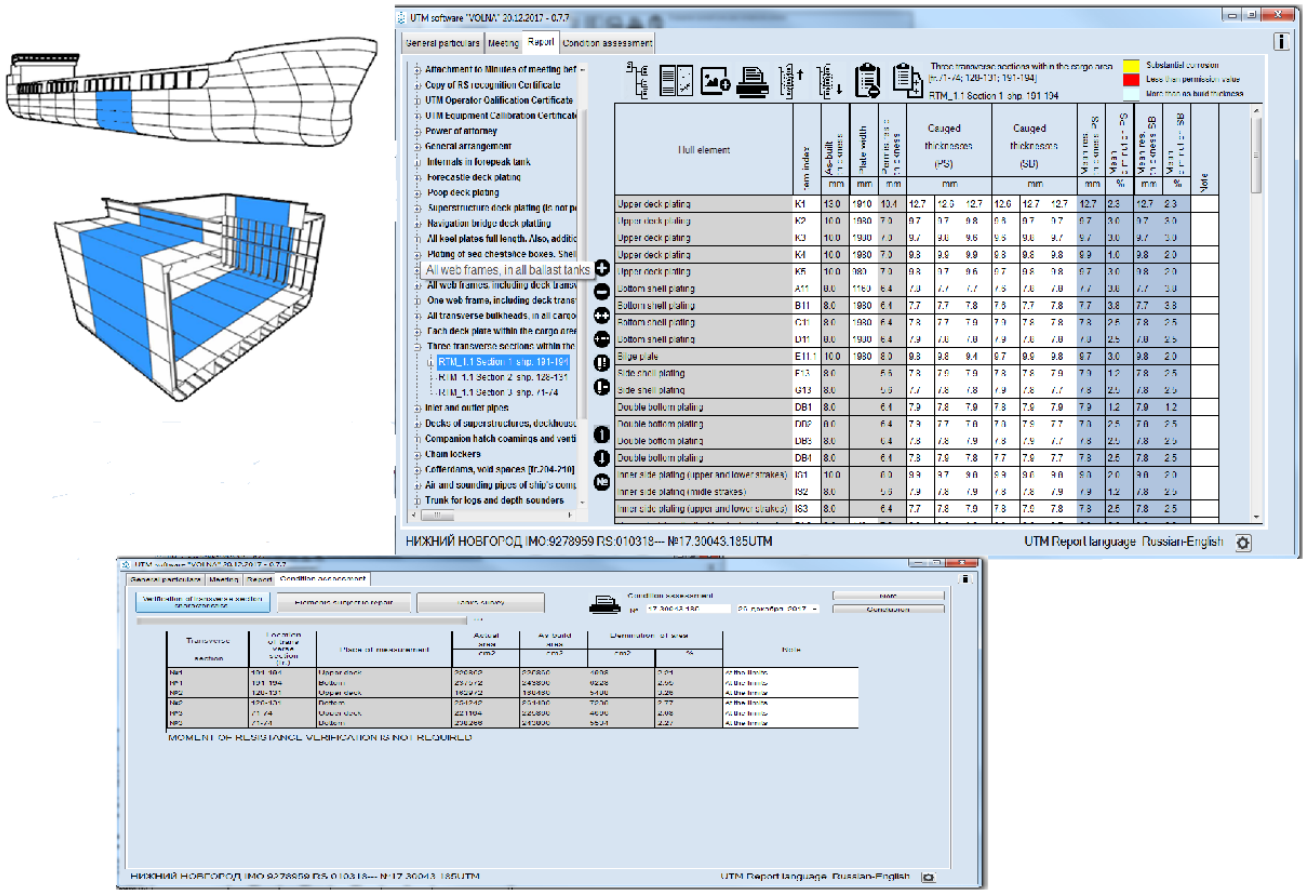


Figure 8 the results of assessment of cross-section area reduction

10.3 Registration of the results of repair

Information on repair required on the basis of the results of assessment of technical condition may be registered using this software.

Upon completion of TM and countersigning of TM report by RS the software gives possibility to register the results of repair of ships items determined by the software as non-compliant to RS Rules (i.e. the defects parameters are beyond the allowable limits).
The results of repair carried out may be used by a shipowner for planning of further repairs/surveys and by RS for collection information of repair history.
The results of repair are represented in the special form created by the software and intended for RS surveyor. This information is included as a section of the Report of assessment of technical condition (form 6.1.06).

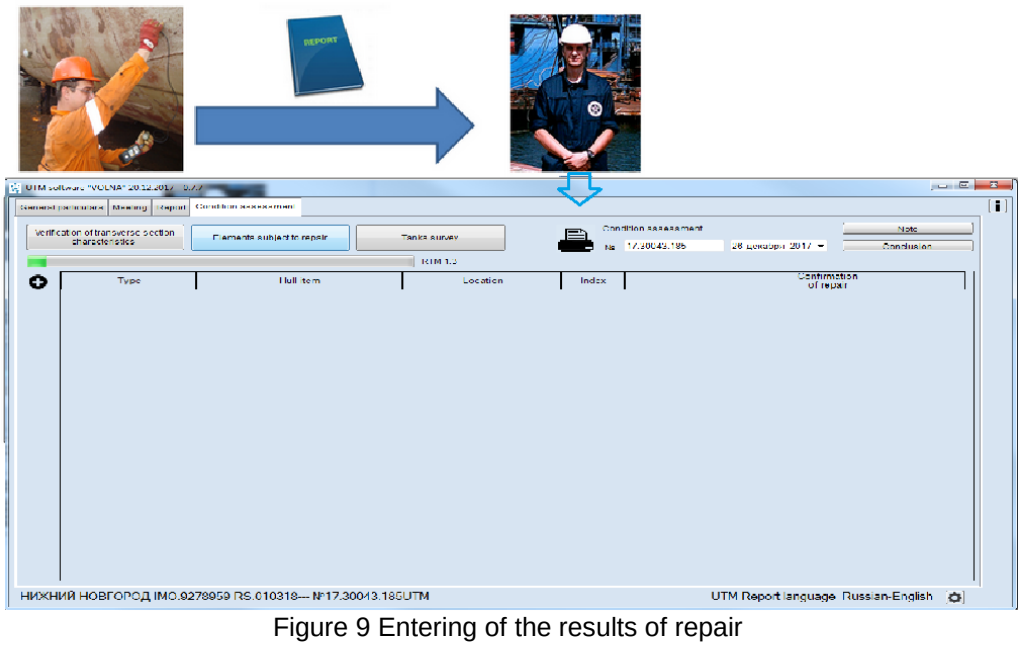


Figure 9 Entering of the results of repair

10.4 Assessment of corrosion prevention system condition

The software gives possibility to register information on current condition of corrosion prevention system within ship's spaces.

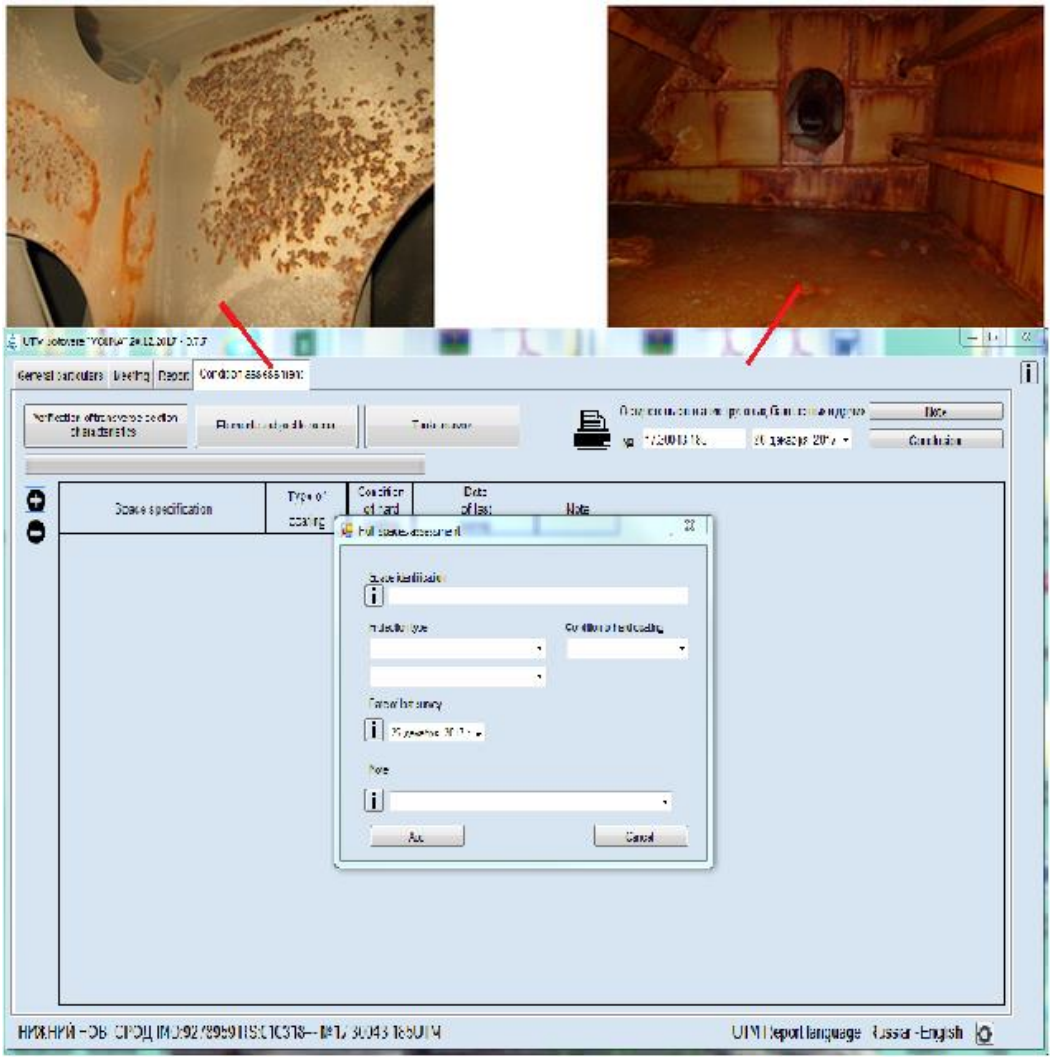
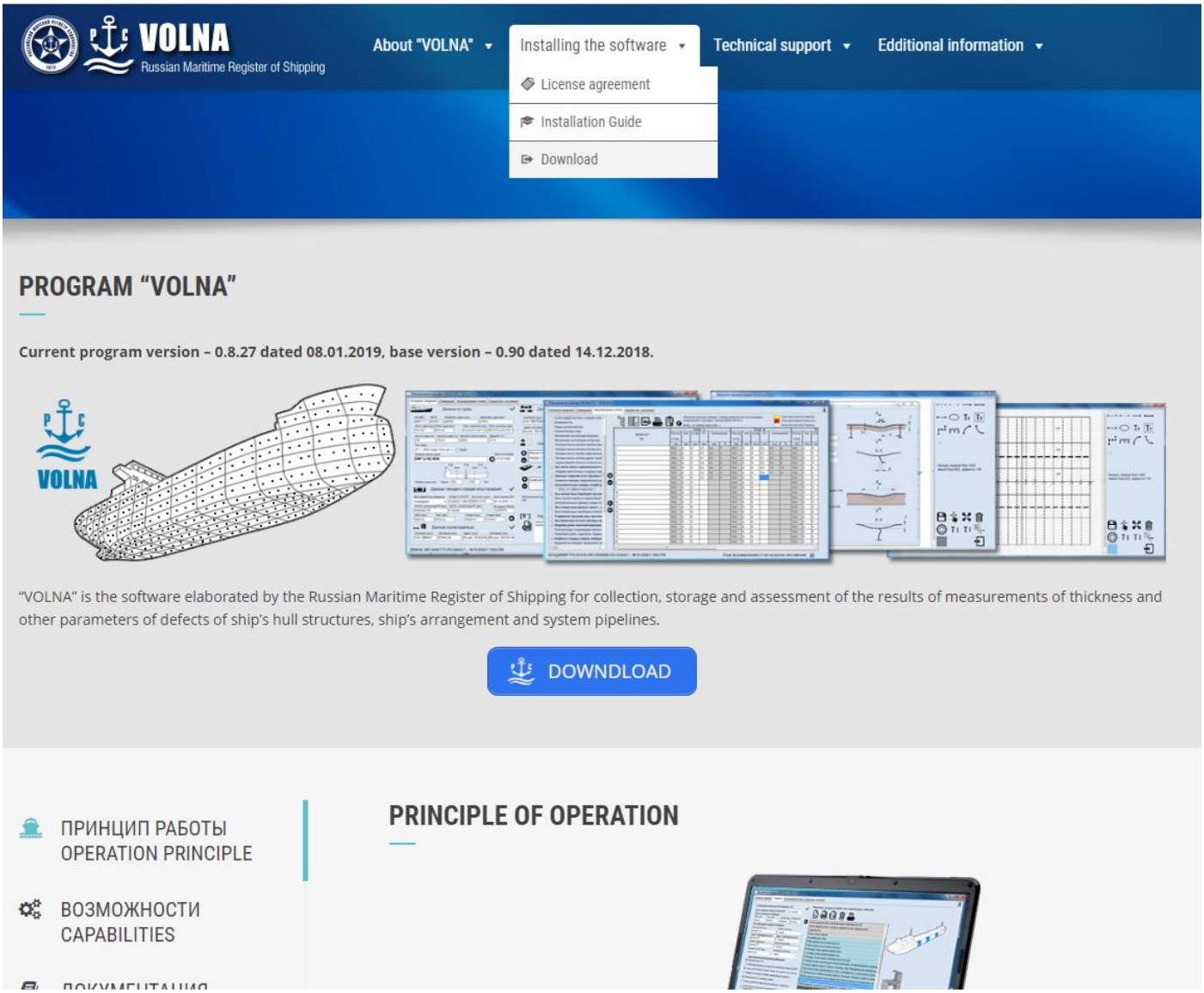


Figure 10 Entering of information on corrosion prevention system

11. Installation of the software

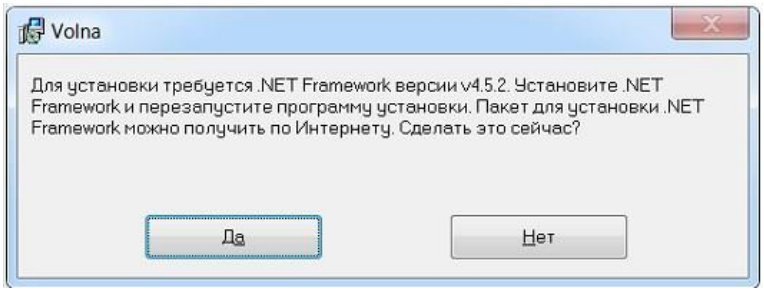
To install software "VOLNA" on a computer it is necessary:

1. to check minimum system requirements of a computer, on which the software is planned to be installed;
2. to go to web-site on the following address: https://volna-global.rs-class.org;
3. to download installation file from web-site;

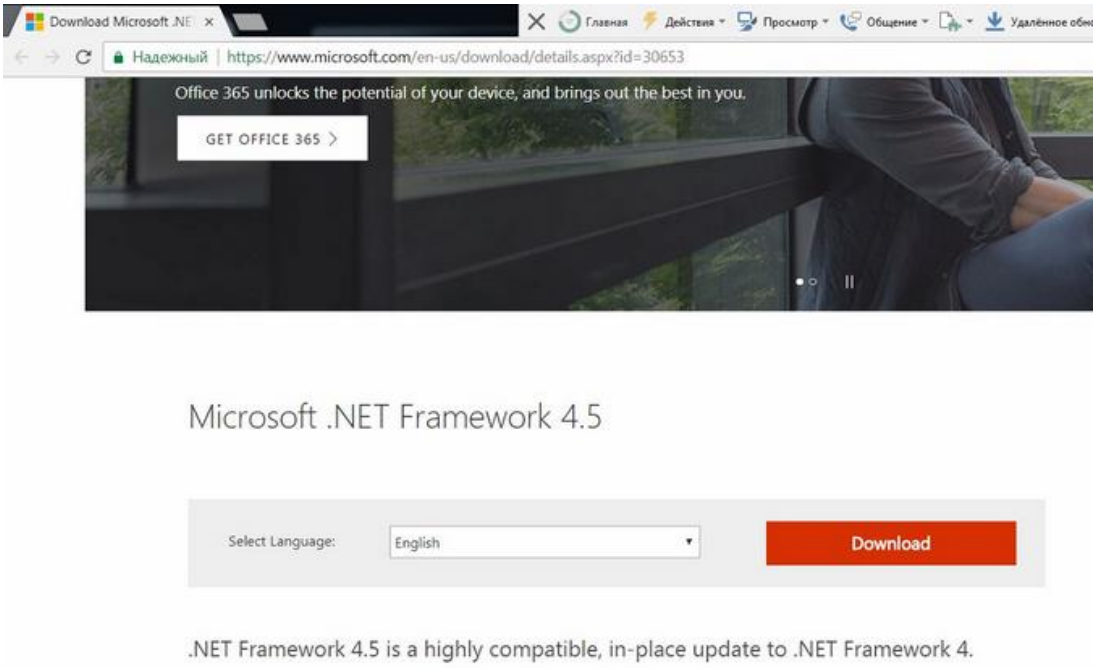


4. to install the software on a computer.

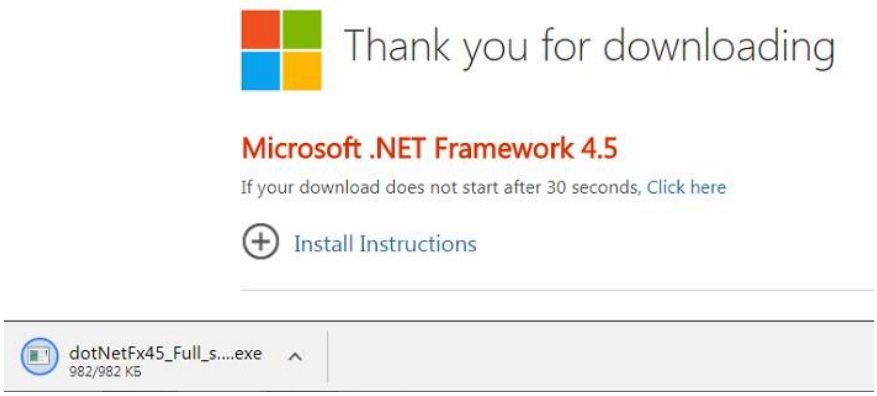
At the first step installation program checks presence of program Microsoft Windows .Net Framework of relevant version on a computer and offers to install it if not available (to install .Net Framework refer to paragraph 4.1). If available – go to item 6 and subsequent.



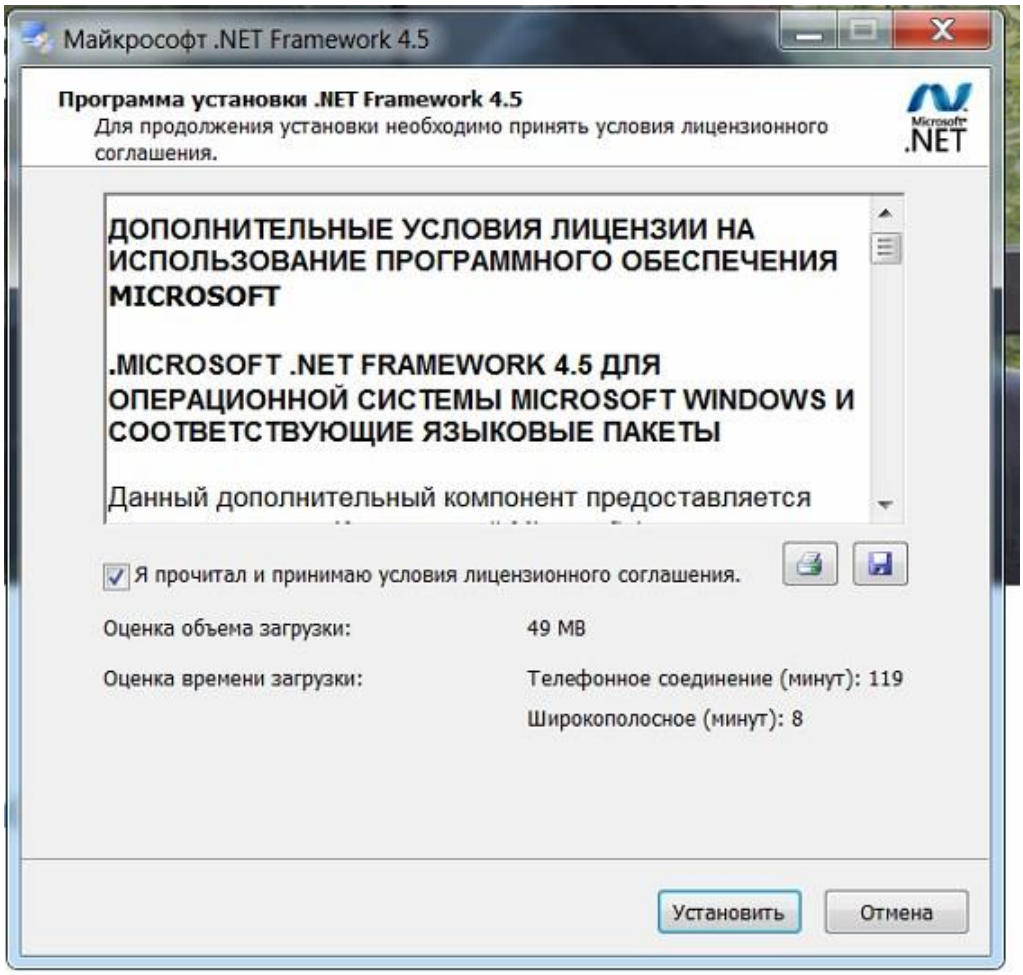
4.1 Click “Yes”, when tooltip offered to install Microsoft Windows.Net Framework.



4.2 Upon selection of language and pushing the button “Download” to install file uploaded.

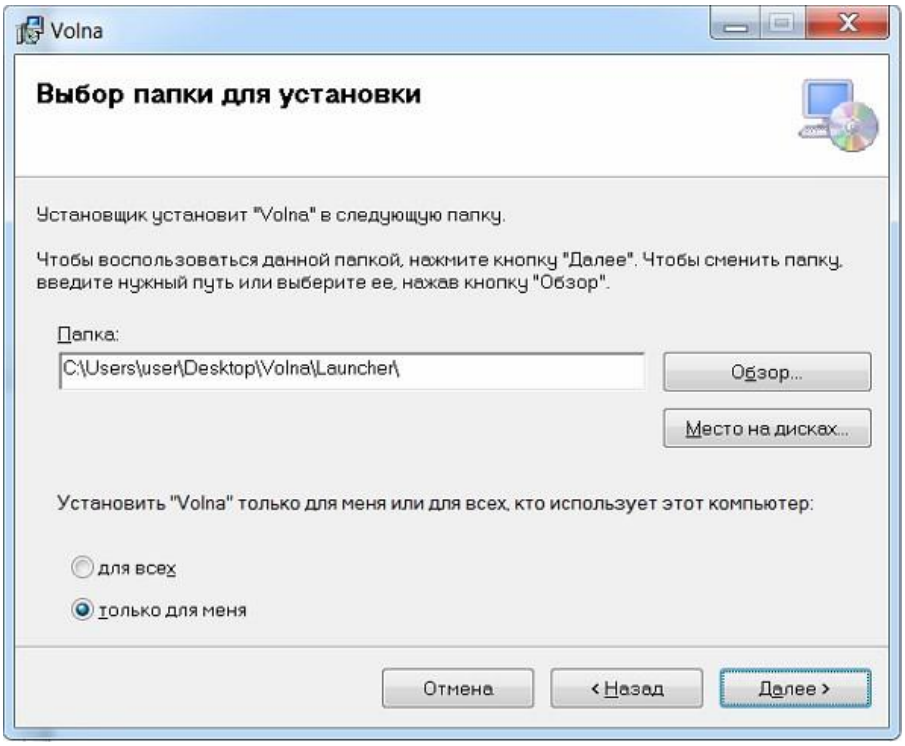


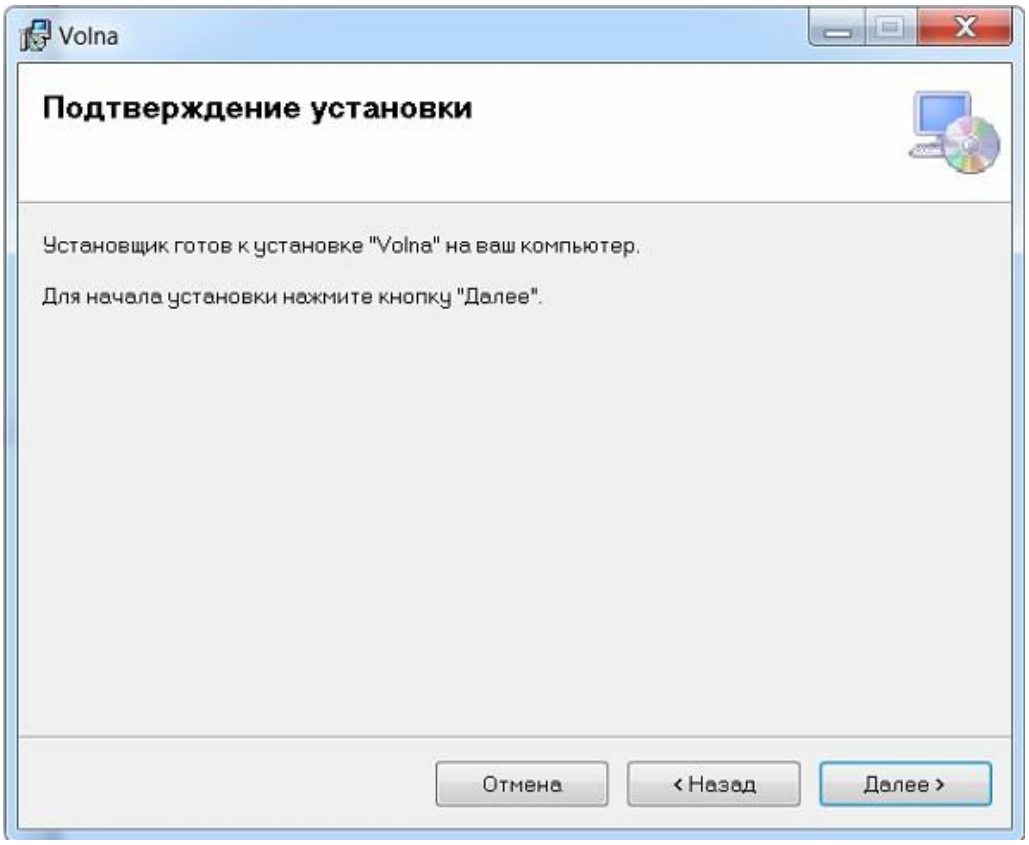
4.3 To install program .Net Framework.



5. Upon installation of program .NET FRAMEWORK, to start installation of the software "VOLNA" and follow to the instructions offered by the installation wizard .

5.1. To select the installation folder for the software VOLNA – which is the default folder on the desktop. It is possible to place the program in the "My Documents" folder or on drive D and than click Next.





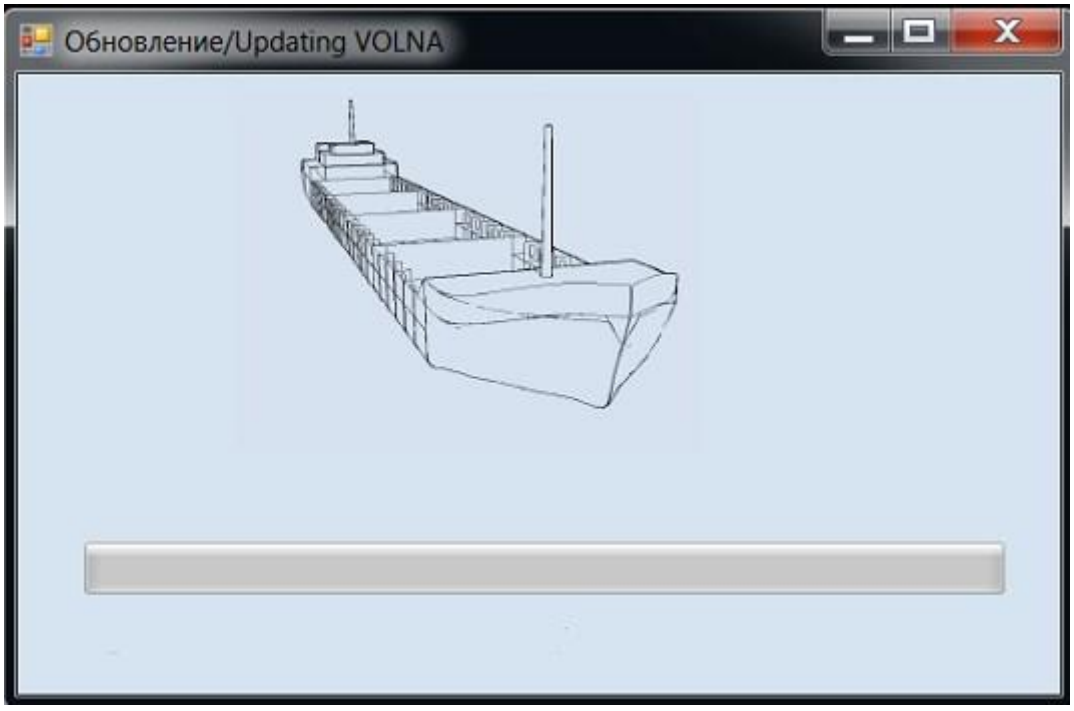
5.2. As a results the software VOLNA will be installed and relevant desktop shortcut will be created -

5.3. To double-click the shortcut to start the software.

5.4. Then the verification of a computer system will be carried out to check the presence of Microsoft SQL CE0 and, if it not available, the installation of it will start.

5.5. If the installation process determines that a newer version of Microsoft SQL Ce0 is installed, the software “Volna” will close and it will need to be restarted.

6. After running the “Volna” will attempt to obtain updates from the RS Head Office server.



7. After the successful upgrade the software will run.

8. If the update site is not available for some reason, the following message will appear:

9. In this case, to close and restart VOLNA software again or to continue working with the non-updated version. However, it is strongly recommended to upgrade software to the latest version, or download a latest version of installation from the server or to run from the desktop.

PART II STEP-BY-STEP INSTRUCTION

1 First software popup window

After installation of the software VOLNA according to the instruction (para 11 of part I) "the Software Installation", by clicking the shortcut

, the first popup window appears (fig.1).
Note that before appearance of the first popup window, the software will automatically contact the RS Head Office server to check the availability of updates.

In the first popup window, software settings are carried out for each user (the interface language, the printout language(s) of the reporting documents, backup, and so on, program relevance (update) information is provided).

Figure 1 First popup window

The first time of start the software, it is necessary to click the Settings button (to personalize the user's settings).

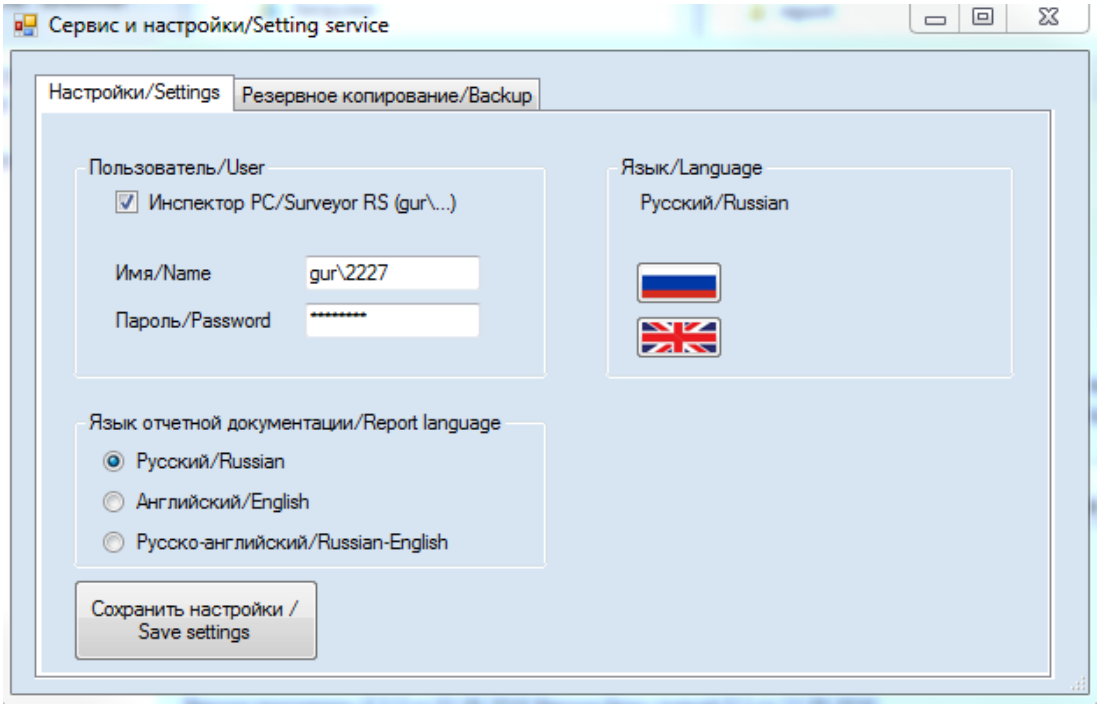


Figure 2 Setting tab

In the tab "Settings" there are following three options:

1) Option "User"

In this option it is necessary to enter name and password to access the software (required for RS surveyors only). For TM operators these fields are to be kept empty.

2) Option "Language"

In this option it is necessary to select the interface language.

3) Option "Report language".

In this option it is necessary to choose the language for drawing up of reports.

The software gives a possibility to draw up reports in Russian, English and Russian-English languages.

One advantage is that you can use only English as an example, and print the report documents in Russian (and vice versa). This advantage is relevant for foreign firms performing thickness measurements on vessels under the Russian flag for which it is required the processing of bilingual documentation.

The program's settings are sufficient to run once and the settings will remain saved.

For the events of an inadvertent failure of the software the popup "Settings" contains a backup tab that allows to restore information entered earlier.

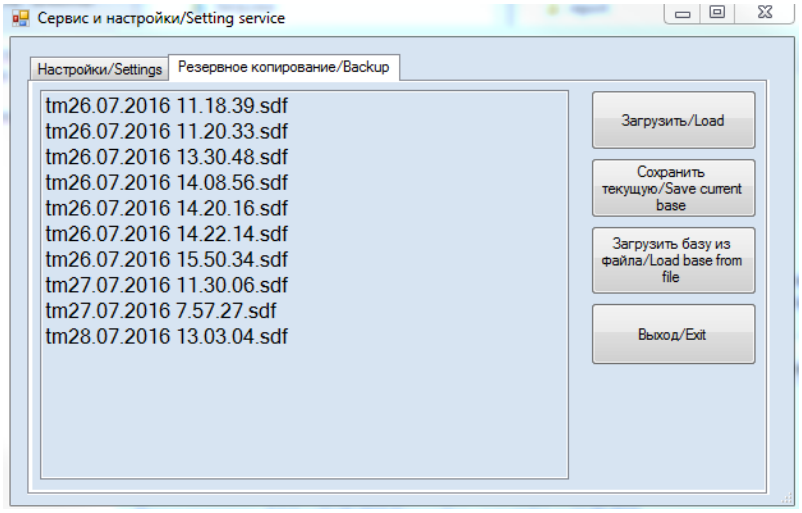


Figure 3 tab "Backup"

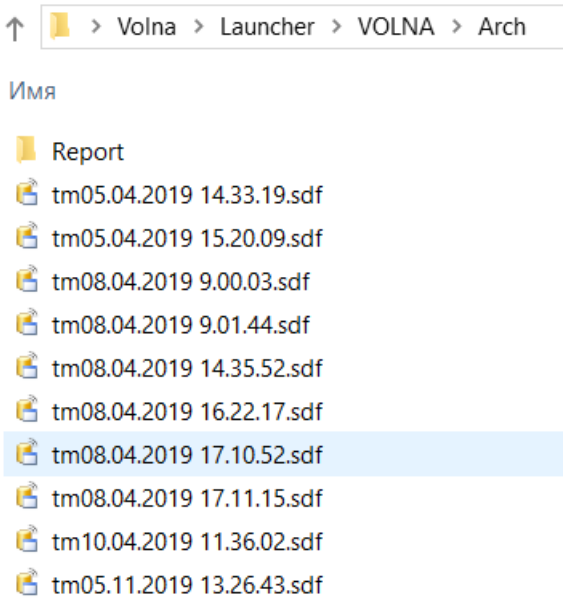
The mechanism of back-up is divided into saving of a local database and reports separately.

1.1 Full back-up of a local database.

1.1.1 At each start-up a full local database back-up is created. This database contains all created or down-loaded survey sessions which exist at the moment of start-up.

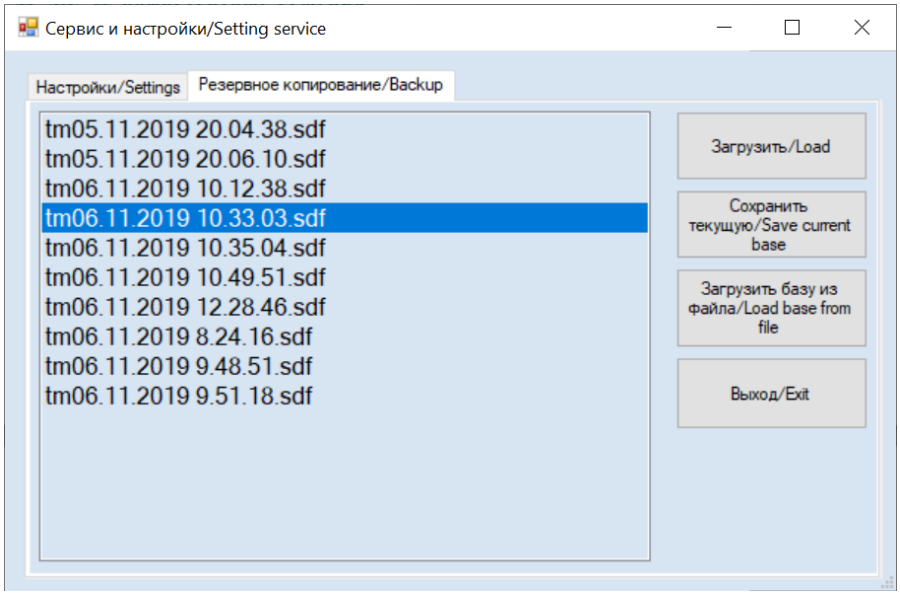
1.1.2 Created back-up is saved in the folder «Arch» of the folder where software VOLNA is located (by default in C:\Users\User\Desktop\Volna\Launcher\VOLNA\Arch).

1.1.3 The back-up file has a name «tm08.04.2019 9.00.03.sdf», where 08.04.2019 and 9.00.03 are the date and time of creation of each particular back-up.



1.1.4 The “VOLNA” software keeps the last 10 back-ups of local database by rewriting the latest one at each start-up.

1.1.5 The access to the earliest saved back-up is provided using button “Settings” of the VOLNA software entering window.



By using buttons of this window it is possible to:

Down-load a database back-up created earlier automatically by completely replacing the current database;

Save current working database (not from the list provided) into the separate file at a way offered during saving;

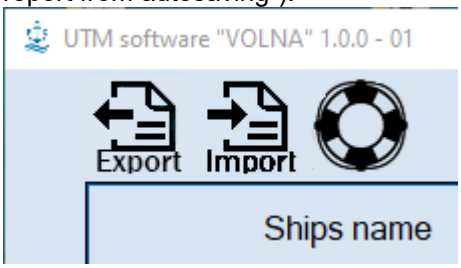
Down-load database from separate file, saved earlier using button “Save current base”.

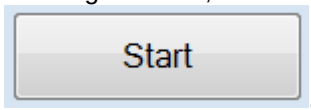
Down-loading of local database is to be done carefully and only in case when the current working database is damaged.

1.2 Back-up of each report.

During working with certain report back-up is created automatically in XML file.
New back-up of a current report is created during the process of data entering in the tables every ten (10) minutes or during data entering for every one hundred (100) measurements.

It is possible to down-load certain report using button “Import” from the list form of all local database reports (“to import report from autosaving”).



Upon fulfillment of settings actions, it necessary to save settings and to click button “Start” upon opening of the first software window 

.

2 Second popup window

The list of ships for which the TM session is created is located in the second software popup window.

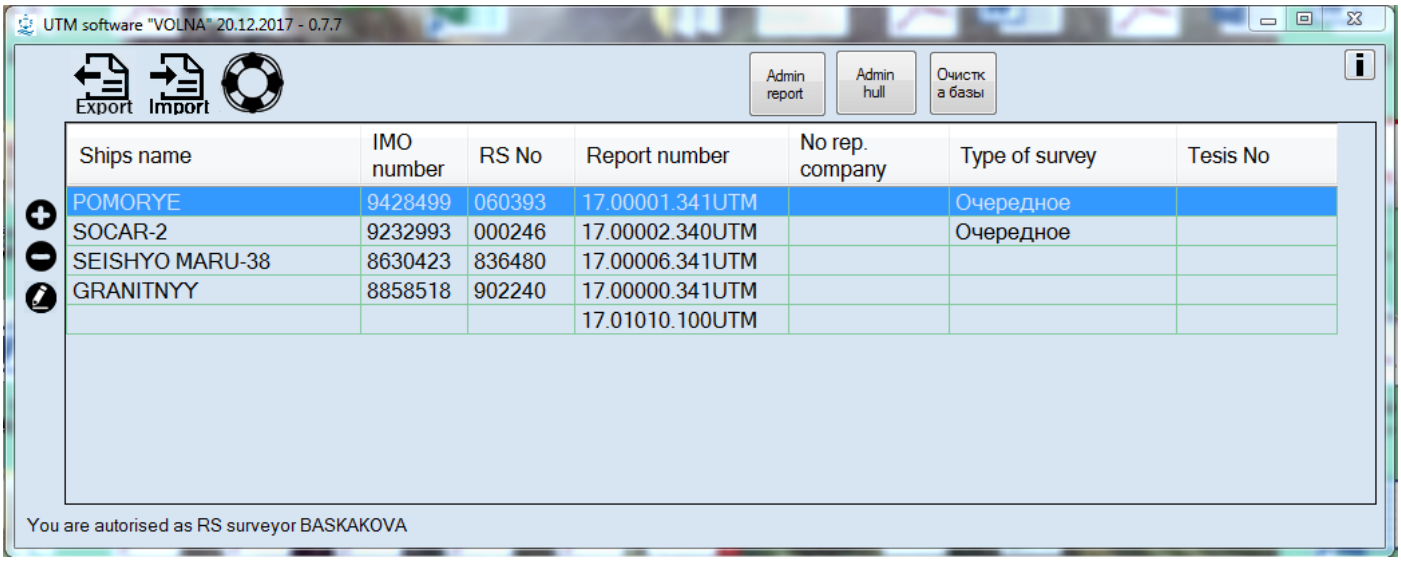


Figure 4 Second popup window

In this popup window it is possible to:

- create new TM session;

- delete TM session;

-select TM session.

- export or import electronic file to or from RS Head Office server or hard or portable disc.

The results of each session may be exported or imported (

) in an electronic file and on RS HO server. Importing and exporting to RSHO server is available to RS surveyor only.

In the lower part of the screen the information for RS surveyor working with program is available.

To create new TM session it is necessary:

1) to click button .

2) Then popup window **"Add new report"** will appear.
3) In the field **"Ship's hull condition report No."** to enter identification number according to the RS Normative Document (for RS surveyor according to ND 2-060202-009).
4) In the field **"IMO number"** or **"RS number"** IMO number or RS number to be enter (it is allowed to draw up of one of the fields);
5) In the field **"Report language"** to choose the language of reporting documents generation for the relevant ship/survey.
6) Then to click on one of the options "**UTM is carried out by UTM company**" or **"UTM is carried out by RS"** whatever is applicable:

"UTM is carried out by UTM company» - TM are carried out by the recognized by RS organization. In this case to enter the number of the Recognition certificate of the firm in the field **"RC No."** or
" UTM is carried out by RS " – in this case the field "RS No." will be unavailable.

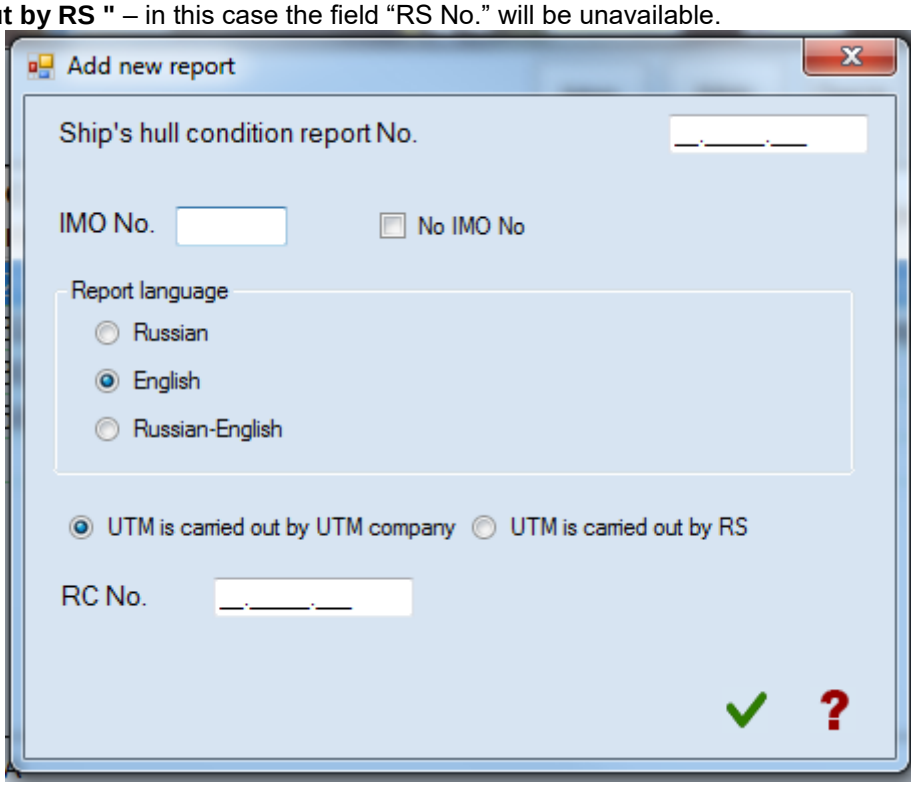


Figure 5 Creation of a new TM session

7) Then to confirm completion of filling in of the fields by clicking on button and transfer to the third popup window of the software.

During transferring the software applies to RSHO server and loads the following:
- information on ship;
- information on UTM firm;
- information on shipowner;
- information on norms (as-built and permissible scantlings, is created earlier using software VOLNA);

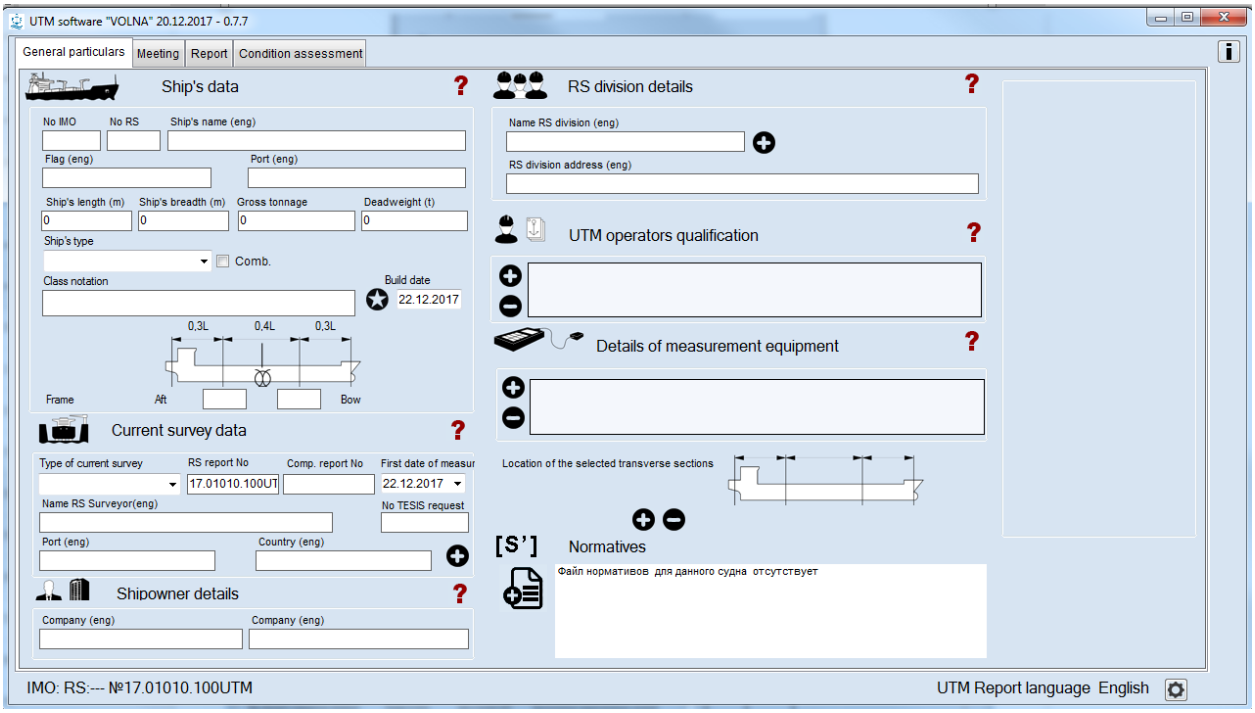


Figure 6 Third software popup window

If any data is not available it means that it is not available on RSHO server and it is necessary to input missing data manually in the appeared window. It is necessary to take into account that information on permissible scantlings may not be sufficient (i.e. were created partly) or it is necessary to correct it, then it is necessary to enter insufficient/actual information using relevant window (ribbon).

Permissible scantling (norms) are filled-in at the first survey (first case of TM). During down-loading of the report on RSHO server, norms are down-loaded into the relevant section of server and further kept there during all time when the vessel is under RS class. At the subsequent surveys, norms are down-loaded to the report automatically during creation of XML file. In case if as a result of subsequent surveys norms were changed (changes of norms type, additional or not counted earlier structures were added, etc.), then during sending of the report to RSHO server these norms will be updated.

If some data are absent (about shipowner, vessel etc.) it is necessary to enter missing data manually.

3 Third popup window

There are four tabs in the third popup window:

- General particulars;
- Planning of meeting;
- Report creation;
- Technical condition assessment

3.1 Tab "General particulars»

There are five tabs in this popup window:

-General particulars on ship and shipowner;
- Survey particulars;
- UTM firm data;
- Permissible scantlings (norms) data;
- Ship's spaces data.

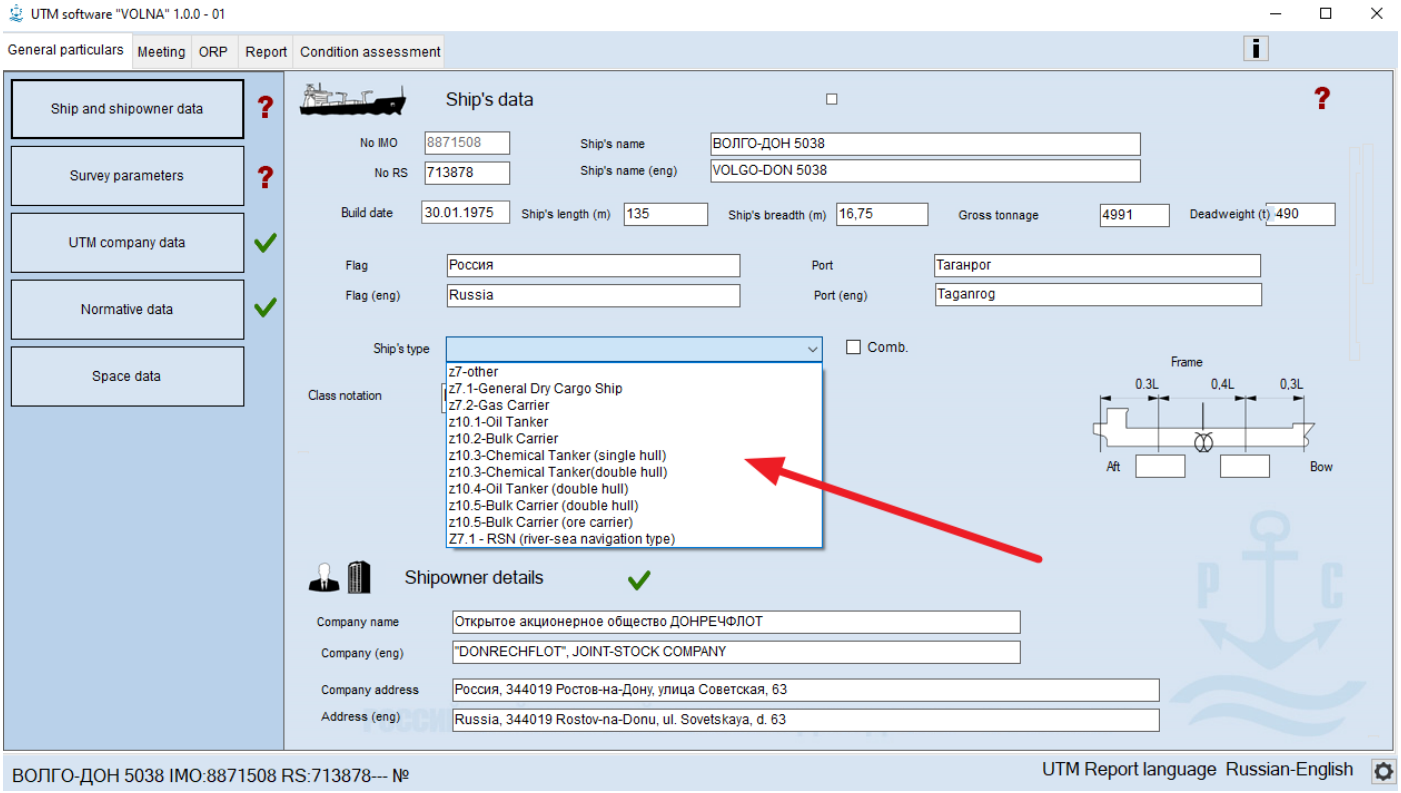
Before transferring to the next popup window "Meeting" all sections of the window "Genera; particulars" shall be filled-in properly.

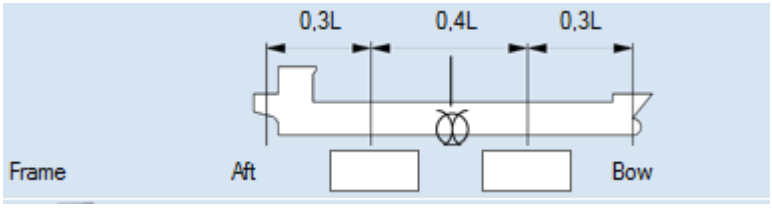
In the previous popup window new TM session was created for a particular ship (refer to fig.4).

In the tab "General particulars" (fig.6) it is necessary to draw up empty fields.

Ship’ type:

to choose ship’s type from the list. Ship’s type is determined by the application of the appropriate IACS UR (Z7-all ship’s types; Z7.1- dry cargo ships (there is a area of exemption), Z7.2- gas carriers, etc.). If no one type is applicable to the ship, it is necessary to choose option “Others".

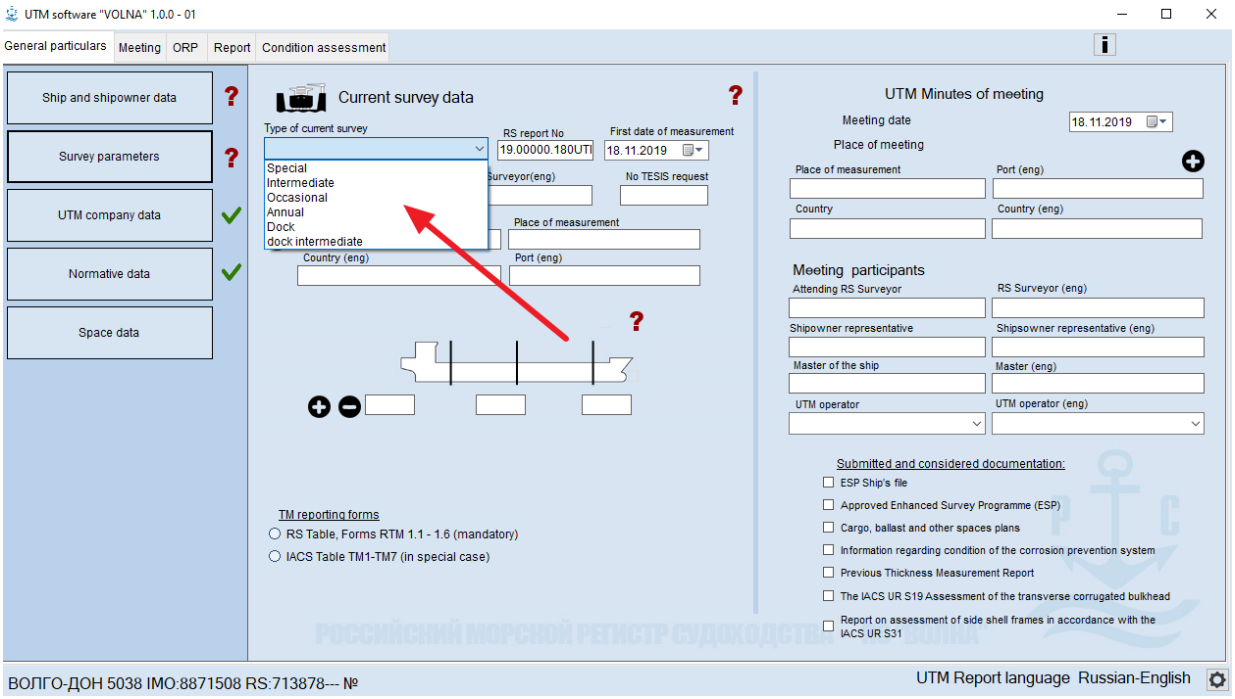


In the fiels “Frame number” 

- to enter beyonds of mid part of the ship.

In the popup window “Survey Parameters” the following shall be filled in:

1. Type of survey - to enter type of current survey.

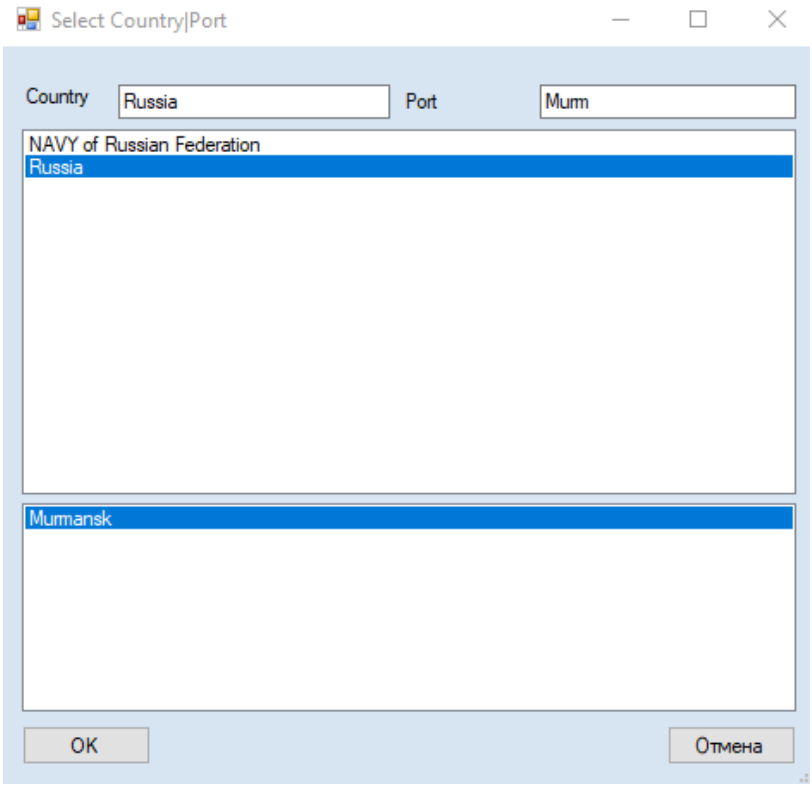


2. RS surveyor’s name:

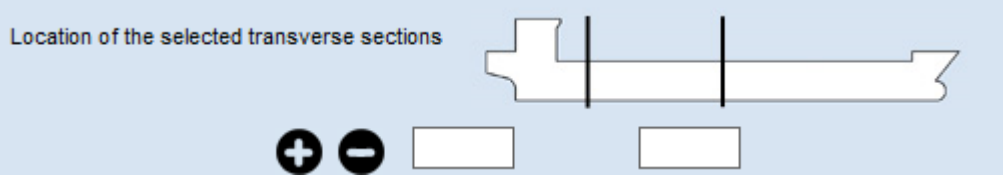
- to enter RS surveyor name, who is carrying out survey of the ship. To enter in the fields in Russian and English languages for correct creation of the report.

3. The request number registered in the TESIS system:

4. To indicate the place of current survey by clicking on the button :
In the first field of the popup window appeared to select country and in the second – port.



5. Location of transverse sections which will be measured



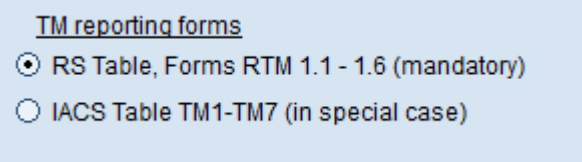
In these fields RS surveyor shall identify location of transverse sections to be measured. The number of sections is identified automatically depending on ship's age, type and type of survey. These sections are preliminary. If upon the results of TM of an upper deck/bottom plating a more deteriorated structures will be found on the other locations (sections), relevant amendments may be introduced further.
In the left side of the window for entering sections locations there are buttons for adding/cancellation of additional sections, if will be necessary upon the results of survey. When entering new sections it is necessary to identify their positions along ship's length in frames numbers.

6. Three groups of tables are used in software VOLNA.
RS tables group – basic RS tables for drawing up of the reporting documents upon the results of thickness measurements. It is necessary to use these tables in all cases except conditions specified below.

The IACS UR tables group – tables, which forms are in compliance with forms recommended by IACS Unified Requirements. These forms may be applied in duly justified cases according to the provisions of the Rules for the classification survey of ships in service.

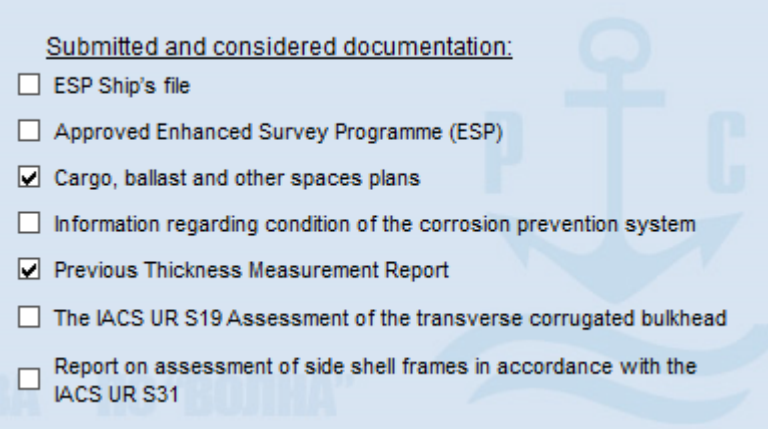
CSR table group – is applied to ships, built in accordance with the Common Structural Rules, only.

VOLNA software gives possibility to register thickness measurements in accordance with IACS UR S19, S21, S21A. The forms of tables are available in all groups in the appropriate branches of the report "tree".

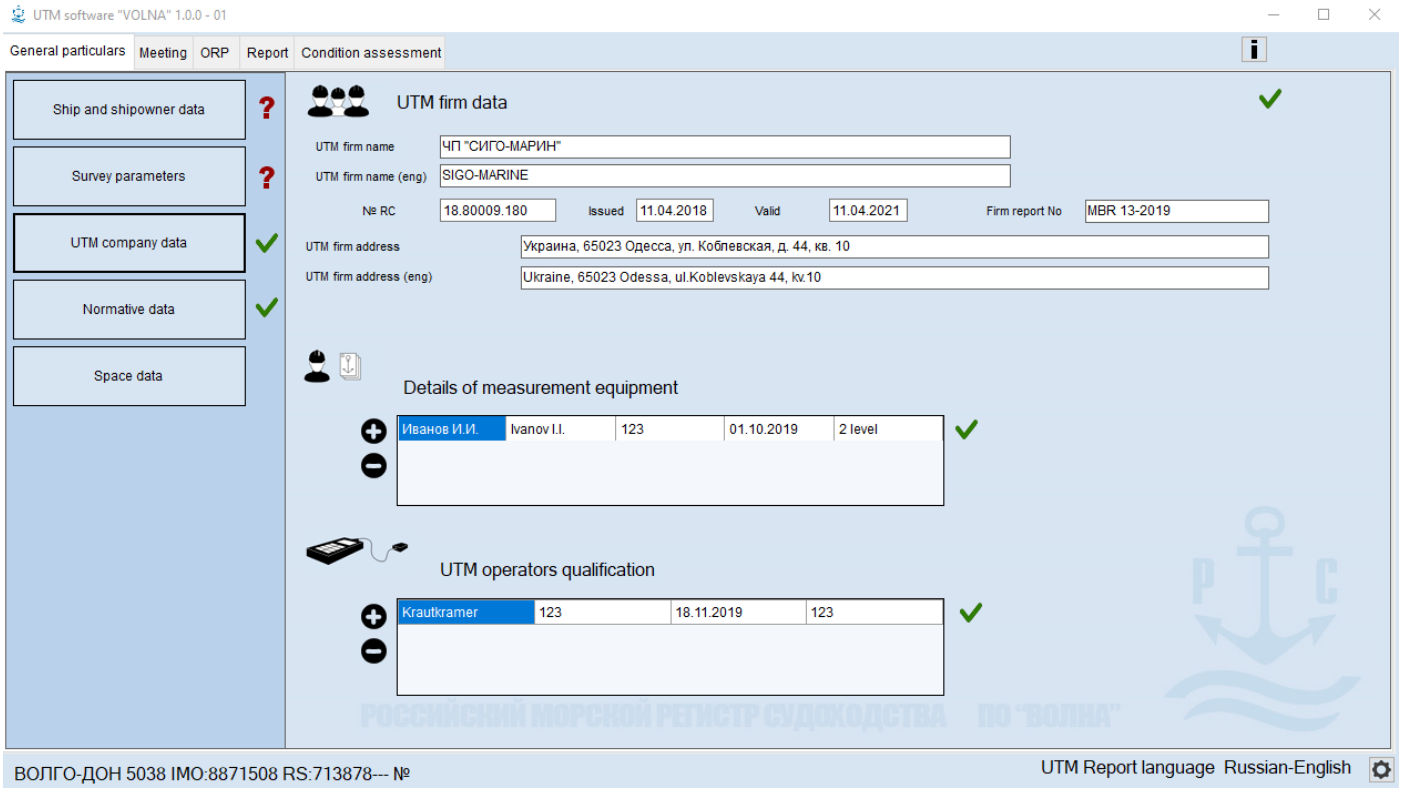


7. In the right part of the window it is necessary to enter date and place of the meeting before TM, minutes of meeting number, as well as persons participated at this meeting.

8. To fill-in check boxes, applicable to the current survey.



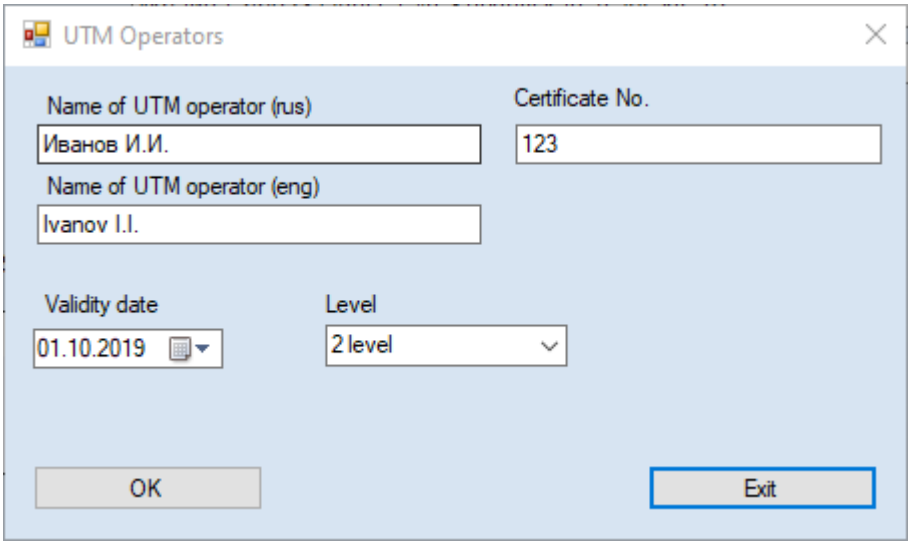
In the field "UTM company data" the following is to be filled in:



Information on the firm, carrying out thickness measurements, i.e.:

- Firm's name;
- Firm's address;
- Recognition certificate number;
- Date of issuance of the recognition certificate;
- The term of validity of the recognition certificate;
- TM firm report Number (if the firm has its own report numeration system).

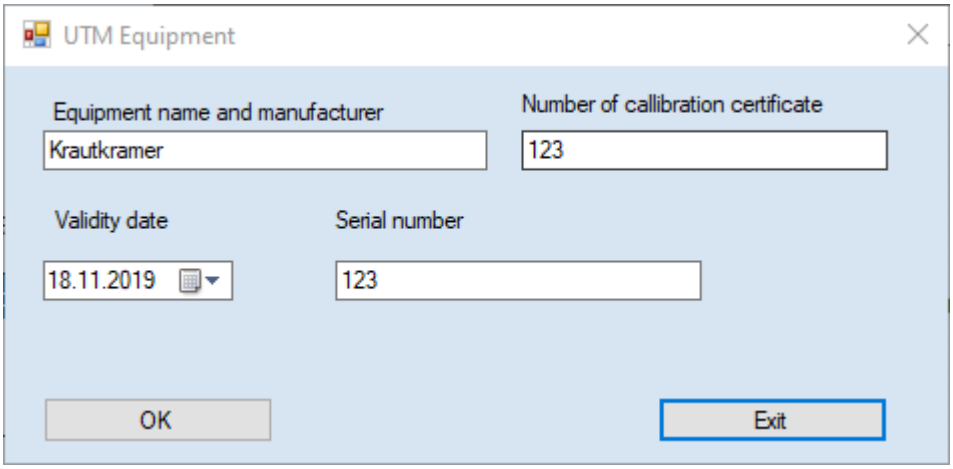
In the module regarding "Operator" it is necessary to fill in TM operator's name in two languages, number of qualification certificate, issued by national body, certificate term of validity and qualification level in accordance with the certificate.



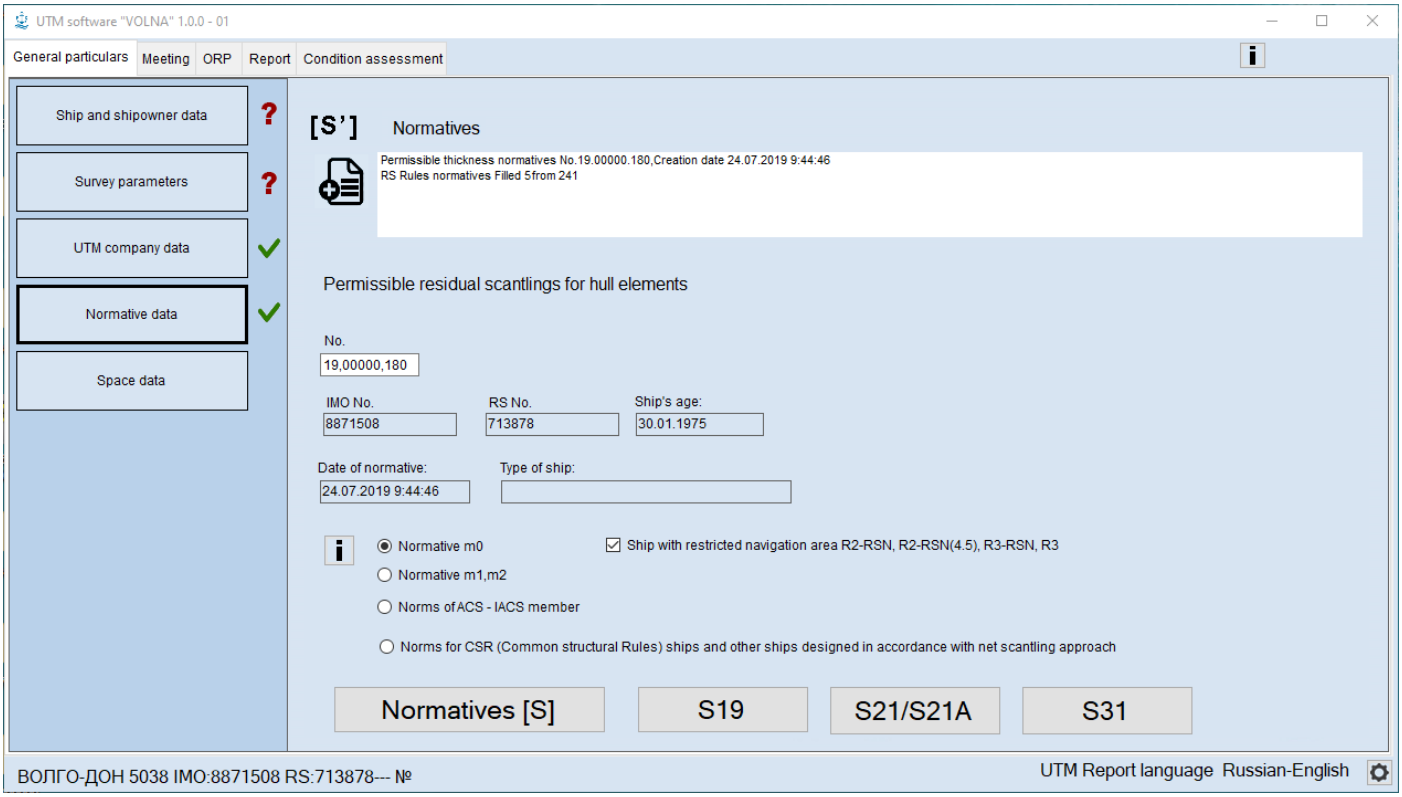
And click "ок".

To describe other TM operators it is necessary to repeat mentioned above steps.

In the popup window "Details of measurement equipment" it is necessary to draw up information with regard to ultrasonic devices used for measurements – manufacturer's name, calibration certificate number, calibration certificate term of validity and serial number of device.



In the popup window "Normative data" the information on ship's items permissible scantlings (norms, normatives) is filled-in.



For each ship a file with norms is to be created. It will be placed on RSHO server and downloaded into the software at each survey.

In the window it is necessary to choose option of norms applicable to each particular ship:

1.Norms m0 – permissible residual scantling identified in accordance with para 4.2.6 of Annex 2 to the Rules for classification surveys of ships in service;
If the ship if of restricted area of navigation (R2-RSN, R2-RSN(4.5), R3-RSN, R3) – it is necessary to click on the relevant check-box "Ship with restricted navigation area R2-RSN, R2-RSN(4,5), R3-RSN, R3.
2. Norms m1, m2 – permissible residual scantling identified in the approved by the Register calculation of permissible scantling according to the RS Rules. The number of the calculation and date of its agreement/endorsement by RS is to be entered in the appropriate check-box.
3. Norms of ACS-IACS member – permissible scantling identified according to the rules of another classification society- IACS member (for ships accepted to RS class from ACS-IACS member);
4. Norms for CSR – permissible scantling for ships built according to IACS Common Structural Rules (CSR).
A user with the rights of a TM operator cannot change option of norms selected by the surveyor.

For particular types of ships it is possible to enter special norms identified according to the applicable IACS unified requirements:
5. S19 – permissible scantling for transverse bulkhead of a bulk carrier between cargo holds Nos.1 and 2 (refer to URS19);
6. S21/S21A - permissible scantling for cargo hold hatch covers and coaming;
7. S31 - permissible scantling for side frames of single hull bulk carriers (refer to UR S31).

Creation of Norms (m1, m2).
! Condition for creation – availability of the calculation of permissible residual scantling approved or endorsed by the Register.

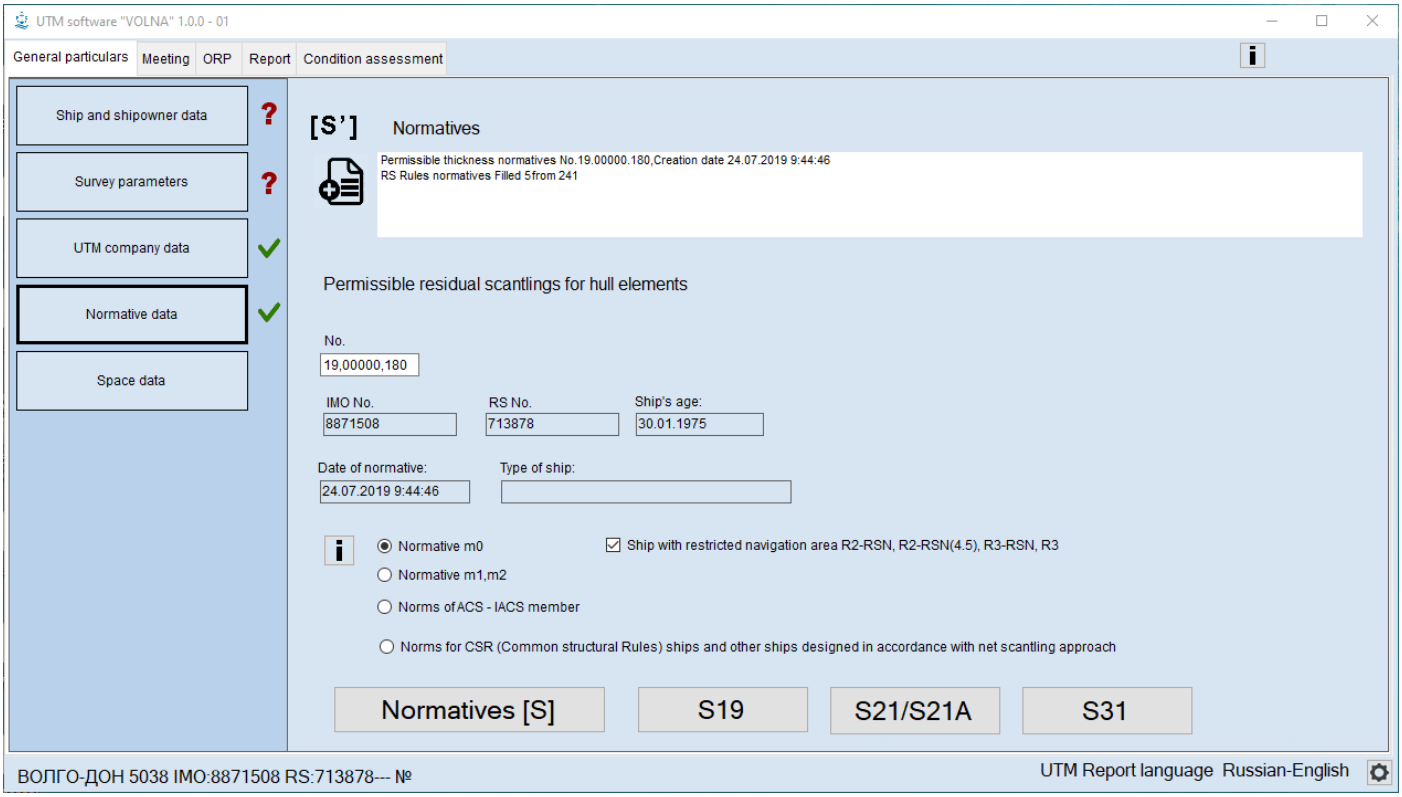


Figure 11. Creation of Norms (m1, m2)

To create **“Norms m1, m2**” it is necessary:
1) To choose option **“Norms m1, m2**”.
2) In the field **“Appr. calc. report No.”** to enter an identification number of a calculation and date of its approval by the Register.
3) Upon clicking on the button **“Normatives [S]”** the following tab appears (fig.12):

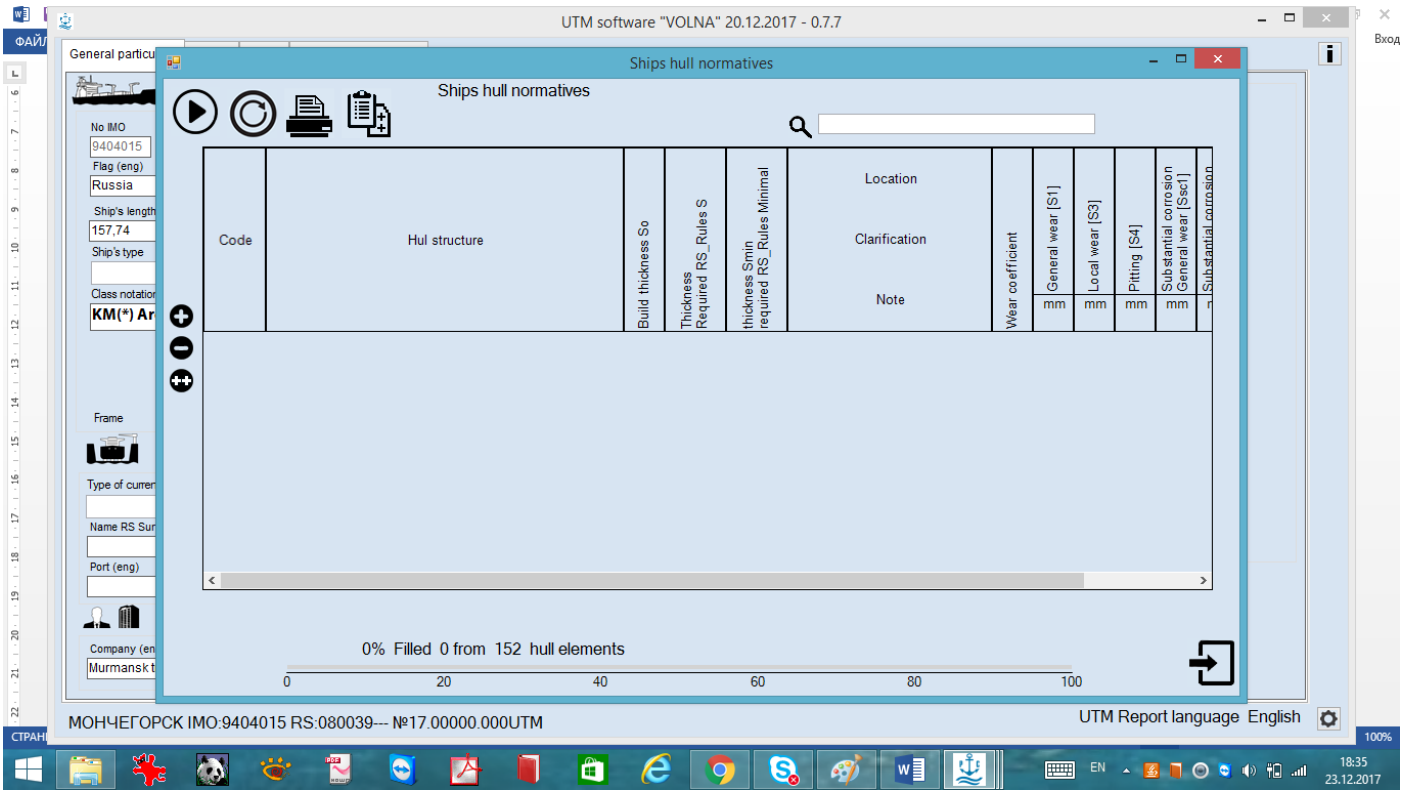


Figure 12. Tab “Ships hull normatives”

In the center of the tab ““Ships hull normatives” the table for entering norms is created.
In the table each particular item has:
- code;
- name;
- as-built thickness - S0;
- thickness required by RS rules - S;
- minimum thickness - Smin;
- location of an item;
- wastage factor;
- overall, local wear and pitting;
- upper limit of the substantial corrosion zone at overall, local wear and pitting.

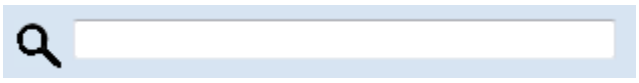
In the left corner of the window there are the following buttons:

- drawing up of norms in automatic mode;

- data cleaning in the table content;

- print out of norms;

- copying of norms from the identical ship on a computer;

 - search of a necessary hull item in the table;

- creation/adding of norms from the software tree-list of items;

- delete item from the table of norms.

- copying of an item with already created norm.

Software gives possibility to choose two options of creation of norms (automatic and manual).

Automatic mode:
By using of automatic mode norms are created in turns until all possible structures from the tree list will be described.

Manual mode:
By using of manual mode of creation of norms user selects necessary item from the tree list of all items.

Automatic mode. Upon click on the button the following window appears to enter hull items (fig.13):

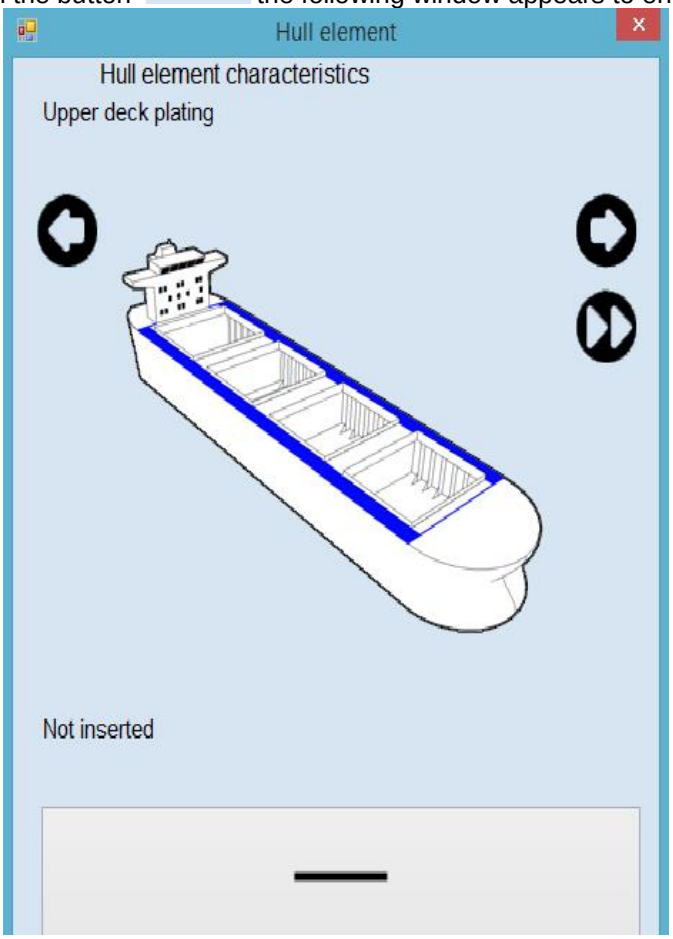


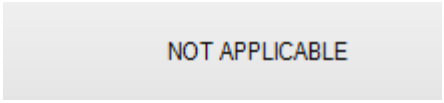
Figure 13. tab for selection of an appropriate hull item

In this window (fig.13) typical ship's hull items are offered to be filled in by turns from the VOLNA database. User shall choose applicable items from offered typical ones and put them into the norms table.
In the upper part of the window the hull item name is given (the first item is an upper deck), in the central part a scheme of item is provided. Please pay attention that sketches provided in the software are for the information purpose only and are not related to the particular item of the particular ship (i.e., for upper deck the sketch of dry cargo ship upper deck is provided).

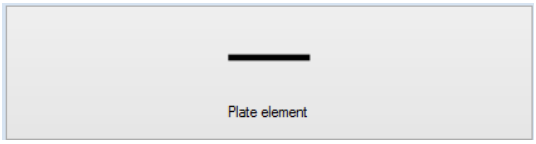
Icons and allow to transfer to the hull item offered to be described.

Icon moves an user to the last hull item which is not described yet.

The button "NOT APPLICABLE" is used when a particular item is absent on a ship.



Attention: after clicking on the button "NOT APPLICABLE" relevant item will be deleted from the list of automatic drawing up, but in manual mode this item may be selected mode.

The button "Plate element" 

is a basic button for entering of norms for plating elements. Upon clicking on this button a window for entering of hull items particulars will appear.
Depending on of the selected item the button is changing. For framing (profiles) two buttons will appear as follows:

.

For the plating to click "Plate element".

In the appeared window (fig.14) it is necessary to fill in all white (empty) fields.

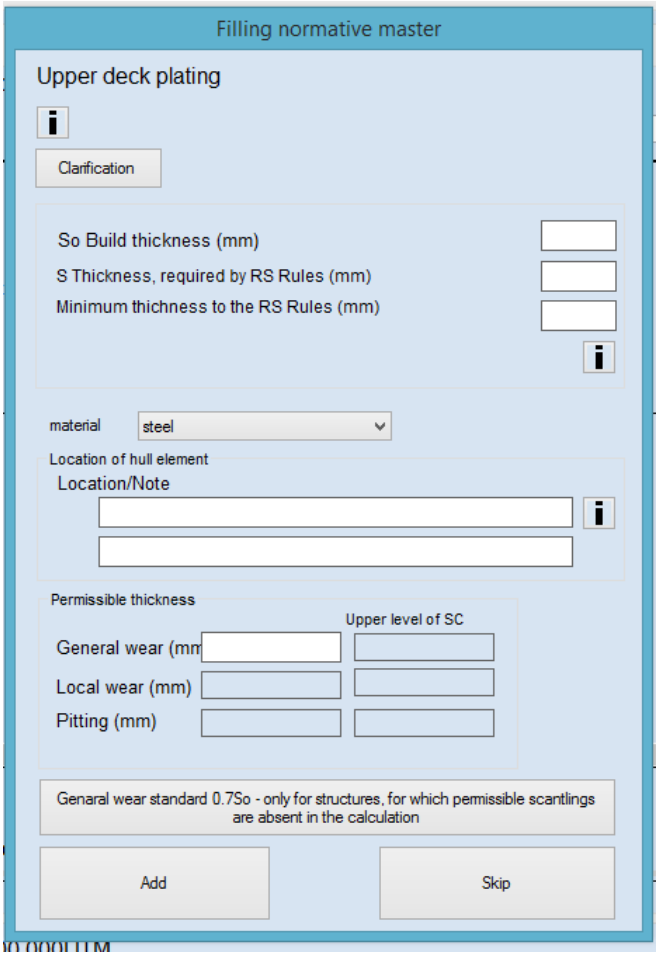


Figure 14 Window "Filling normative master"

By clicking on button "Clarification" in the window (fig.14) it is possible to give extensive or precise description of a structure for ease of reference (for instance, if there are more than one superstructure decks on a ship). When

choosing the structures "superstructure/deckhouse deck" then it is necessary to name the deck in accordance with drawings (deck A, deck B etc.).
Upon clicking on button "Clarification" two fields will appear – for Russian and English languages (it is recommended to fill in both).
Further, in the window there are fields for entering information on as-built thickness, thickness required by RS rules, RS rules minimum thickness which are taken from the calculation (information on as-built thickness is determined by using drawings).

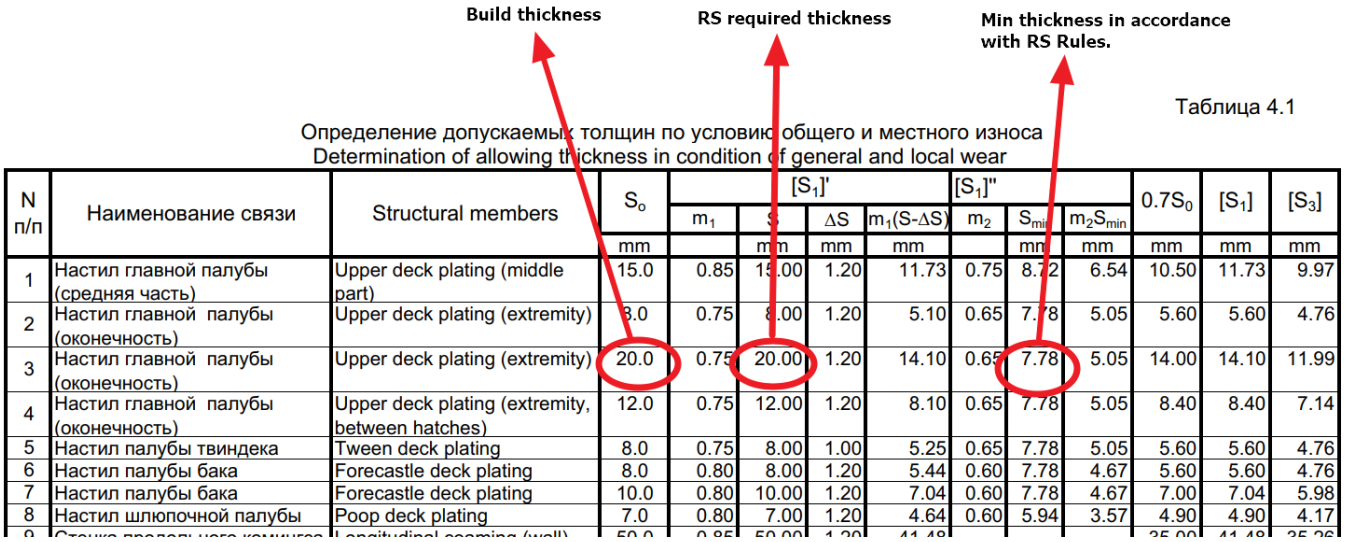
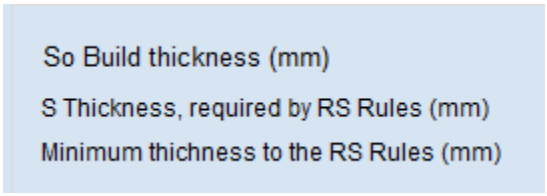


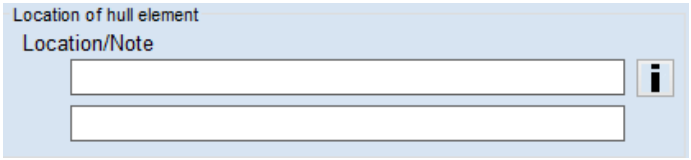
Таблица 4.1

Определение допускаемых толщин по условию общего и местного износа
Determination of allowing thickness in condition of general and local wear

N п/п	Наименование связи	Structural members	S_o	$[S_1]'$				$[S_1]''$			$0.7S_0$	$[S_1]$	$[S_3]$
				m_1	S	ΔS	$m_1(S-\Delta S)$	m_2	S_{min}	m_2S_{min}			
			mm		mm	mm	mm		mm	mm	mm	mm	mm
1	Настил главной палубы (средняя часть)	Upper deck plating (middle part)	15.0	0.85	15.00	1.20	11.73	0.75	8.72	6.54	10.50	11.73	9.97
2	Настил главной палубы (оконечность)	Upper deck plating (extremity)	8.0	0.75	8.00	1.20	5.10	0.65	7.78	5.05	5.60	5.60	4.76
3	Настил главной палубы (оконечность)	Upper deck plating (extremity)	20.0	0.75	20.00	1.20	14.10	0.65	7.78	5.05	14.00	14.10	11.99
4	Настил главной палубы (оконечность)	Upper deck plating (extremity, between hatches)	12.0	0.75	12.00	1.20	8.10	0.65	7.78	5.05	8.40	8.40	7.14
5	Настил палубы твиндека	Tween deck plating	8.0	0.75	8.00	1.00	5.25	0.65	7.78	5.05	5.60	5.60	4.76
6	Настил палубы бака	Forecastle deck plating	8.0	0.80	8.00	1.20	5.44	0.60	7.78	4.67	5.60	5.60	4.76
7	Настил палубы бака	Forecastle deck plating	10.0	0.80	10.00	1.20	7.04	0.60	7.78	4.67	7.00	7.04	5.98
8	Настил шлюпочной палубы	Poop deck plating	7.0	0.80	7.00	1.20	4.64	0.60	5.94	3.57	4.90	4.90	4.17
9	Стенка продольного комингса	Longitudinal coaming (well)	50.0	0.85	50.00	1.20	41.48				35.00	41.48	35.26

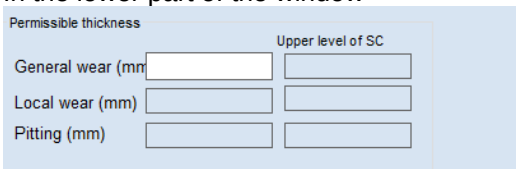


In the middle part of the window (fig.14) there is the section "Location/Note"



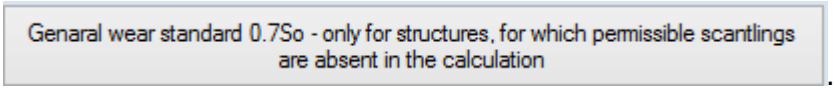
In this section it is recommended to enter information on location of an item on a ship for ease of reference. It is possible also to enter any other information describing relevant item (for the sake of user's convenience).

In the lower part of the window



there are fields for entering of permissible thicknesses. In white fields information on permissible scantlings is entered.

For hull items for which there is no information on permissible wear in the agreed calculation it is allowed (upon agreement with the Register) to click button



.

In this case permissible scantling is calculated according to the formula moSo (refer to para 4.2.6 of Annex 2 to the RS Rules for classification surveys of ships in service).

In general the form drawn up completely is shown on figure 15:

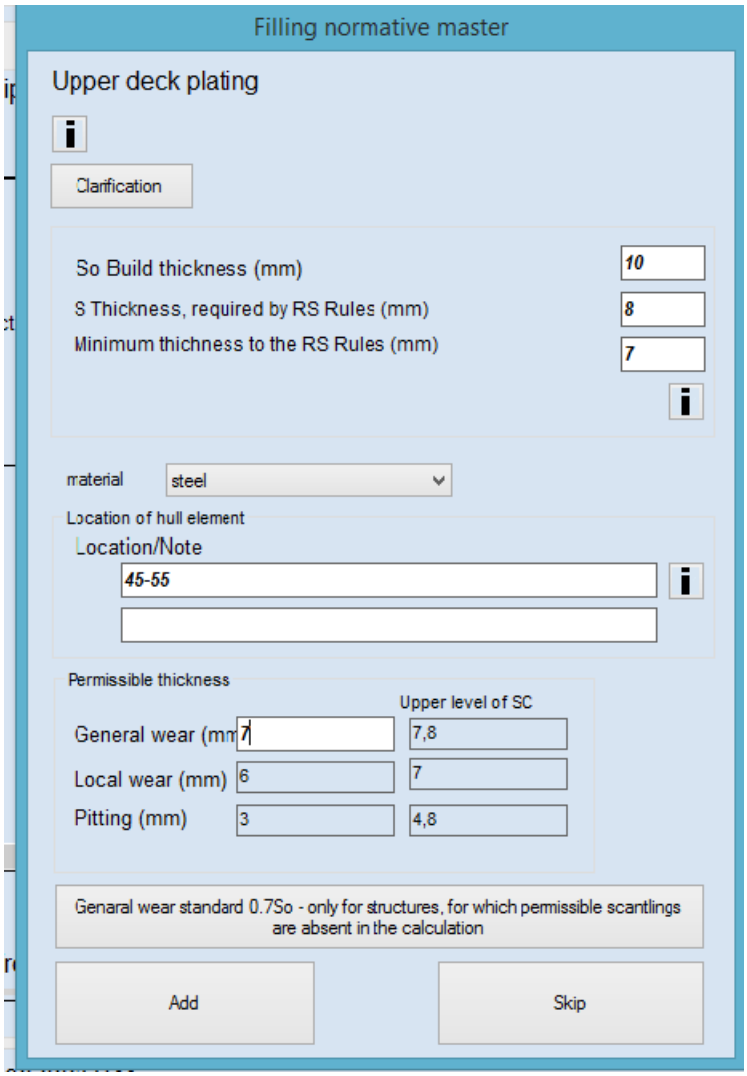


Figure 15 Example of drawing up norm for upper deck plating item

Upon entering of all data to click button "Add".

Button "Skip" is used in cases when it is not necessary to add particular items in the table with norms (when particular item is absent on a ship).

Upon adding of deck item the main window of the table with norms will appear showing item with relevant information entered. The software calculates automatically permissible values for local wear and pitting as well as upper limit for substantial corrosion zone on the basis of three values (So, S and Smin).
Simultaneously prompt box is appeared with question with regard to repeat entering of data for hull structure with different thickness.

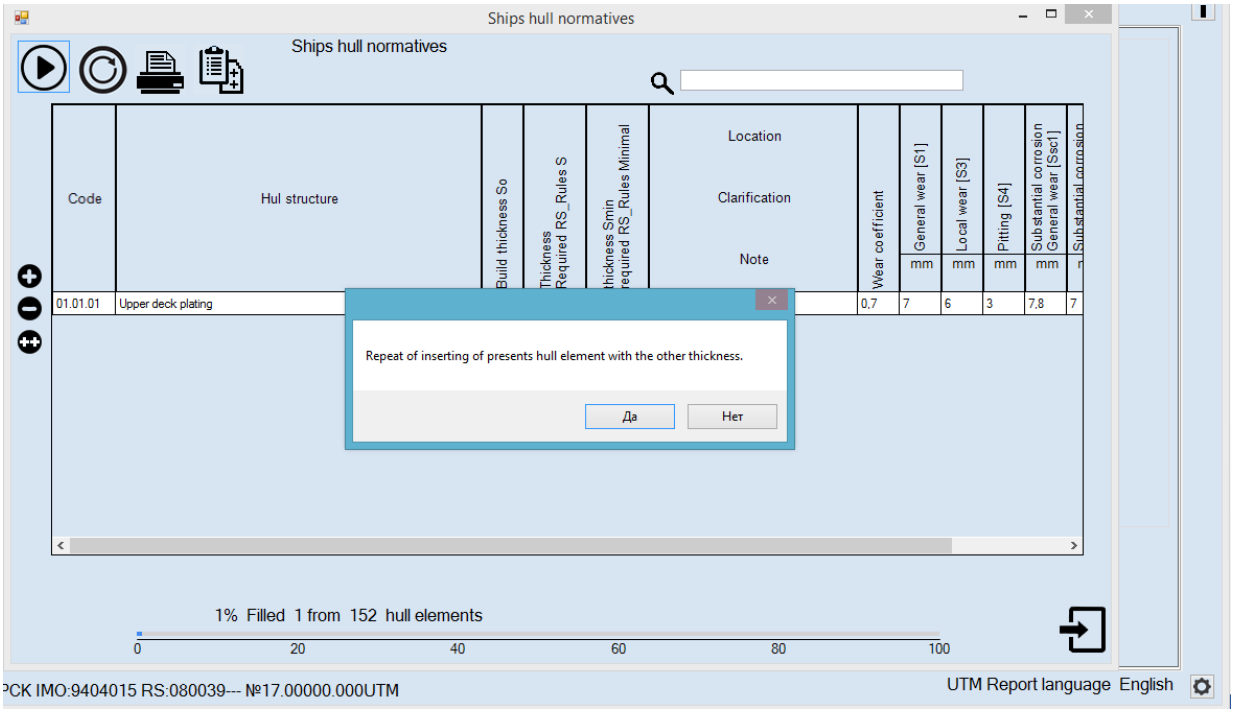
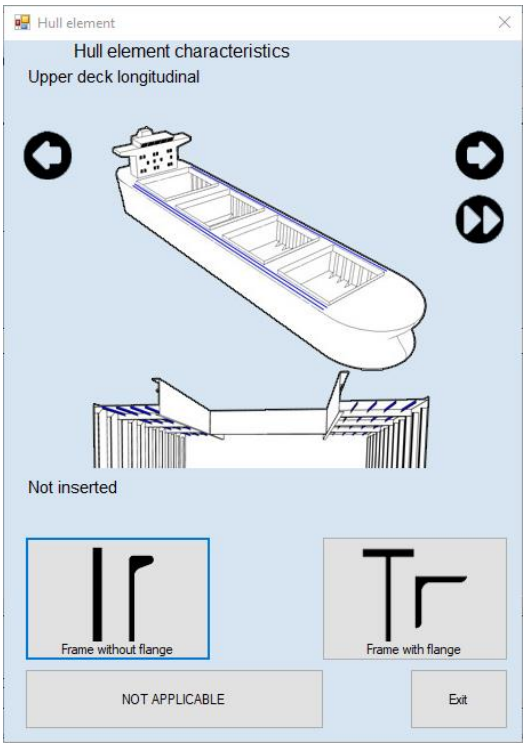


Figure 16. Example of table with norms for one drawn up record in it

Hull items within a group of items may have different original thicknesses (for instance, upper deck plating). To enter the next thickness for upper deck plating it is necessary to choose “Yes” and repeat mentioned above steps.

Upon completion of entering of all thicknesses of deck plating for a particular ship, it is necessary to click “No” in the query window and follow to the next structural member.

Entering of norms for hull items is repeated according to the steps described above.



Creation of NORMATIVE m0.

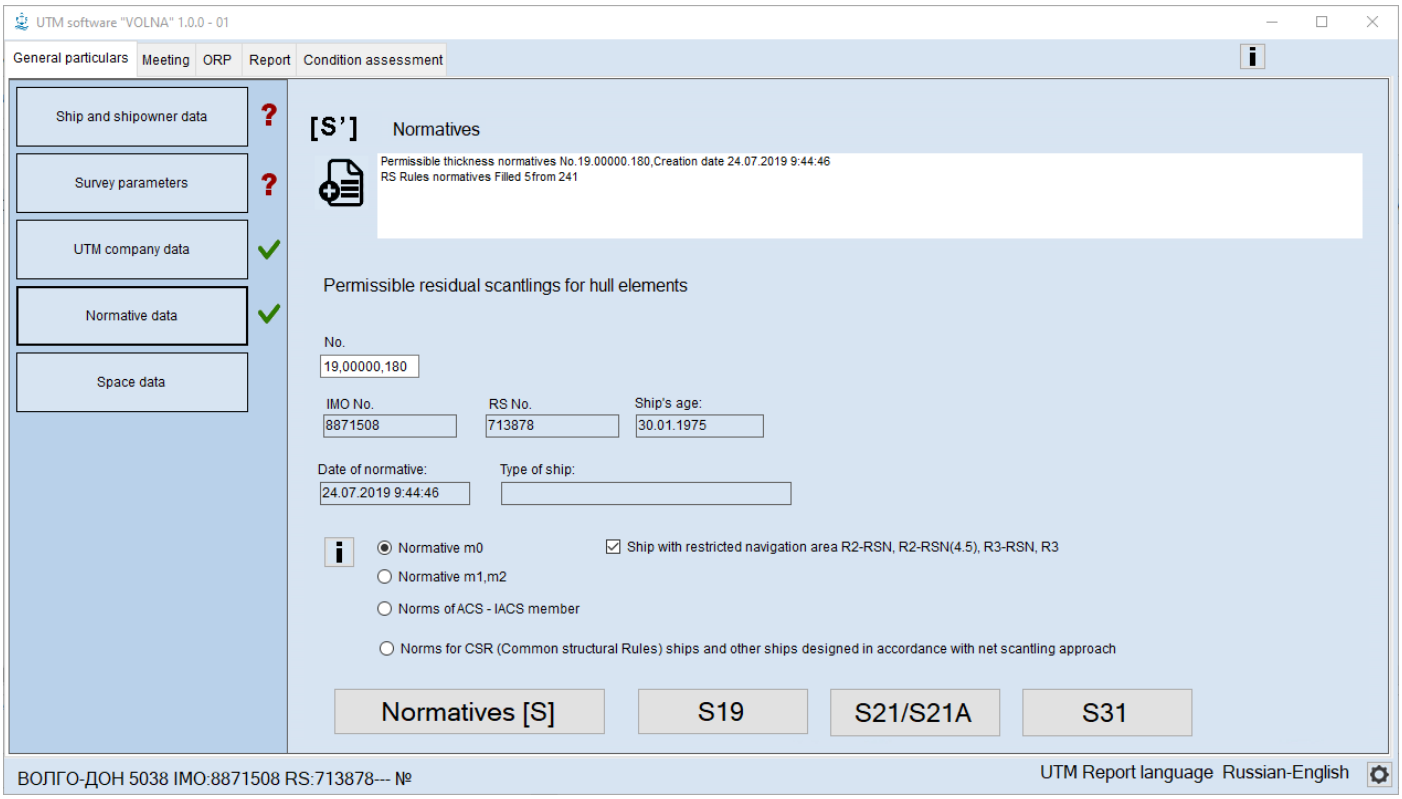


Figure 17. Selection of option “NORMATIVE m0”.

To create norms according mo (refer also to para 4.2.6 of Annex 2 to the RS Rules for classification surveys of ships in service it is necessary to:

1) Choose option "Normative m0". If the ship if of restricted area of navigation – it is necessary to choose this option by clicking on the relevant check-box.

The process of drawing up of these norms is similar to the process described above with regard to norms m1, m2, except the mechanism of entering of data to the tab "Entry of data".

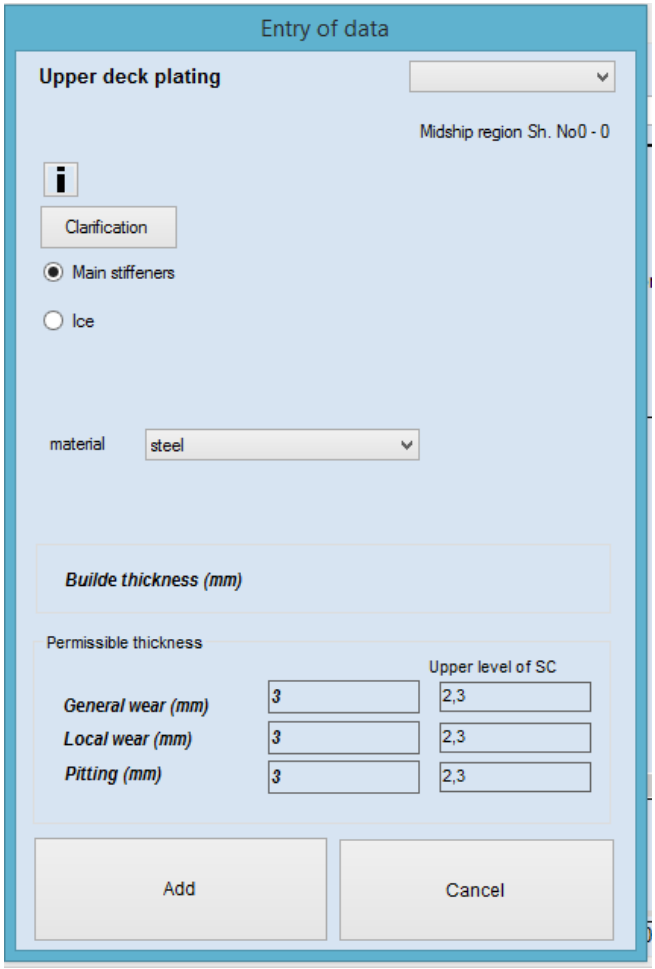
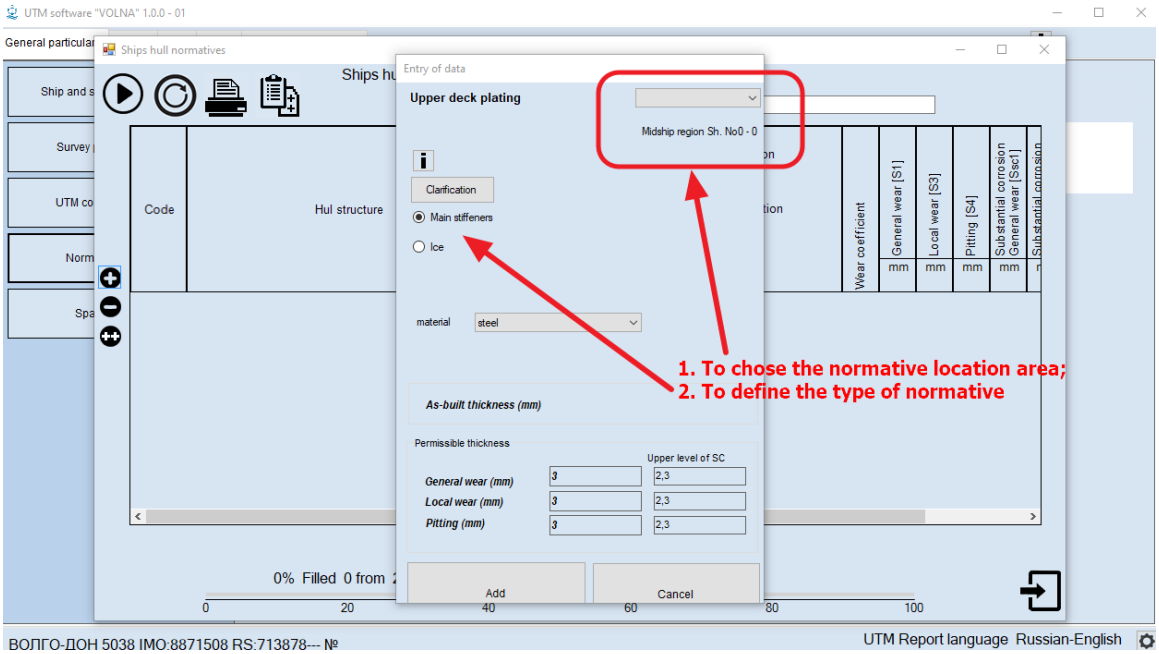


Figure 18. Tab for entering of norms to hull items according to option "NORMATIVE m0"..

2) To enter norms in the tab "Entry of date" (refer to figure below) it is necessary to:
1. choose the area of location of a structure (mid part or stern, stem);
2. to identify the norm type. If structures are located within the ice strengthening area it is necessary to indicate it.
3. to choose material of structure (steel, aluminum alloy, copper);
4. to enter as-built thickness.

Permissible thicknesses on general, local wear and pitting, as well as upper limit of a substantial corrosion zone are calculated automatically in accordance with the RS Rules requirements.



3.2 tab “Meeting”

Tab “Meeting” is intended for the purpose to identify information required to be discussed during the meeting before thickness measurements.

To identify the scope of survey and thickness measurements for a particular ship to click the button

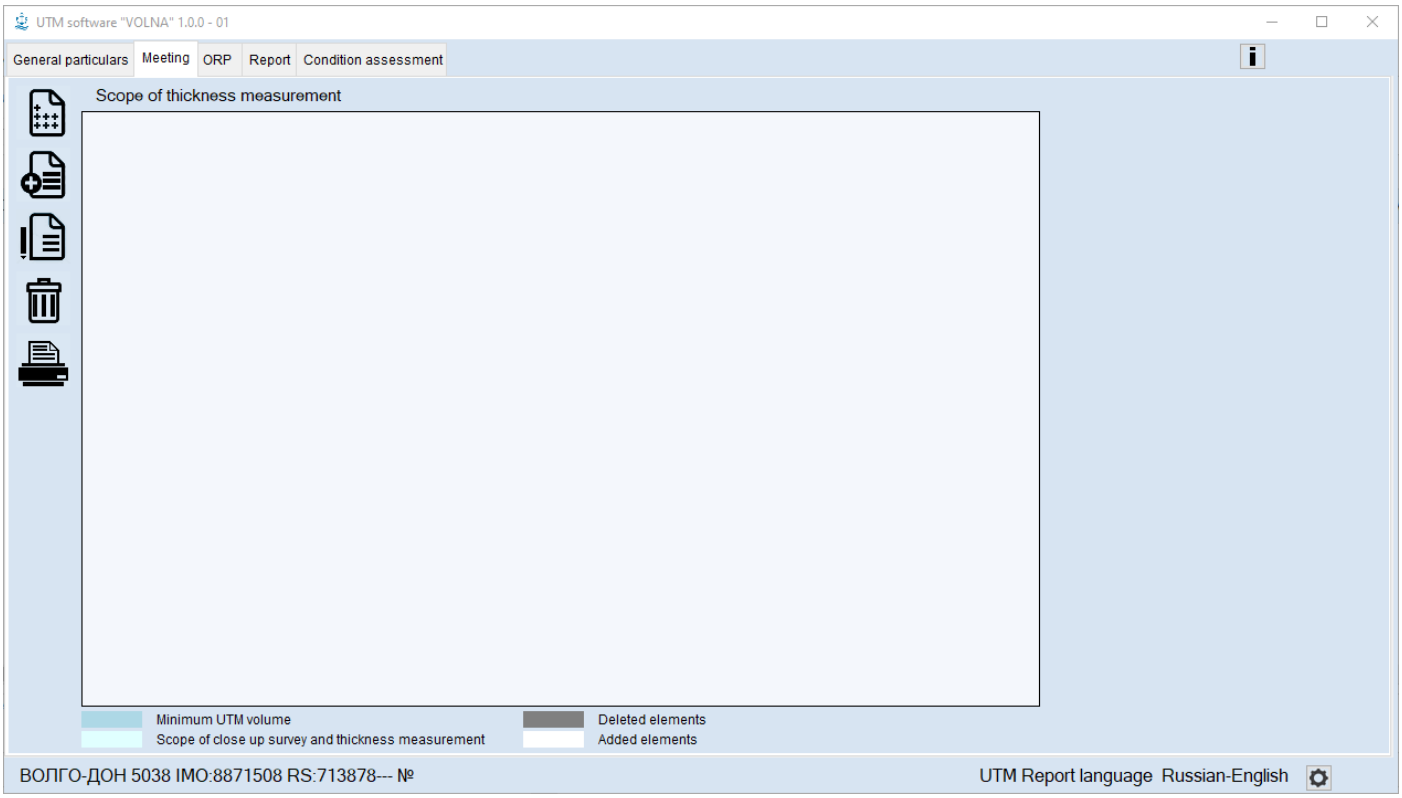
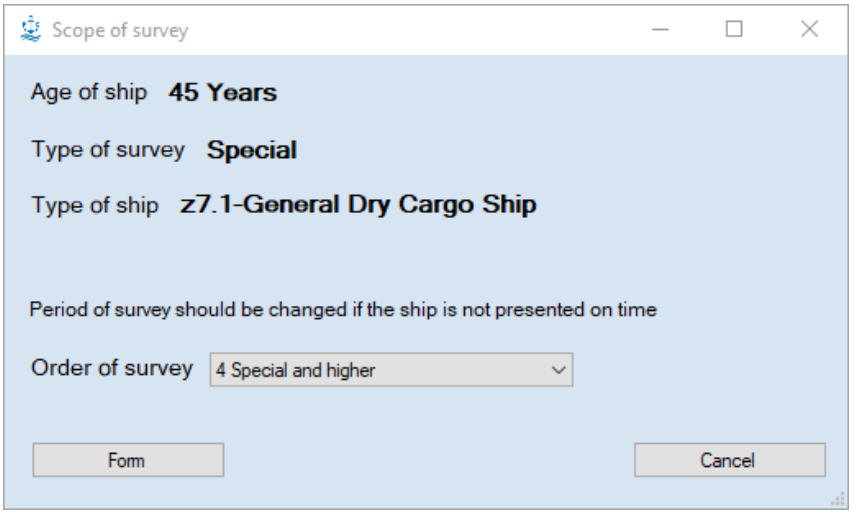


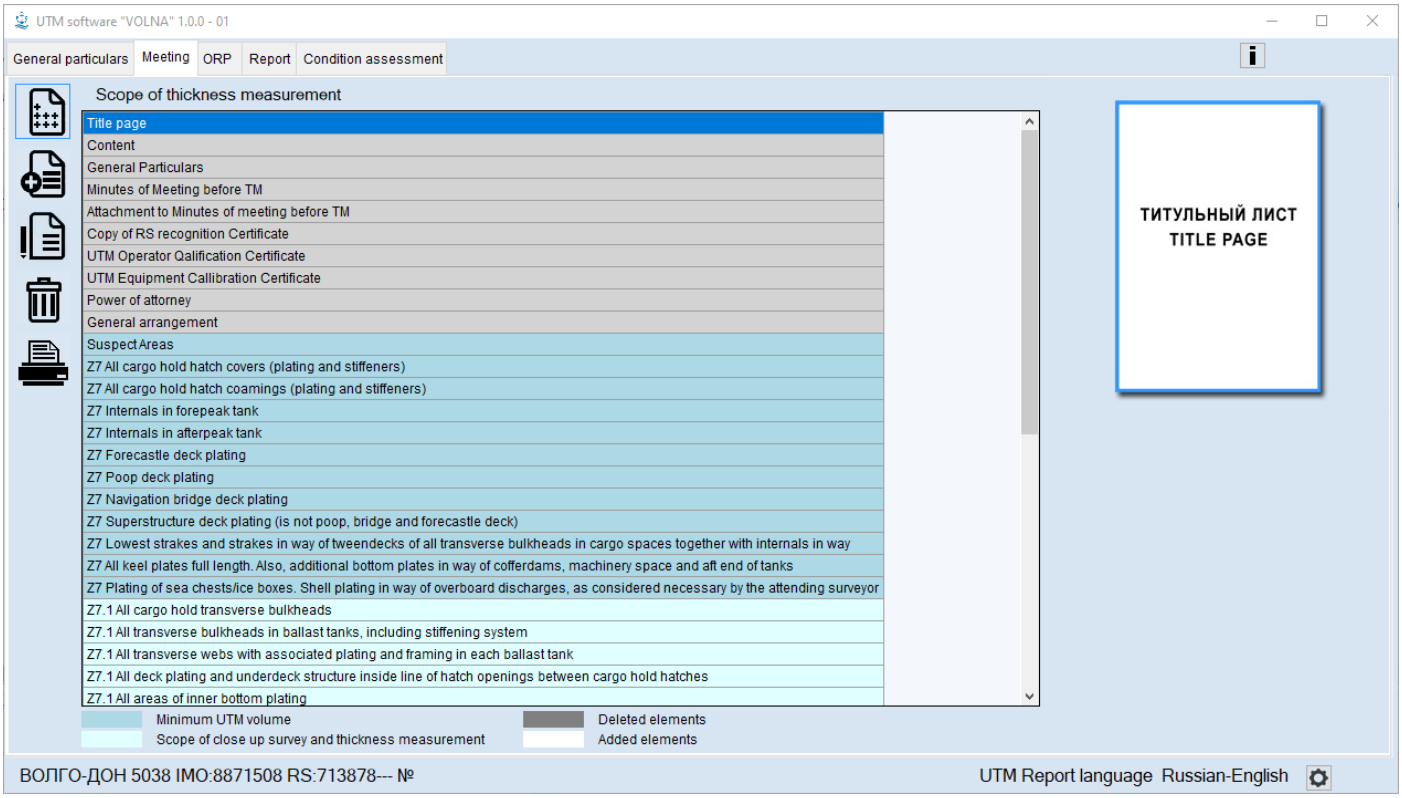
Figure 19 Tab “Meeting”

The scope of survey and TM is generated depending on age of a ship, type of survey and ship in accordance with the Rules foe classification surveys of ships in service.

Before forming of the items list the window will appear containing all of the parameters on the basis of which the list is generated. The period of survey may be changed, because the ship may be submitted not in the prescribed terms.



Upon clicking the button “Form” the minimum scope of survey and thickness measurements will appear.

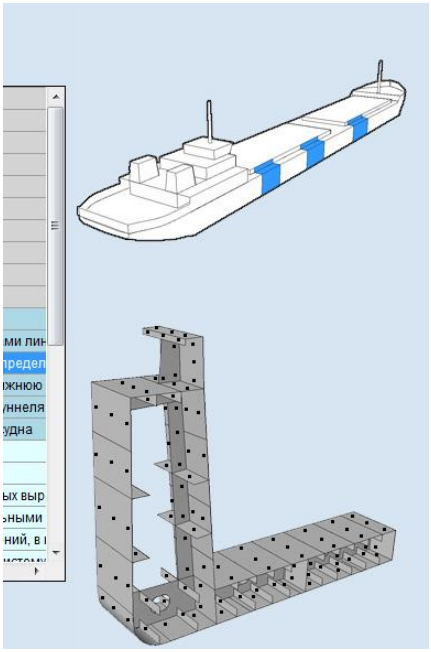


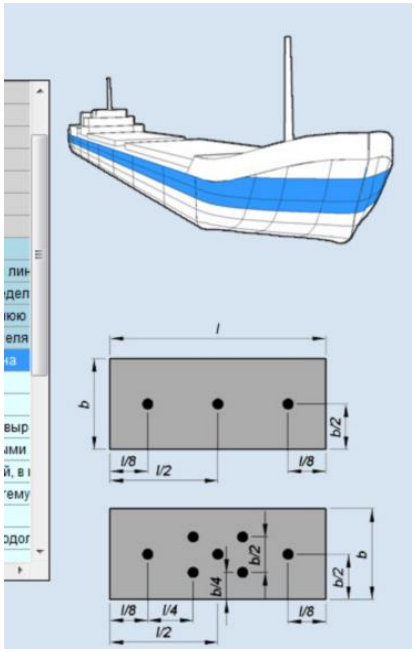
In this list first paras describe main documents, which shall be attached to the report (first page, content general particulars etc.). Then there are listed structures which shall be measured at the current survey. These paras are highlighted with color:

- minimum scope of TM

- scope of close-up survey

When transferring from para to para in the right part of the screen pictorial clues will appear subject to this particular structure and targeting positions – places where measurements to be done. By double clicking on pictorial clues – the text window will appear with descriptions of the item.





The software allows to add items to the list by clicking the button .

In the window “Add new item” it is possible to enter additional hull items in the left part of the window, in the right part – typical items of ta particular ship.

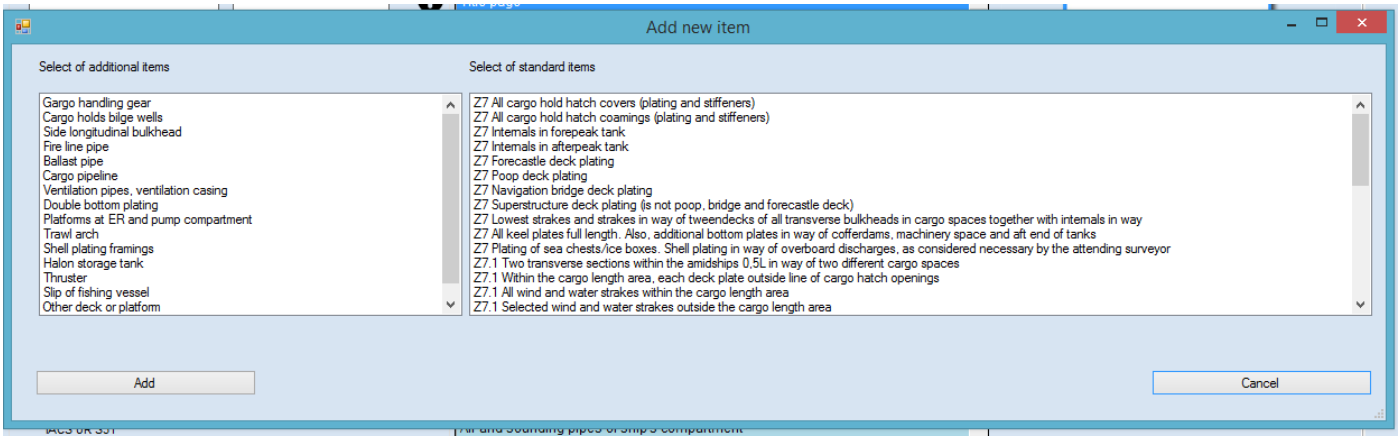


Figure 22 How to add new item

Upon choosing of item and clicking of button “Add” new item appears in the general list of items for TM (fig.23).

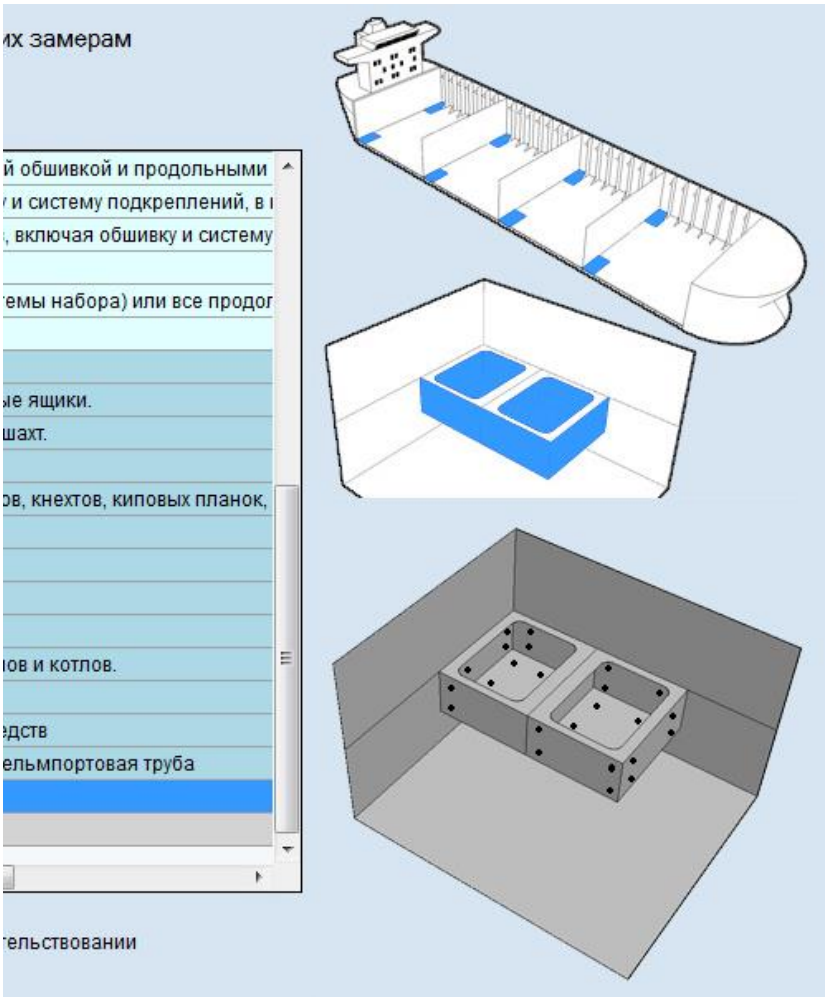


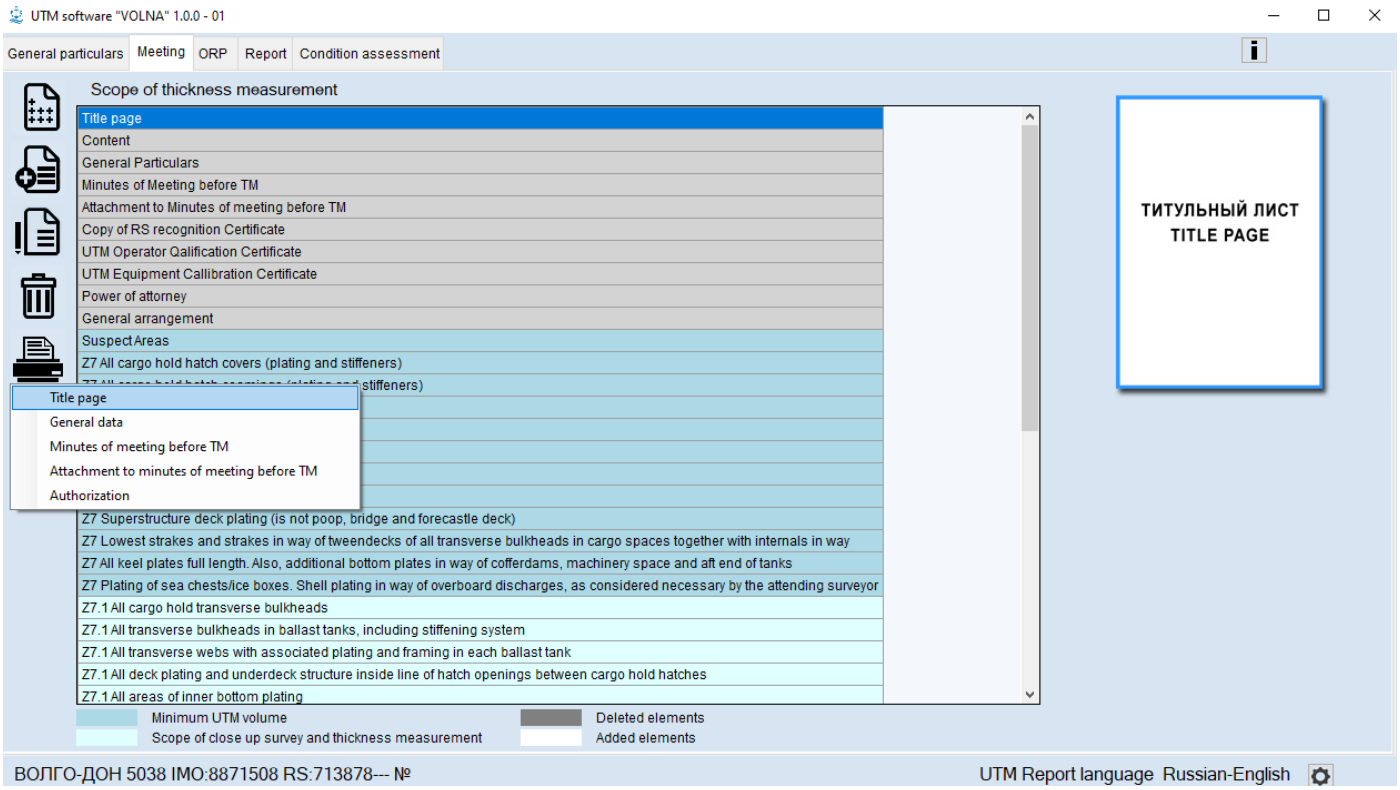
Figure 23 How to add new item

To delete item which is not applicable to a particular ship – to click on button .
A user with the rights of a TM operator cannot delete items in the “Meeting” tab.

“Meeting”
In this case before deletion the query box will appear when it is necessary to explain action for deletion of item from the list.
When drawing up the tab “Meeting” it is possible to form and print out the Minutes of Meeting and relevant attachment. Also there is a possibility to print out the Cover page, General particulars and other pages which have to be originally signed and stamped and than scanned and added to the TM report (see further).

To print out of above mentioned document to click icon .

In the appeared list to choose relevant document to be printed.



At this stage actions of RS surveyor are completed.

RS surveyor closes the window by clicking the button (and the second popup window will appear again – refer to fig.24).
In the following window (fig.24) it is necessary to export file developed by RS surveyor or TM operator under supervision of RS surveyor to XML file and shift it to TM operator by any available means for further development of TM report.

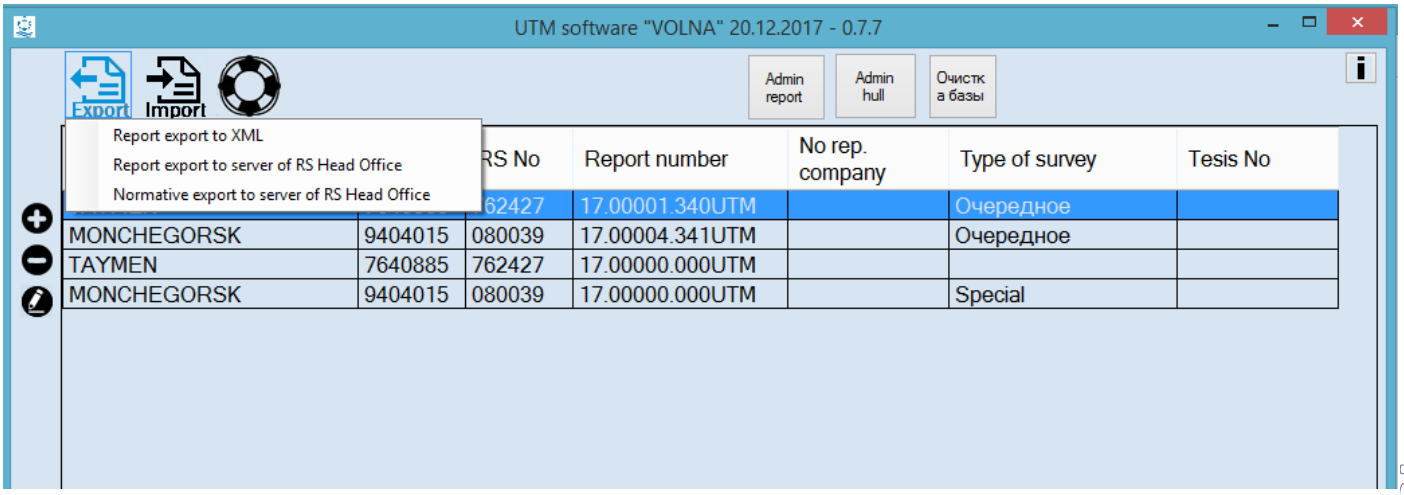


Figure 24. Second popup window

3.3 Tab “Report”

This tab is intended to draw up information upon the results of thickness measurements and entering of defects parameters.
The window is divided into two parts.
In the left part of the screen there is a tree list of hull item required to be measured. On the right part of the screen there are tables and other information required for drawing up of tables.

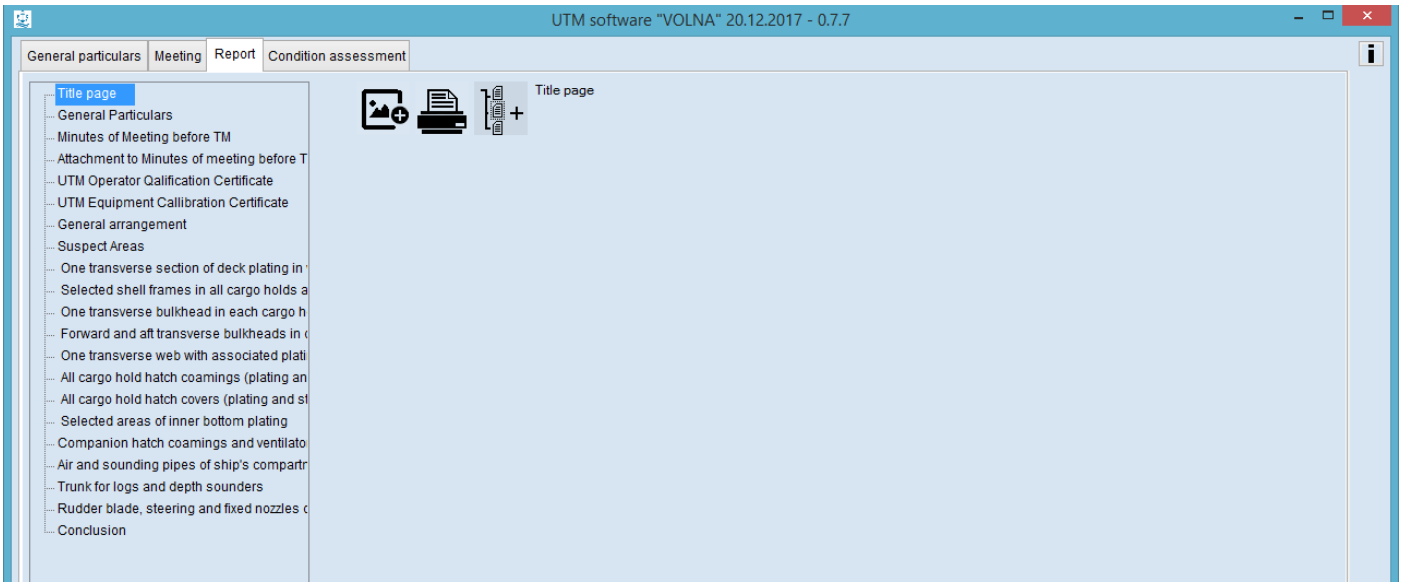


Figure 25. Tab “Report”

The tree is provided for quick and comfort navigation in the report. In each branch of the tree it is possible to attach one or more tables as well as sketches, drawings and other documents.
First ten items of the tree have housekeeping issue meaning. It is necessary to attach relevant scanned copies in these items. These attached documents will be introduced in TM report.
To attach document to the branch of the tree it is necessary to choose exact branch (by clicking on the mouse left button), in the right part the following icon will appear - .
By clicking of this icon it is possible to attach electronic document in jpg, bmp or pdf format.

The next items in the tree – required scope of thickness measurements. By clicking on a branch in the right part the field will appear where it is necessary to choose one or more applicable tables (some of items, for instance upper deck between cargo hold hatches, may be registered in the form RTM1.2 or RTM1.4).

There is a prompt message below the window concerning selection of tables (assumed points of measurements on item) – refer to fig.26.

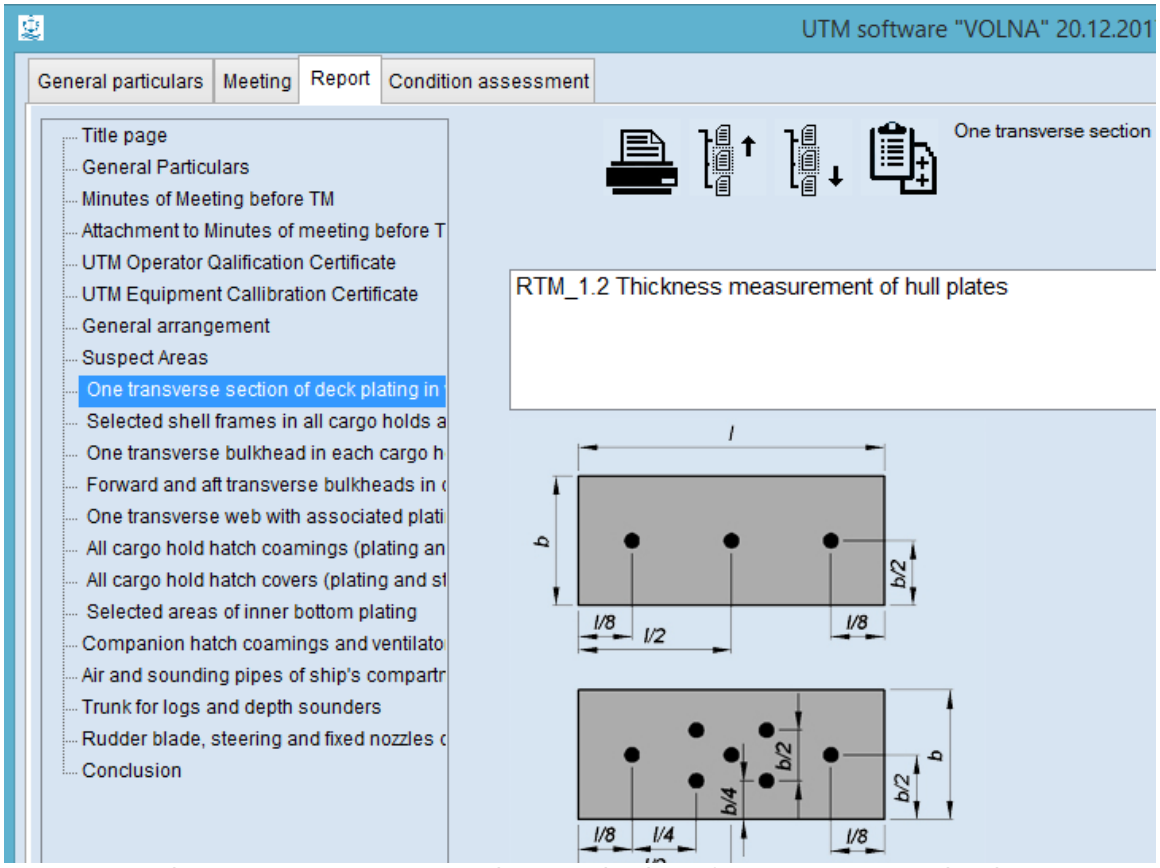


Figure 26. Prompt message (assumed points of measurements on item)

By clicking on the number of the TM form (highlighted in blue in the figure) new prompt message appears containing explanations to the table.

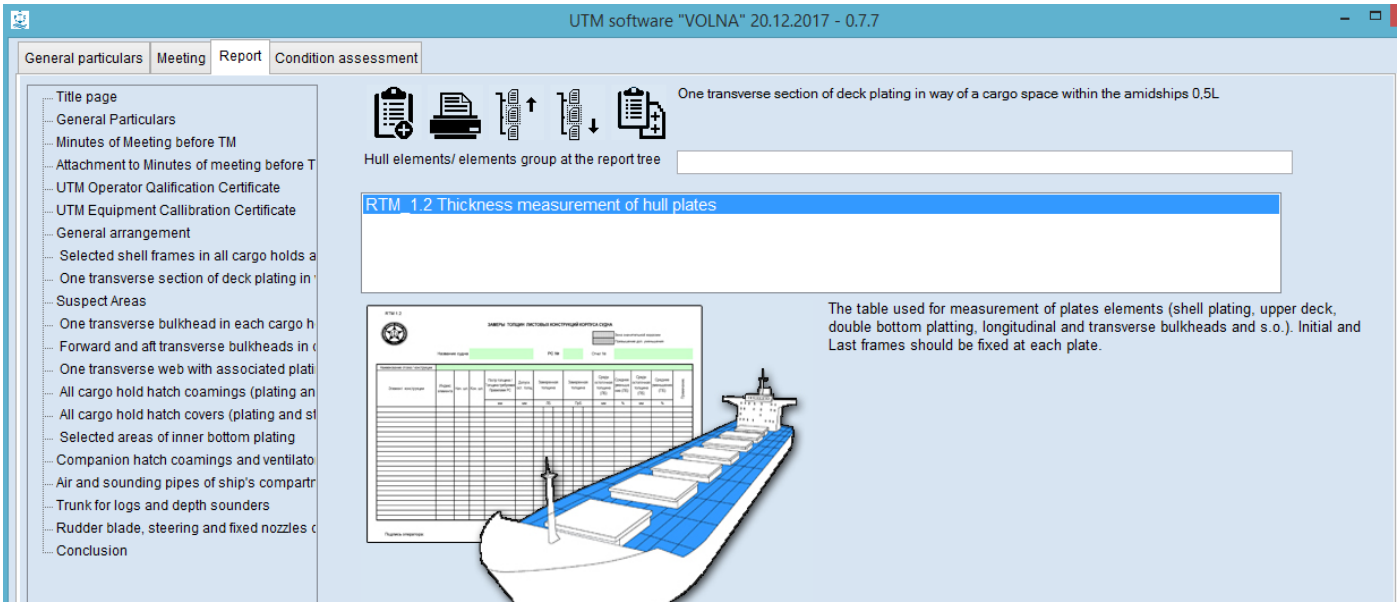
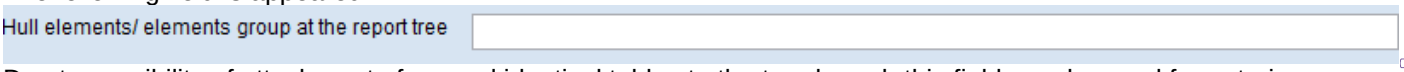


Figure 27. Selection of TM reporting form

The following icon for drawing up of the tabular form appears

The following field is appeared



Due to possibility of attachment of several identical tables to the tree branch this field may be used for entering explanations to each table. It means that upon completion of creation of the table new branch (item) will be added to

the tree with a name of the table. Comment added in this field will be shown in the name of the created item (refer to fig.28).

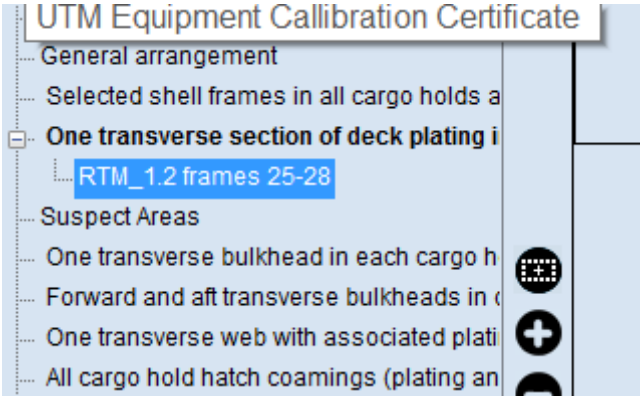


Figure 28. Addition of a new item

Upon generation of the table the screen will be as follows (refer to fig.29):

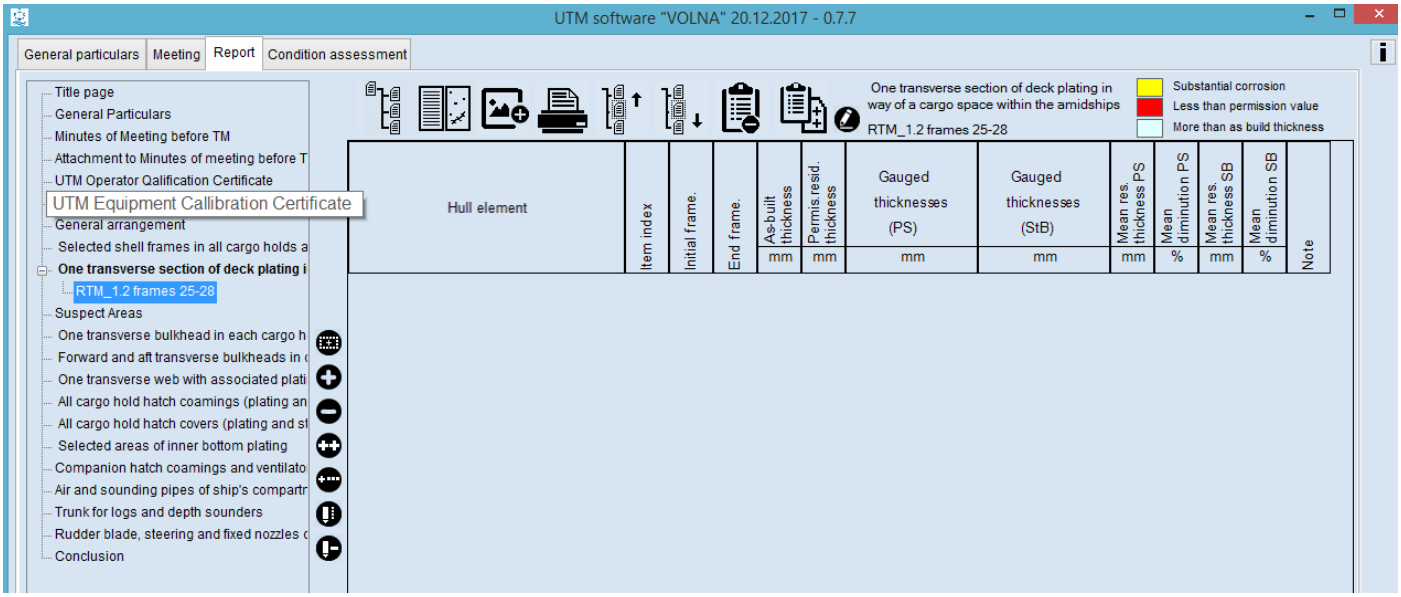
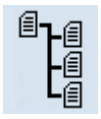


Figure 29. Example of working field (table area)

The table area is located in the right part of the screen (right from the tree).

In the upper part (above the table) there is a navigation menu for TM report and table view managing.
In the left part of the table there is a navigation menu for the table lines managing.
Upper menu icons designation:

 - to hide the tree, i.e. to fit the table full screen (for the suitability at working with one table).

- to post table and sketch next to the screen (for the suitability of transferring of point to sketches).

- to attach one or more figures to the table.

- icon "Print out" with the list of possible options of printing out.

- to delete the table from the tree.

- copying of the table in the tree branch.

- to enter note to the tree branch (refer to para 3 above).

Designation of icons on the left menu:

- to add new line in the table;

- to delete table line/lines selected;

- to copy selected table line (with as-built and permissible thicknesses);

- to add line to the item of measured structure (is used in case when it is necessary to increase the number of measurements, for instance for substantial corrosion zones).

- to enter measurements on sketches;

- to delete connection between table line and sketch. (For more information – refer to Measurements on sketches).

So the table is created. To add the line to the table it is necessary to click the button .

The following window (refer to figure 30) appears in which the information on hull items will be presented together with as-built and permissible thicknesses applicable to this branch.
So the software offers to add a hull item from the hull items database for a current ship to the table line.

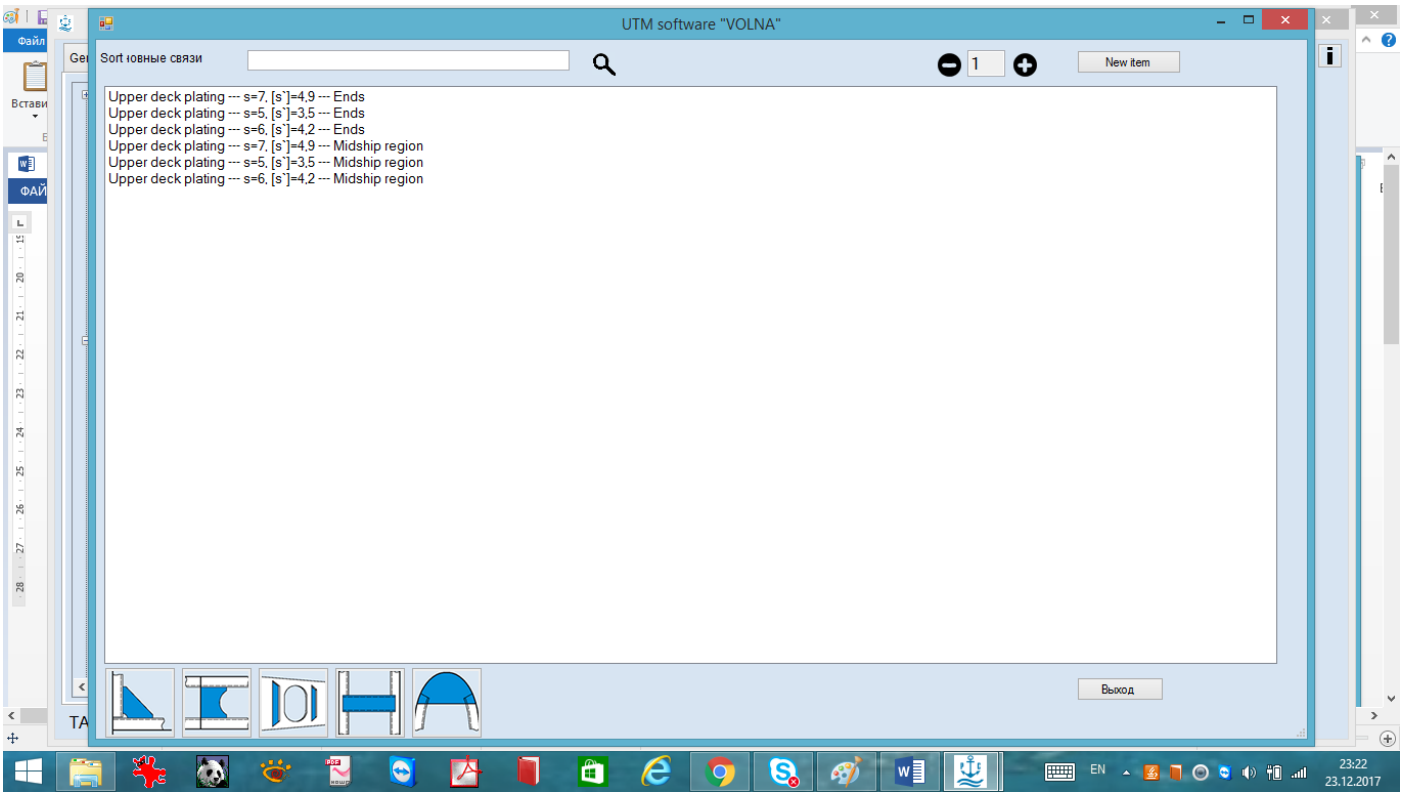


Figure 30 Window with information on hull items (from the file with wear limits)

By double clicking on the relevant item is selected from the list. For huge number of items in the branch (transverse sections etc.) the searching mechanism is provided.
New line will appear in the table with preliminary entered data such as:
- hull element;
- as-built thickness;
- permissible thickness.

Hull element	Item index	Initial frame.	End frame.	As-built thickness mm	Permis.resid. thickness mm	Gauged thicknesses (PS) mm			Gauged thicknesses (StB) mm			Mean res. thickness PS mm	Mean diminution PS %	Mean res. thickness SB mm	Mean diminution SB %	Note
Upper deck plating				7,0	4,9											
Upper deck plating	ф1			7,0	4,9	5,0	5,0	5,0	5,0	5,0	5,0	5,5	21,4	5,5	21,4	
						5,0	6,0	7,0	5,0	6,0	7,0					
Upper deck plating				7,0	4,9	4,0	5,0	6,0	7,0	8,0	9,0	5,0	28,6	8,0	0,0	

Figure 31. Table area for entering measurements data

In this table shown on fig.31 it is necessary to identify item index, initial and end frames and gauged thicknesses
Mean residual thickness (mm) and mean diminution (%) are calculated automatically.
The software gives possibility to enter data into the table without mouse, i.e. moving from cell to cell by clicking on the button “Enter” on a computer keyboard.

To copy the record of the line – move to the record to be copied and click to the record and then to the icon in the vertical menu (refer to fig.32). Then draw up empty fields.

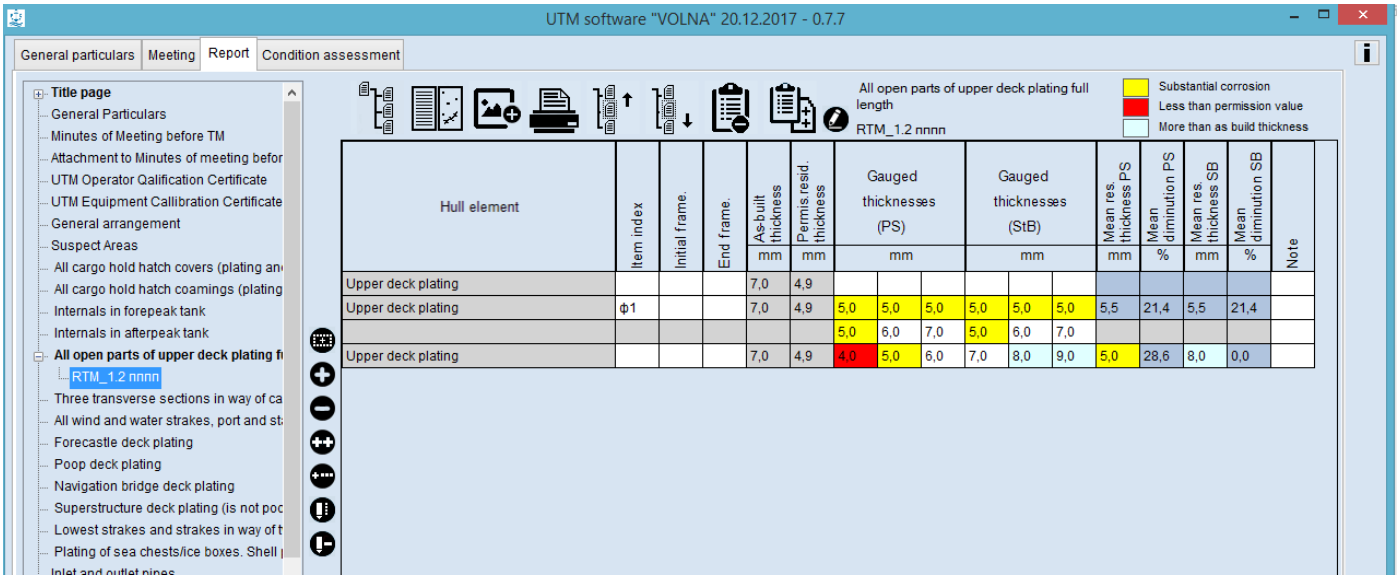


Figure 32. Making a copy of record in table area

If the value of measurement is below the permissible limit the cell is highlighted in red color.

If the value of measurement is within the substantial corrosion zone limits than the prompt message will appear with attention to enter additional measurements. The cell will be highlighted in yellow color (refer to fig.33).

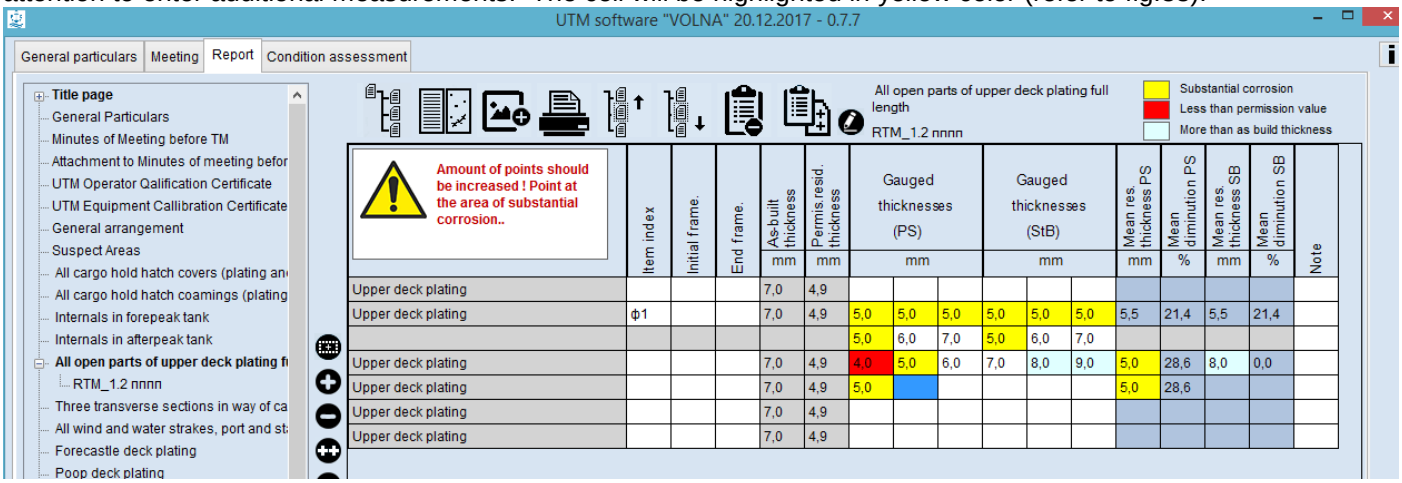


Figure 33. Indication of substantial corrosion zones (yellow color)

To increase the number of measurements it is necessary:

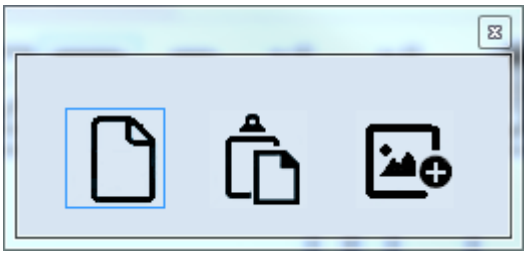
- to move to the line (record) needs to be extended, click on it and click the icon in the vertical menu

Under the line new cells will appear which are to be drawn up.

3.4 Plotting of measurements on a sketch

Measurements registered in the table are to be transferred to the sketch.
To transfer measurements to the sketch it is necessary:

1. To attach the figure by clicking on the icon . In the horizontal menu.



In the appeared window it is possible to attach the figure. Thera three option to attach the figure:

- to create empty figure (the software contains image editor for creation of simple figures and schemes);
- to attach figure from clipboard;
- to attach figure created in JPG, BMP or PDF format.

In the items tree the sketch branch appears under the table (refer to fig. 34).

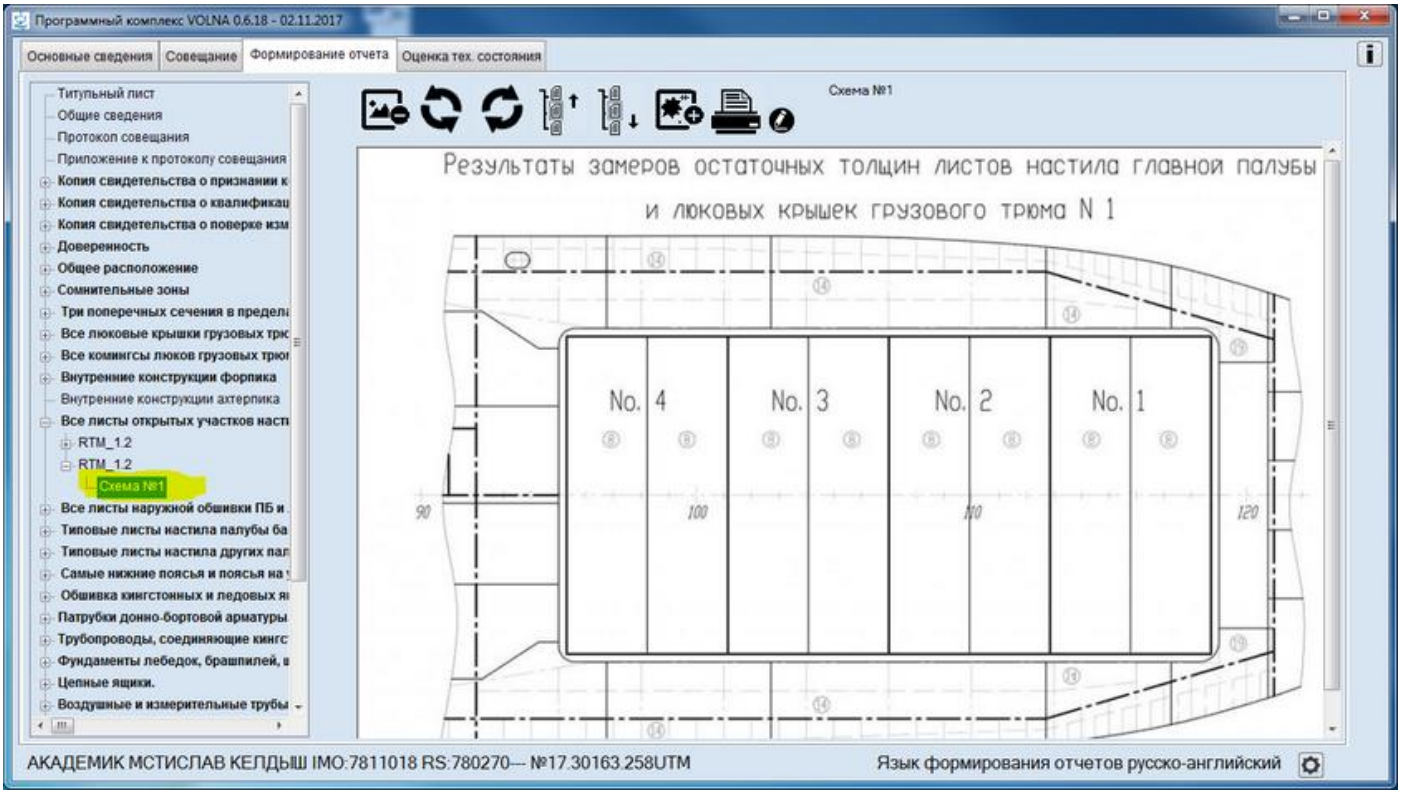


Figure 34. Creation of a sketch

Then to move to the record of form with measurements to be shown on the sketch, click on it and then the icon .

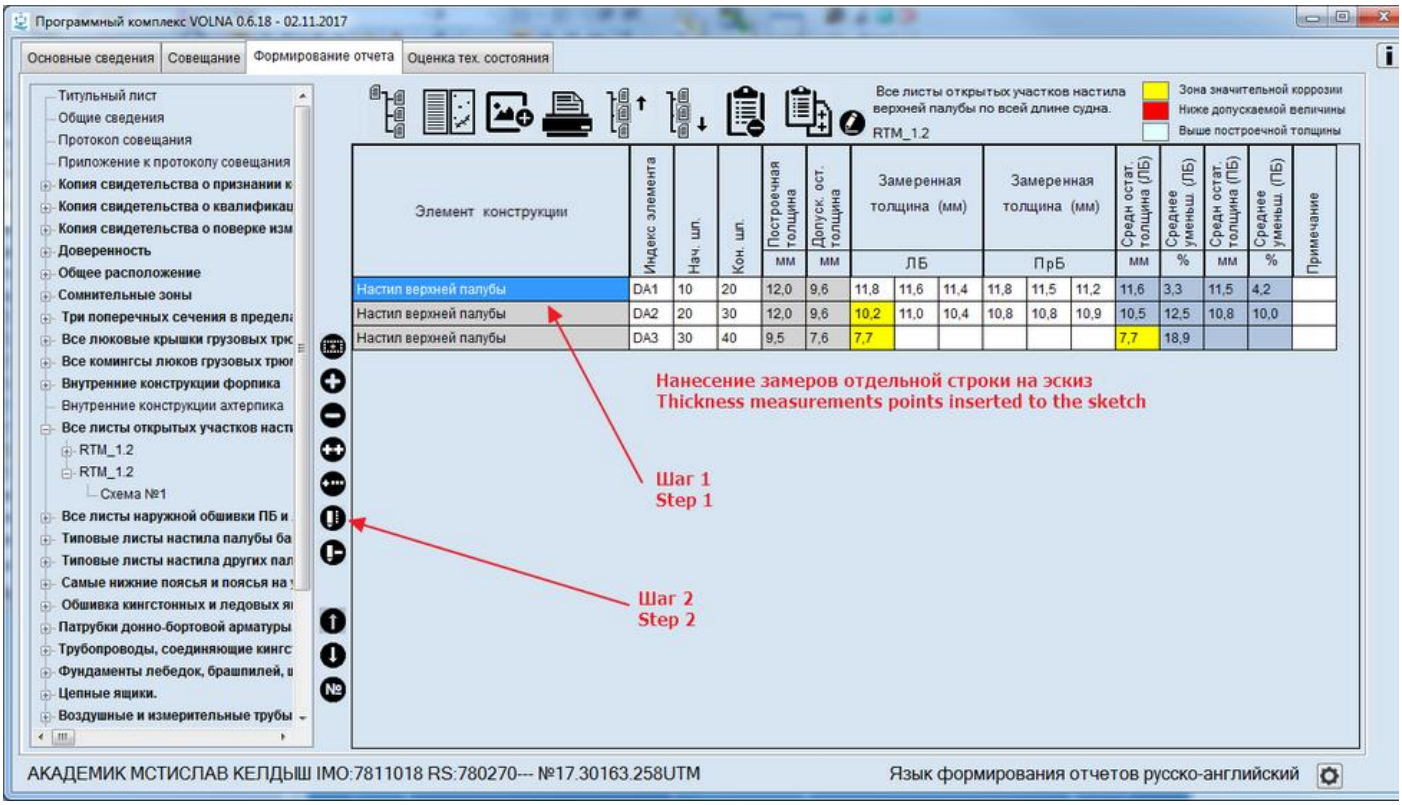


Figure 35. Steps of actions regarding attachment of sketch

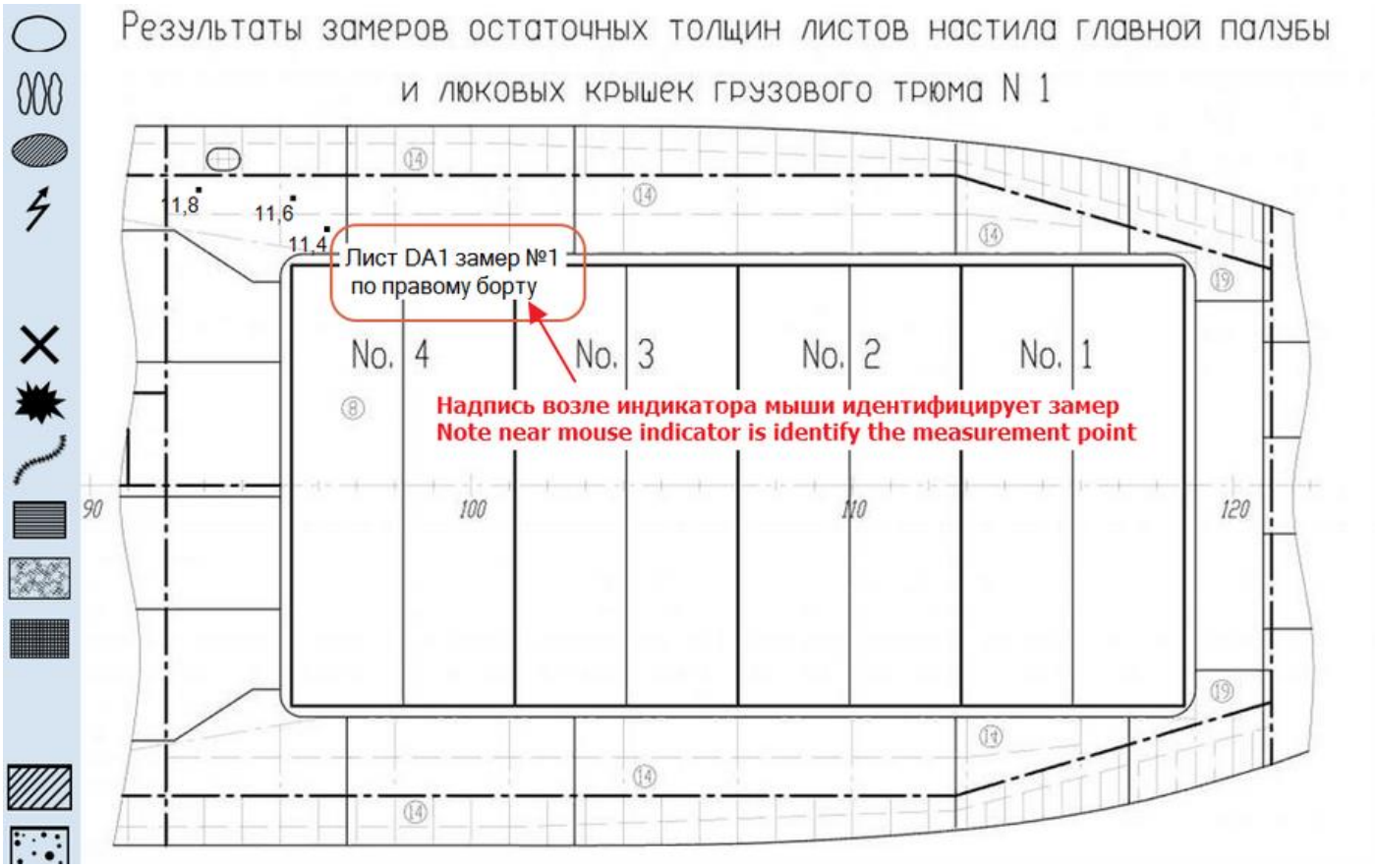


Figure 36. Indication of measurements on a sketch

Then to indicate measurements on the sketch according to the instruction of the popup window near the mouse indicator.

To exit the window to click the icon .

To move to the next record and click the icon .

To indicate the next group of measurements.

Thus it is necessary to indicate measurements on the sketches from the tables.

Upon completion of registration of all of required measurements in the tables and sketches, TM operator shall create file containing TM report and submit it to RS surveyor using applicable means.
To do it it is necessary to close the window with table. Then in the second popup window to click the button "Export" (export to XML format). To save the file and submit it to RS surveyor using applicable means.

3.5 Assessment of technical condition

Upon receipt of electronic file from TM operator RS surveyor carrying out survey and supervising TM, RS surveyor is to carry out verification of the submitted TM report and assessment of technical condition of ship's items.
To perform it an electronic file is to be downloaded in to the software – refer to section for import of a report to XML format in the second popup window.

Then RS surveyor is to verify TM report. Further It is recommended to move to the tab "Condition assessment" (fig.37).
For more information it is necessary to follow the instructions in part II of the User's Manual "Ship's hull technical condition assessment".

PART III Instructions for drawing up of reporting forms

1 Instruction for drawing of TM tabular forms

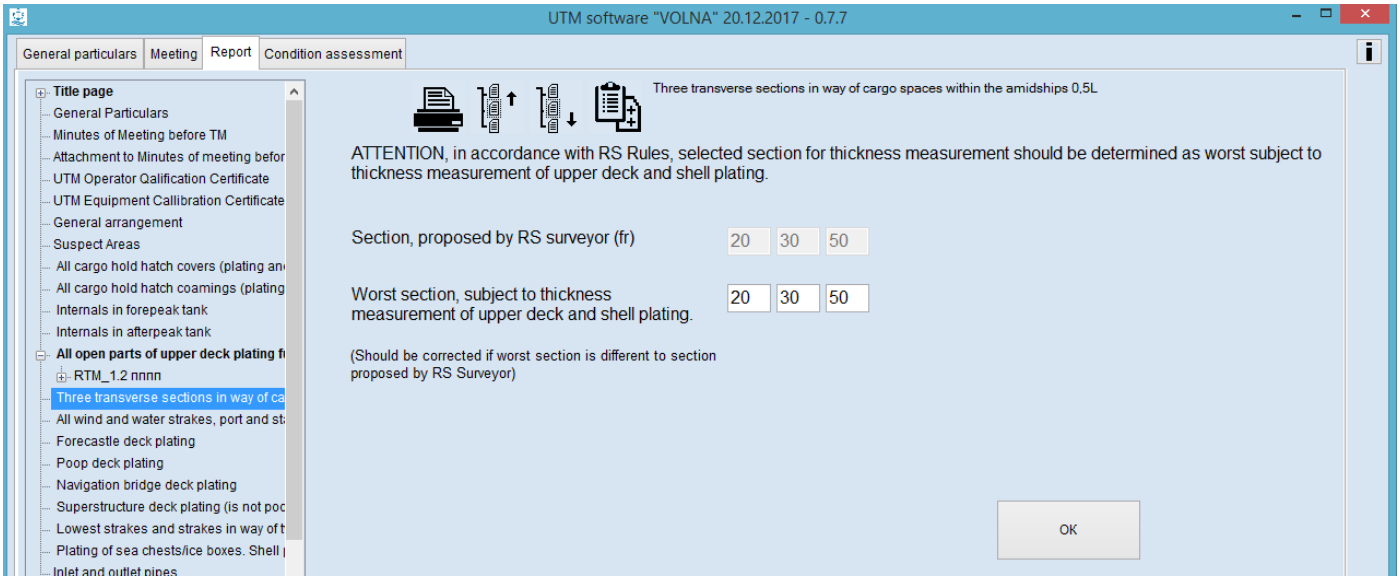
1.1 Thickness measurement forms according to RS Rules (mandatory)

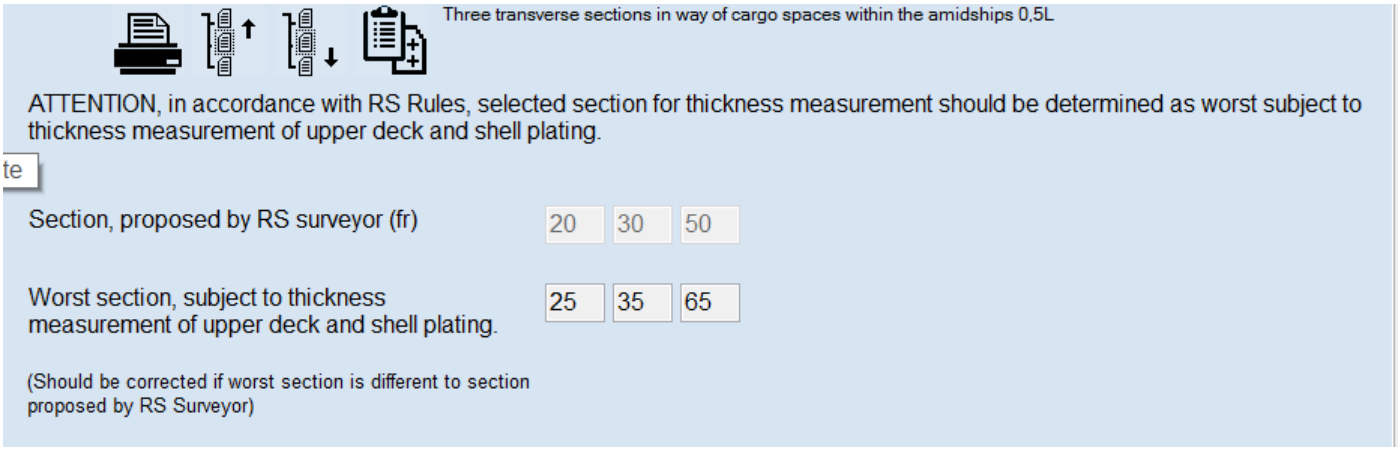
RTM-1.1

The form RTM-1.1 is intended for the drawing up of measurements of items in ship's hull transverse section

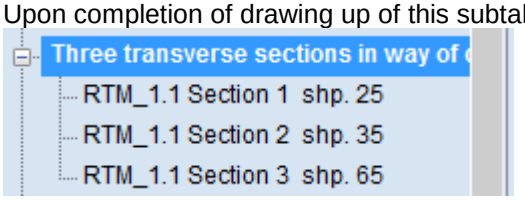
In the tab "Report" section with items tree it is necessary to find and click on item containing words "Transverse sections", then in the following window to clarify the location of sections on the basis of the results of upper deck and bottom plating measurements and click on "OK".
When filling in this table it is necessary to take into account the description of the transverse section provided in the Rules for the classification surveys of ships in service:
A Transverse Section includes all longitudinal members such as plating, longitudinals and girders at the deck, sides, bottom, inner bottom, and longitudinal bulkhead. For transversely framed vessels, a transverse section includes adjacent frames and their end connections in way of transverse sections.
The location of the section is to be chosen in accordance with the provisions of Annex 2 of the Rules for classification surveys of ships in service (for instance, 3.2.2.1, 3.3.2.1 etc. of the Annex 2 to the RCSSS).

In the popup window "Report" in list of items it is necessary to find and click on the item containing words "Transverse sections" and then in the nest window to clarify the location of the transverse sections on the basis of the results of measurements of the upper deck plating and bottom plating and click "Ok".

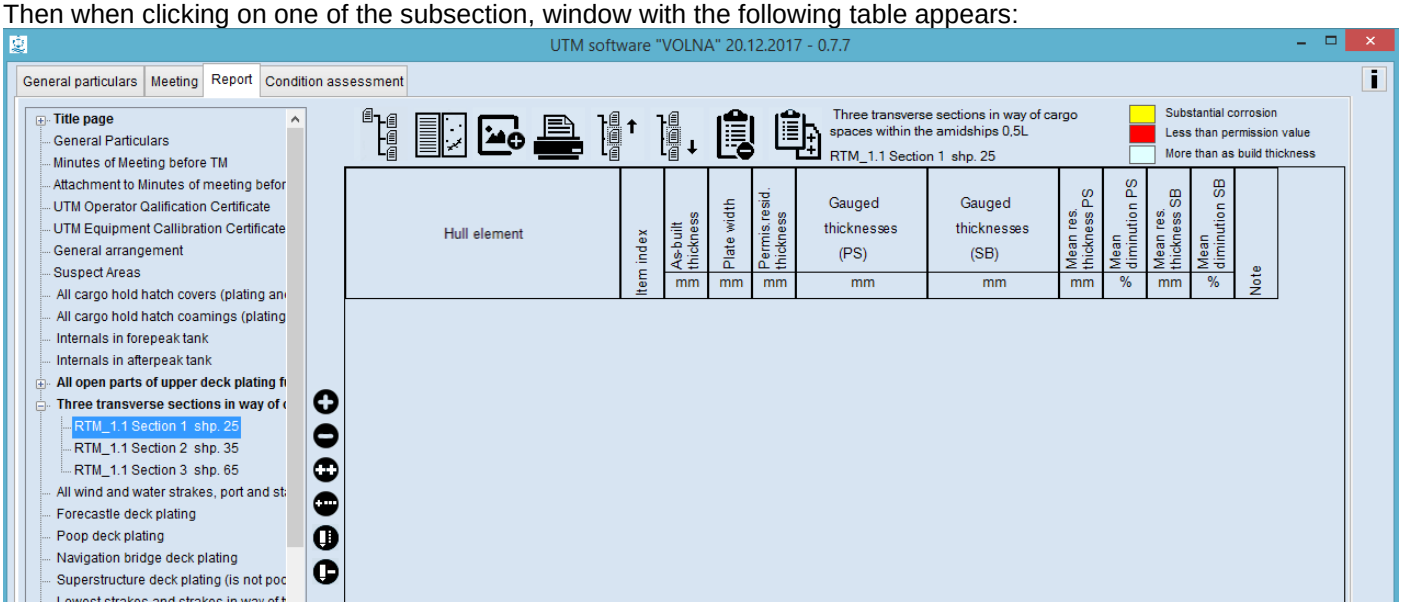




Upon completion of drawing up of this subtab new branches will be added to the tree:

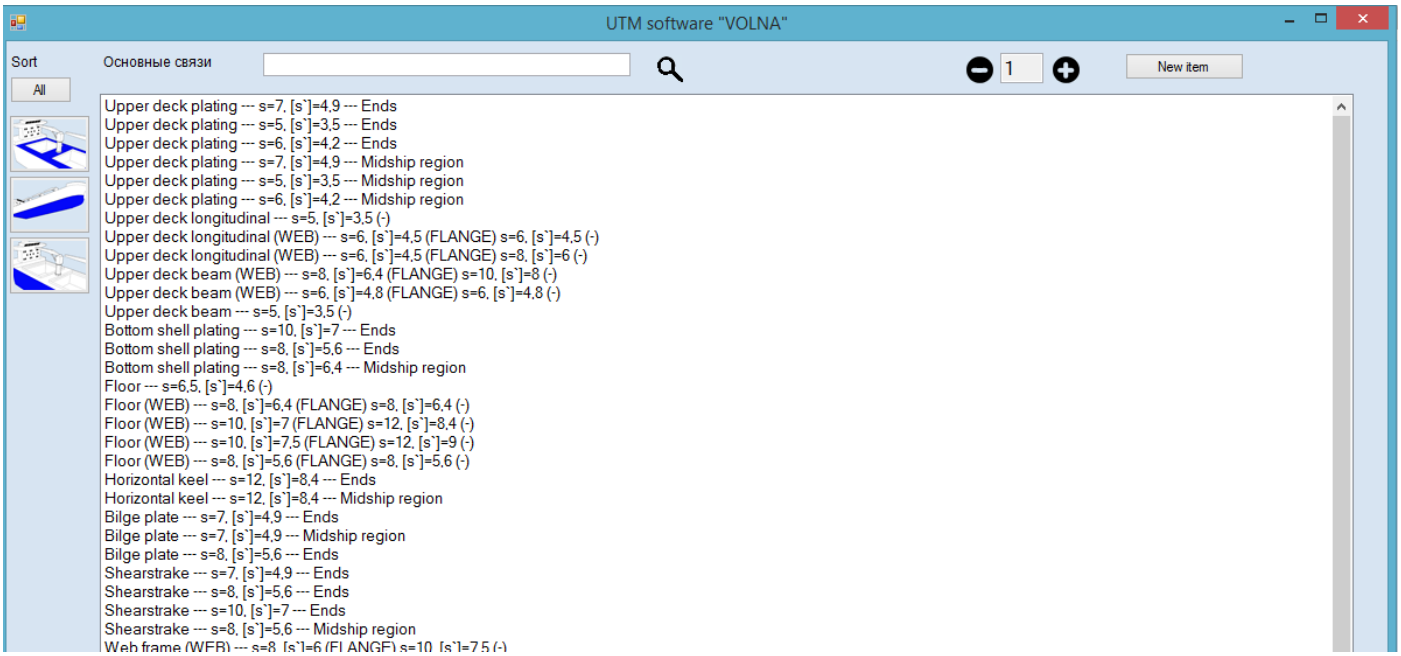


Then when clicking on one of the subsection, window with the following table appears:



By clicking on icons in the vertical menu it is necessary to choose appropriate item from the appeared window. Items related to a transverse section are listed in the table. To find necessary item it is possible to search it using

.



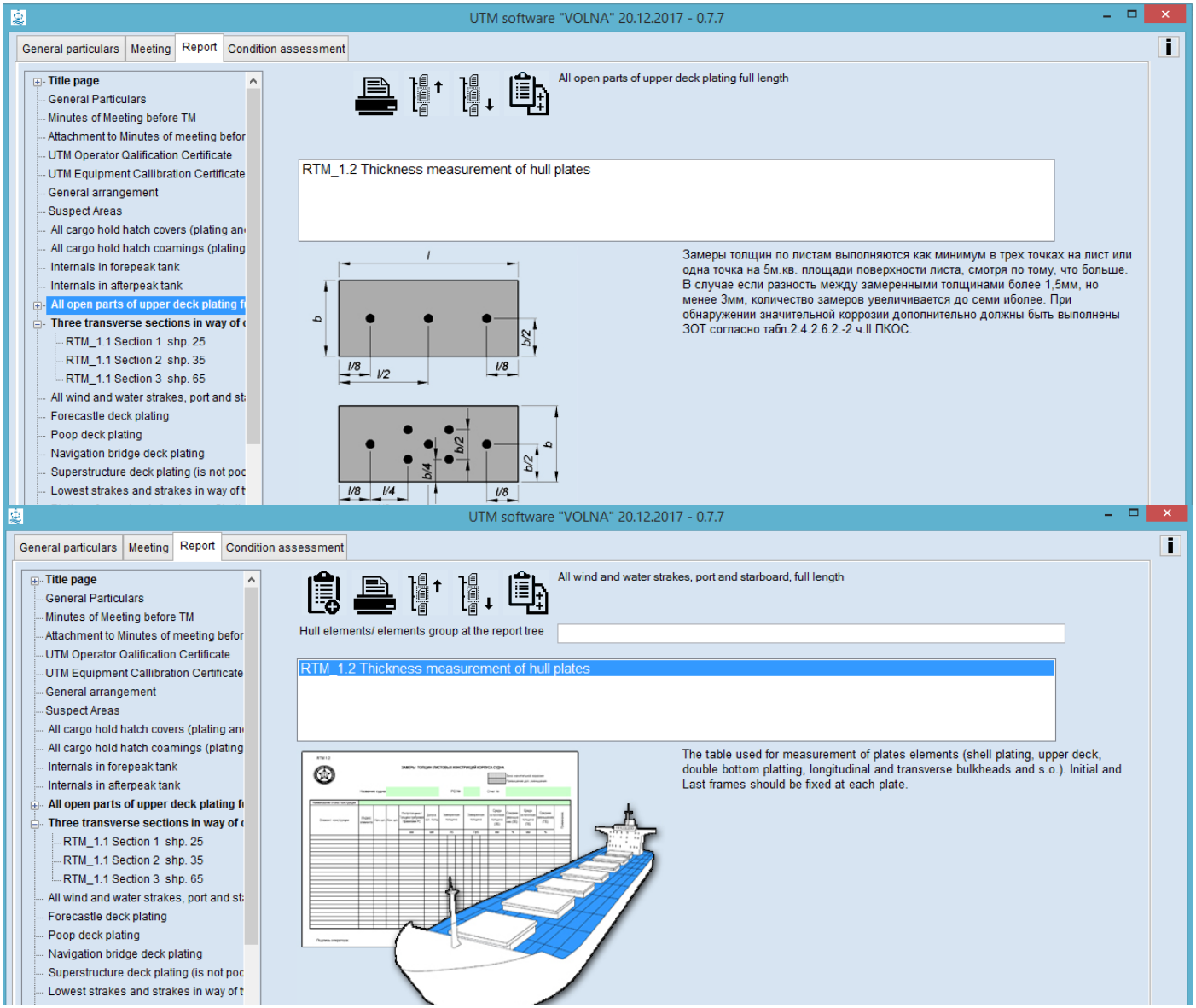
To describe items it is necessary to enter the following information:
1. item index;
2. plate breadth;
3. measurements on port side and starboard side.

Longitudinal and transverse members are to be entered into the table (refer to the definition of the transverse section). For items, accounting in calculation of the area reduction of deck and bottom with bilge transverse section, it is necessary to indicate plate breadth/frame. Upon completion of filling of this form the software will form separate table (to identify the form No.) with the results of the assessment of area reduction. If the result is negative it is necessary to perform verification of hull girder transverse section (additional notification about necessity of performing such verification is generated by the software).
The software does not allow to indicate this information for items which are not the part of calculation of area reduction.

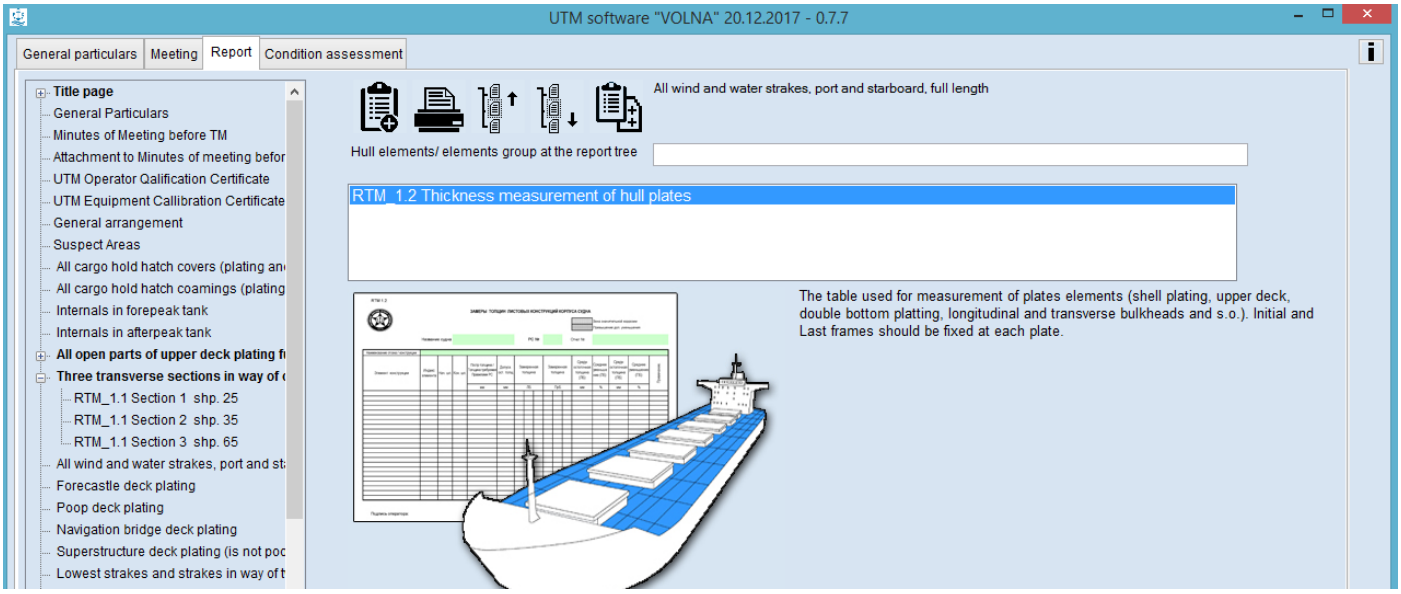
RTM-1.2

Tabular form RTM-1.2 is intended to draw up measurements of plate items (decks, shell plating, inner bottom plating, longitudinal bulkheads plating and etc.).

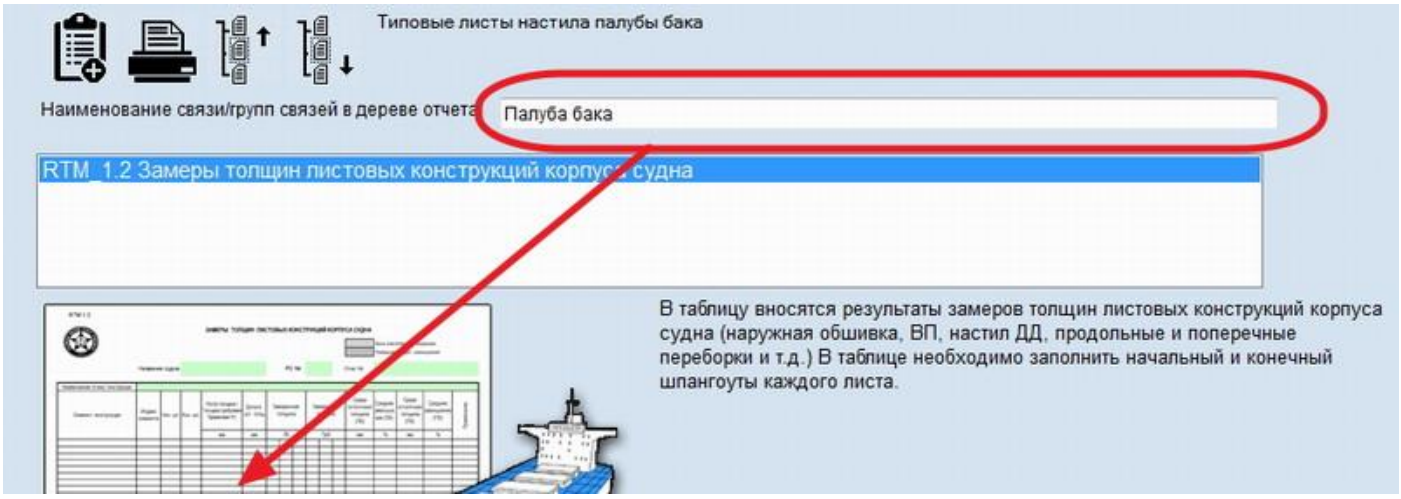
In the item tree it is necessary to find and click appropriate item and:
1. to choose appropriate form.
2. to acknowledge explanations for number and points of measurements (refer to Annex 4 of the RS Rules for classification surveys of ships in service).

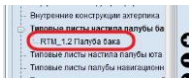


By clicking on the number of form in the right part of the screen, the prompt message with description of the table appears.

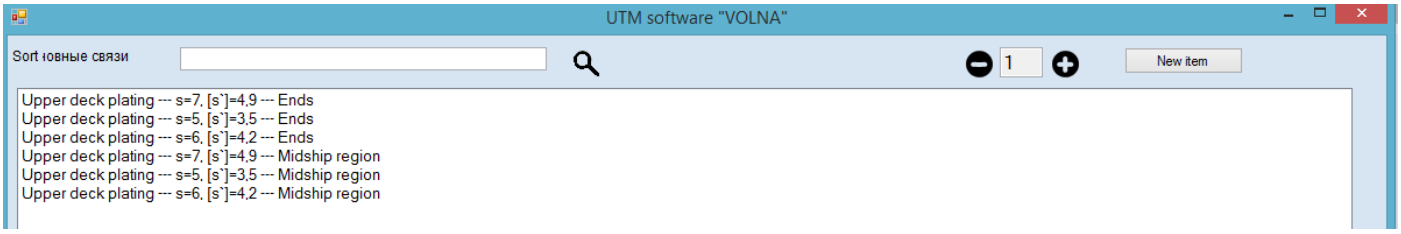


Fields “Hull elements group at the report tree” is not mandatory for drawing up. It is intended for the improvement of navigation in the tree. For one item it is possible to create many tables and to improve navigation on items, tables it is recommended to enter additional information in this field..

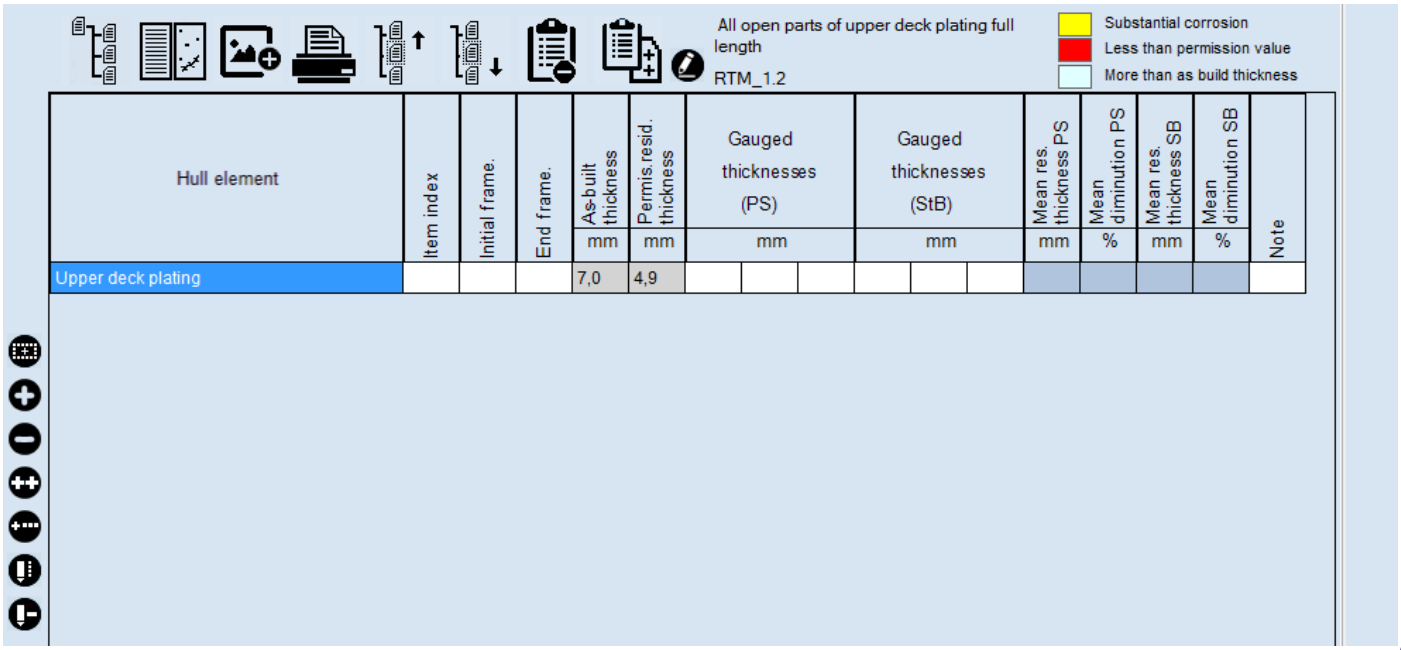




To create new record for item it is necessary to click the icon , then window will appear offering list of appropriate items to be selected (information from the file containing norms). If item or item with different scantling is absent, it is necessary to add item to the file with norms. To add item to the file with norms it is necessary to click button “New item”.



In the table it is necessary to enter the following information on each plate:
1. item index (according to ship’s drawings or assigned by TM firm);
2. Initial frame;
3. End frame;
4. Measurements on PS and STBD side.

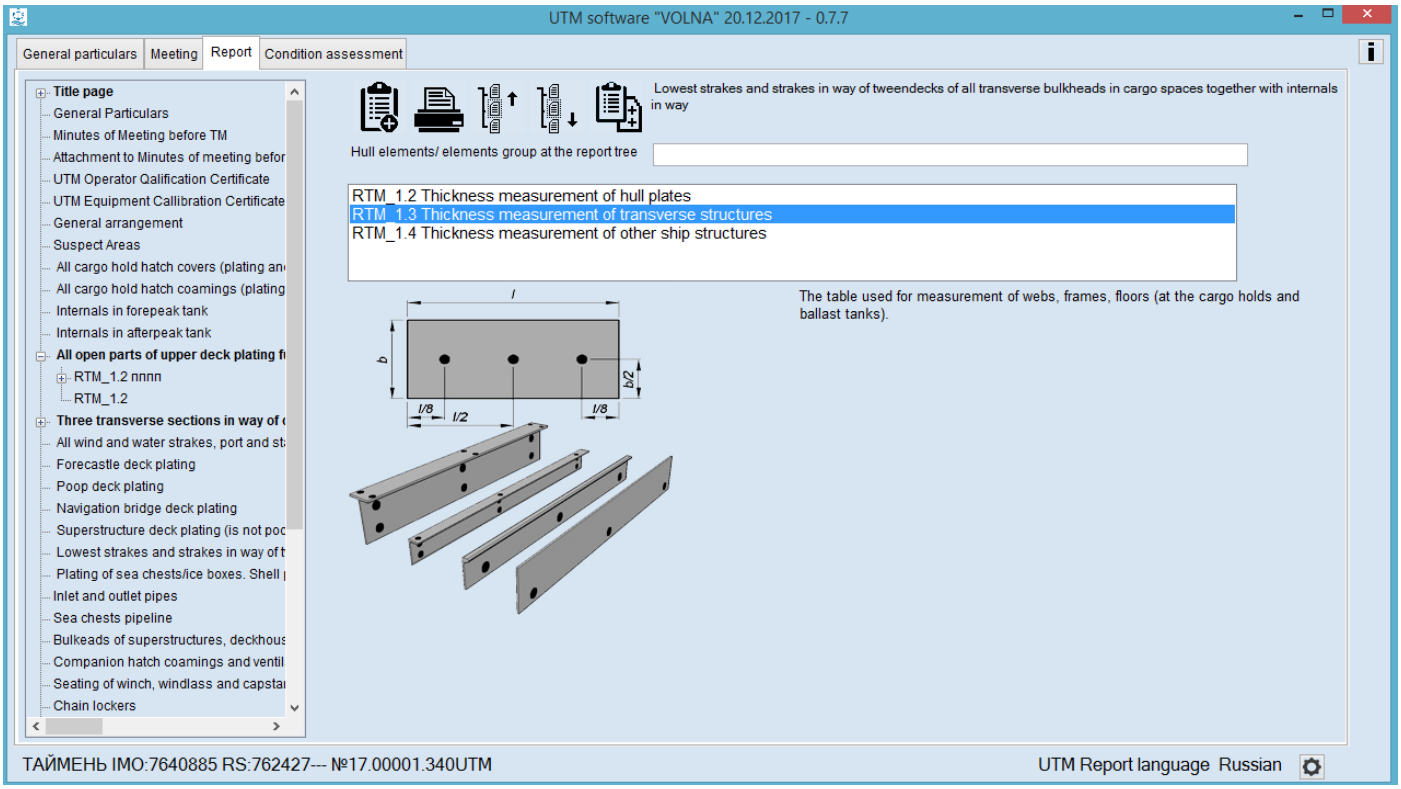


When it is necessary to enter measurements on one side or for each side in turn, it is possible to choose table RTM-1.2a. This table gives possibility to register measurements on each side only and the number of measurements in one line is greater.

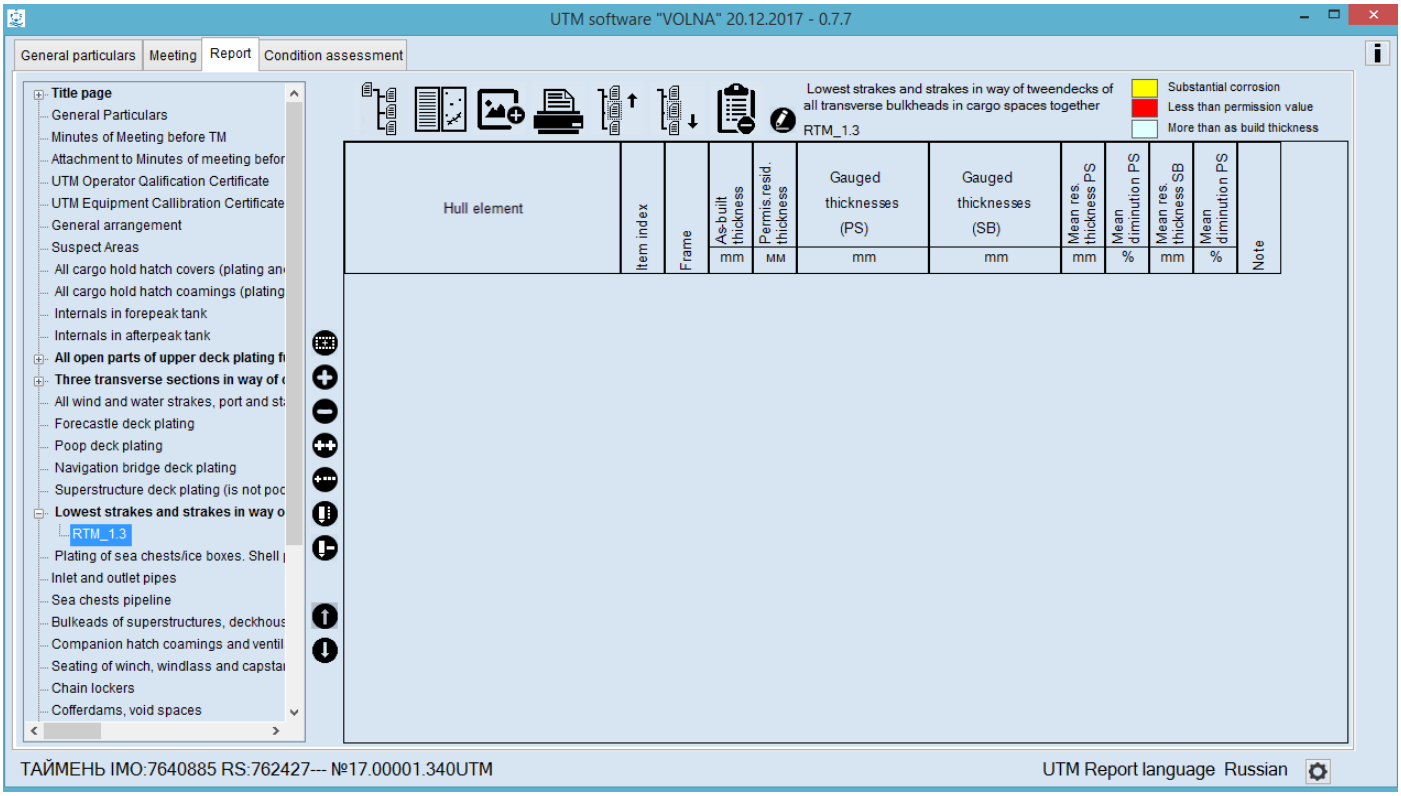
RTM-1.3

Tabular form RTM-1.3 is intended for the purpose of entering information on transverses (web frames, floors, transverse bulkheads and etc.).

In the item tree it is necessary to find and click appropriate item and:
1. to choose appropriate form.
2. to acknowledge explanations for number and points of measurements (refer to Annex 4 of the RS Rules for classification surveys of ships in service).

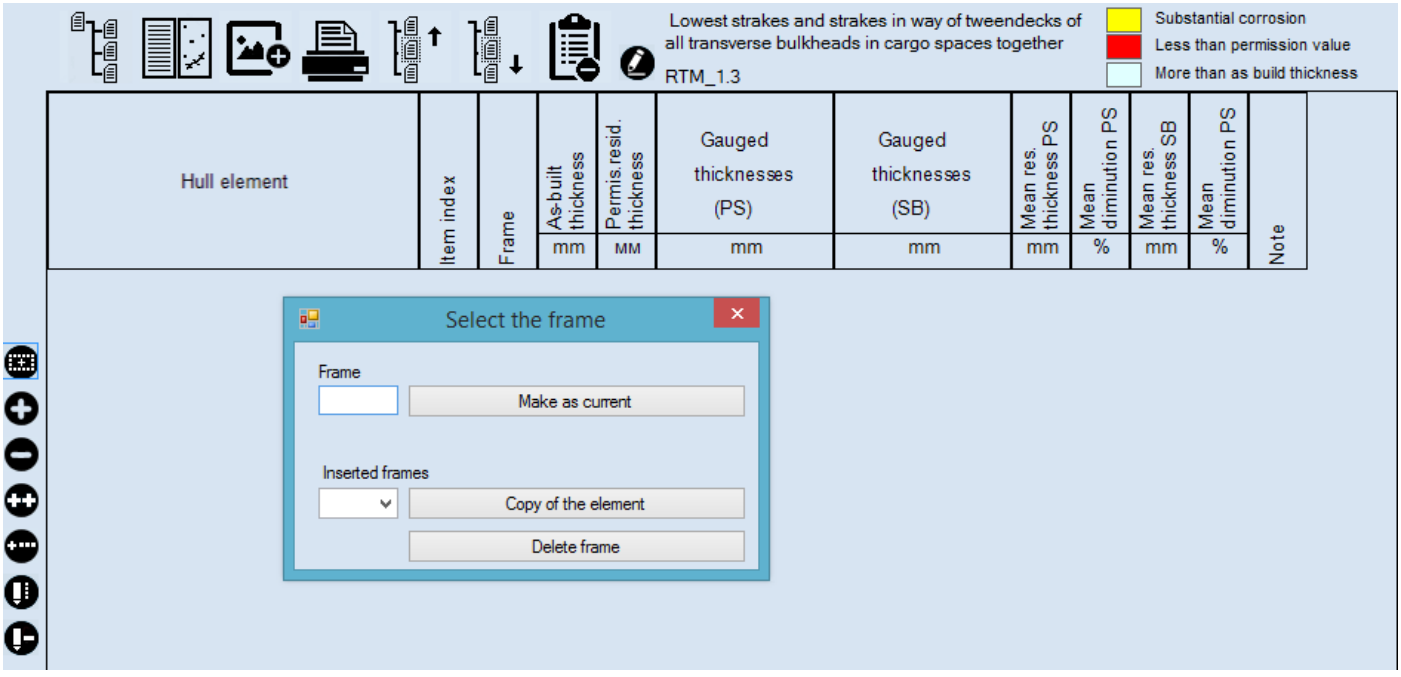


By clicking on the appropriate number of form and icon the relevant table will appear.

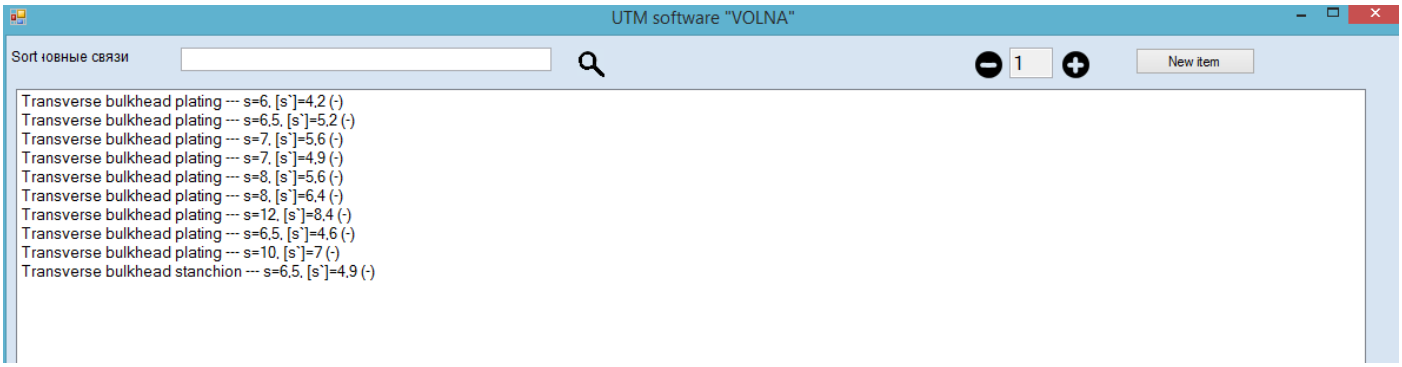


The mechanism of filling in data on ship's hull transverses in the table 1.3 is provided by data blocks. For selected frame the structure's block is created. Further new structure's block is created or copied for the next frame. Thus data on all frames are filled in.

To start drawing up it is necessary to click the icon . Then in the window appeared to indicate "Frame" (first frame) and click "Make as current".

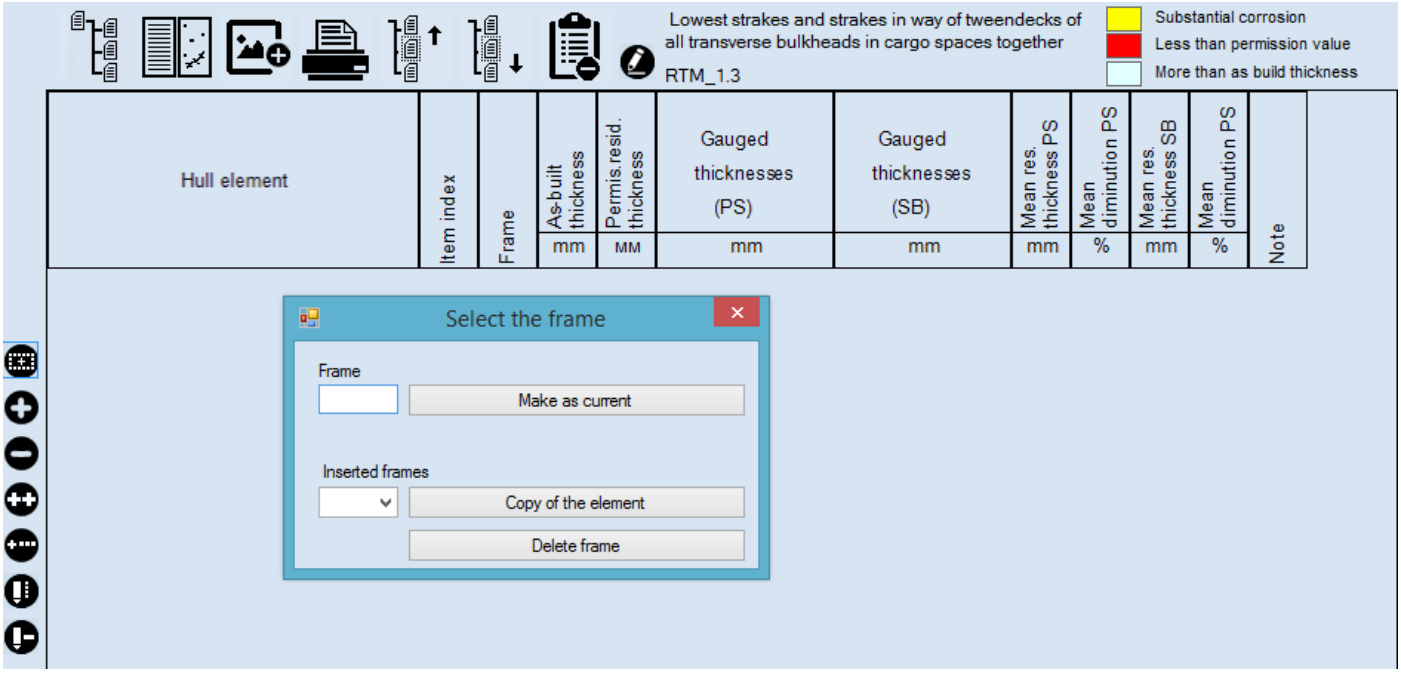


Further the following window will appear where it is necessary to indicate first item located on a current frame.



Further all items located on a current frame to be entered following principle described above.
For the user's convenience reference it is possible to copy repeated items on the same frame.

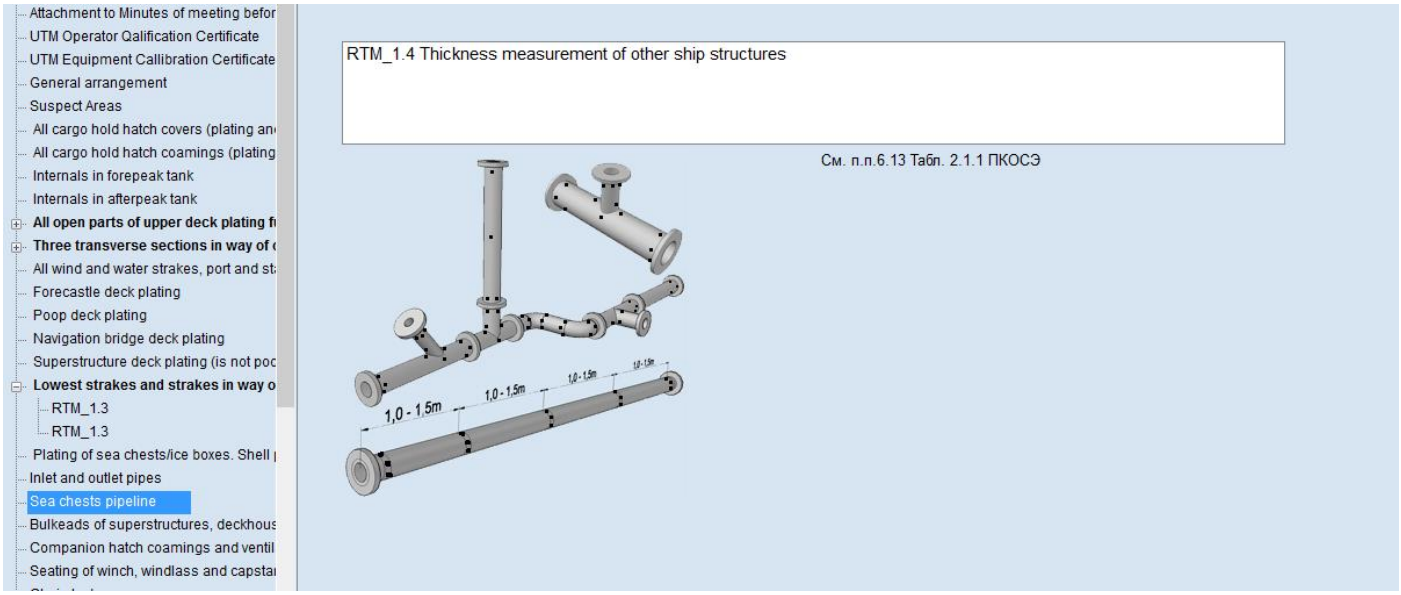
To copy item it is necessary to click the icon . In the window appeared to enter new frame into field "Frame" and to choose frame number from the list under "Inserted frames" and click the button "Copy of the element".



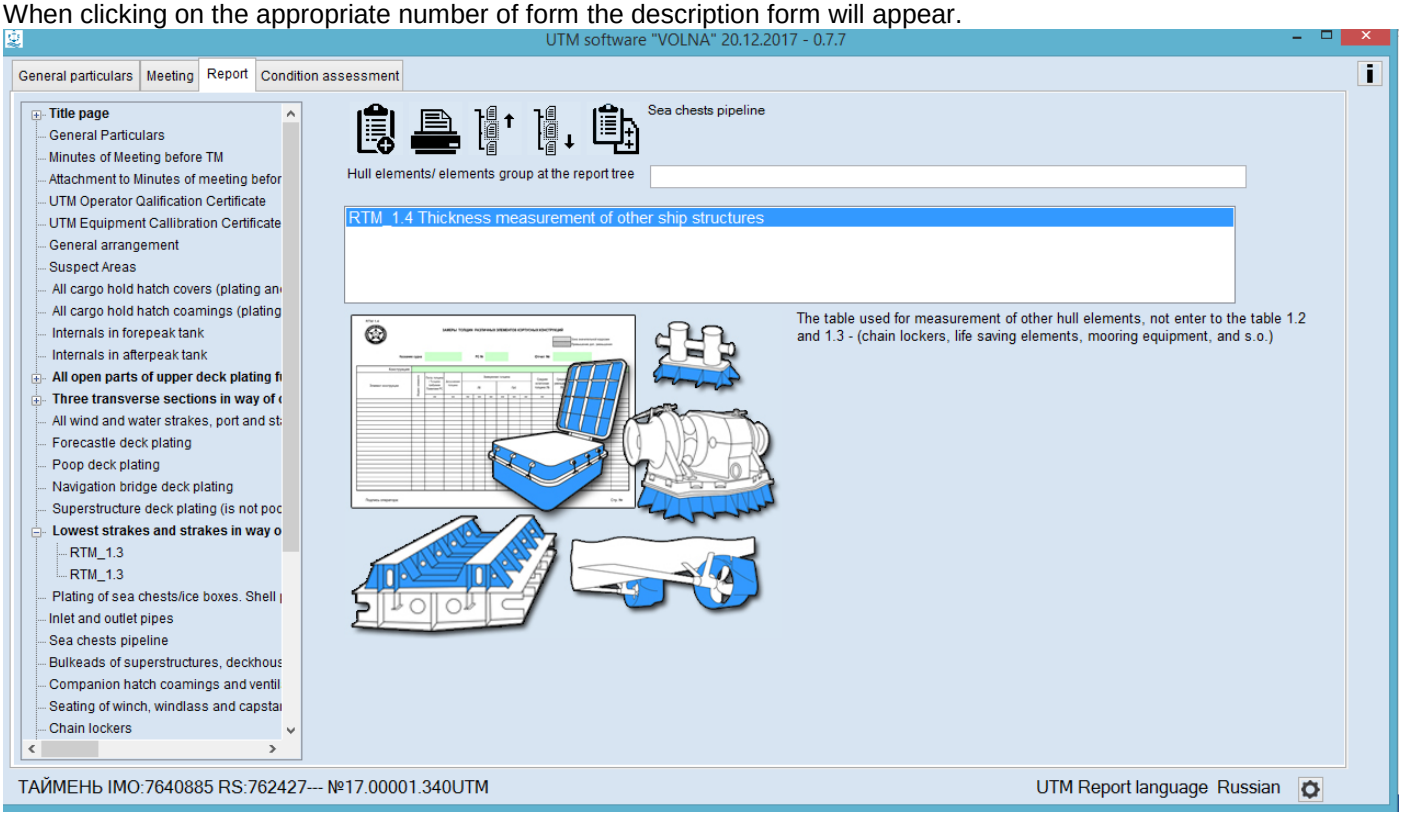
It is possible to copy, move and change etc. frames blocks.

RTM-1.4

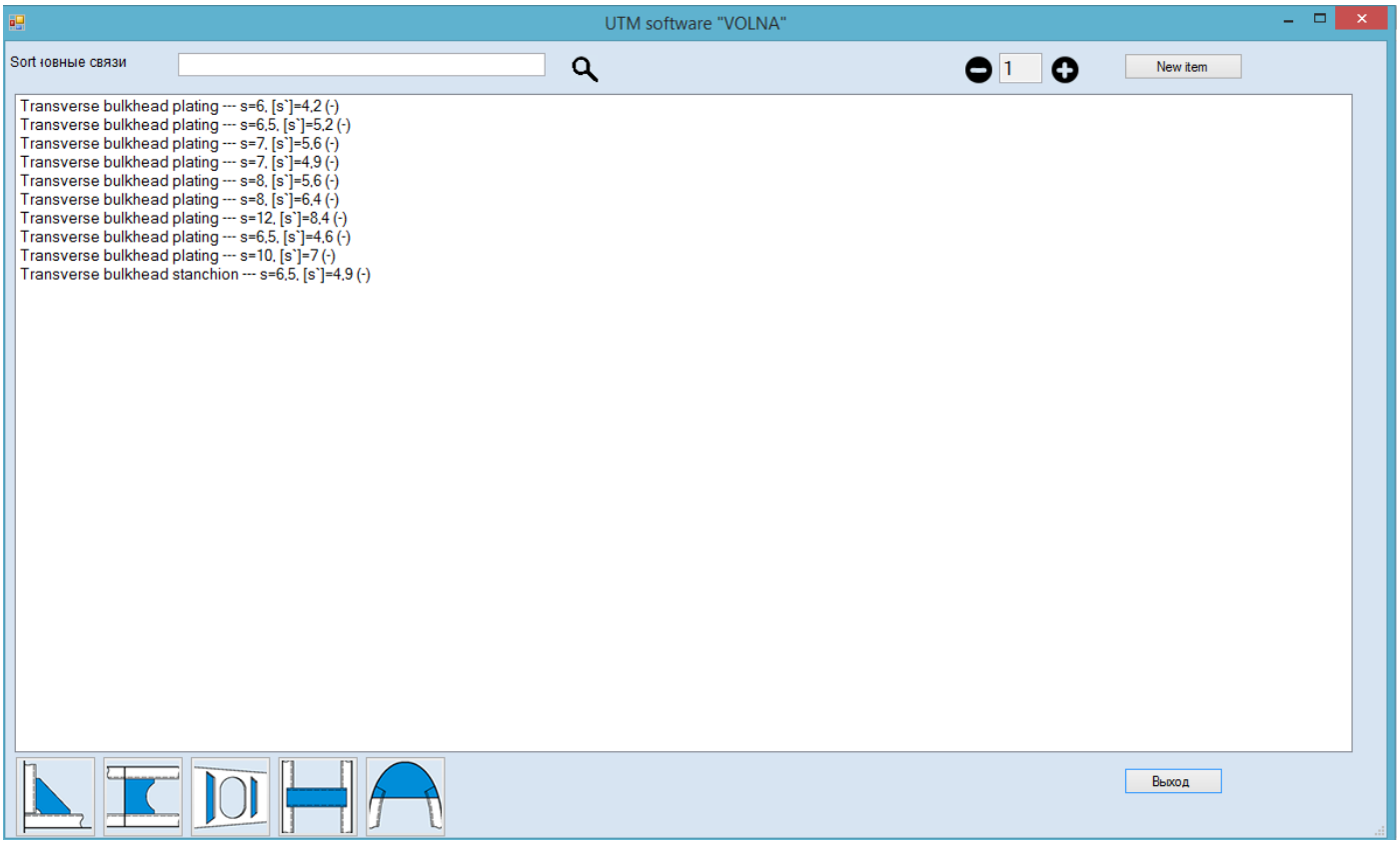
Tabular form RTM-1.4 is intended for the purpose of entering information on miscellaneous items, for which forms RTM1.1, RTM1.2, RTM1.3, RTM1.5, RTM1.6 are not used.
In the item tree it is necessary to find and click appropriate item and:
1. to choose appropriate form.
2. to acknowledge explanations for number and points of measurements (refer to Annex 4 of the RS Rules for classification surveys of ships in service).



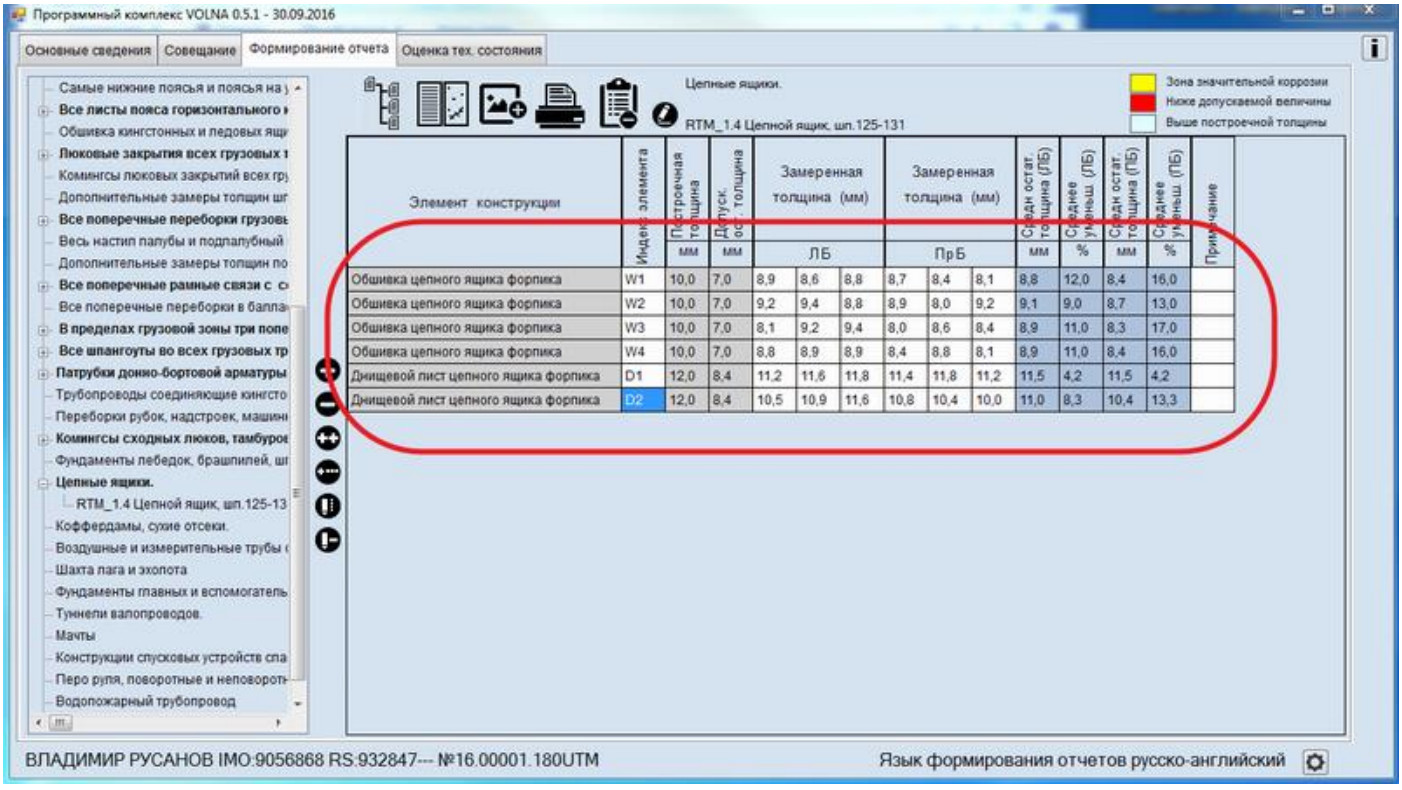
When clicking on the appropriate number of form the description form will appear.



Then click the button and the appropriate table will appear. By clicking on icon it is necessary to choose the appropriate item.



Then to enter all necessary data to the table.

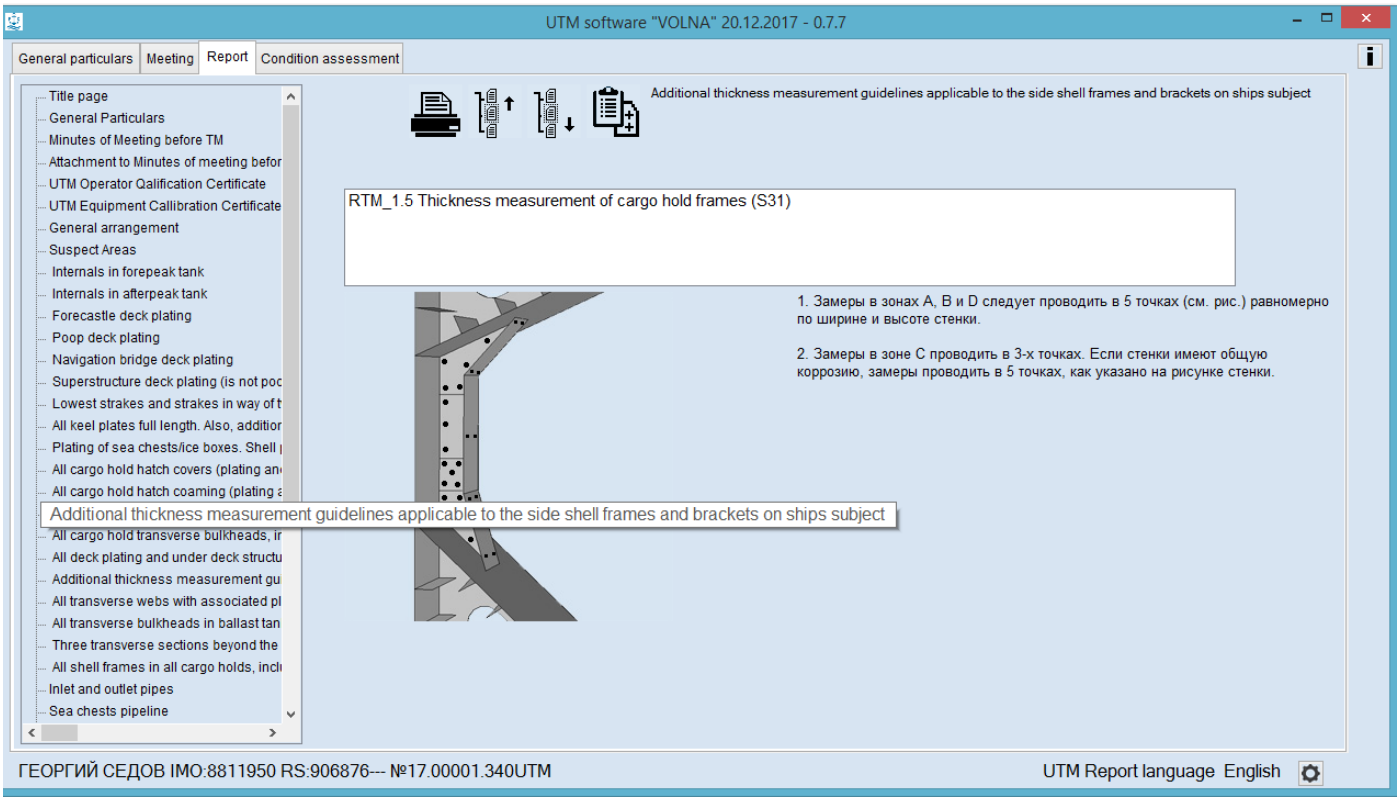


Элемент конструкции	Индекс элемента	Построечная толщина, мм	Допуск. ост. толщина, мм	Замеренная толщина (мм) ЛБ			Замеренная толщина (мм) ПрБ			Средн остат. толщина (ЛБ), мм	Среднее уменьш. (ЛБ), %	Средн остат. толщина (ПБ), мм	Среднее уменьш. (ПБ), %	Примечание
Обшивка цепного ящика форпика	W1	10,0	7,0	8,9	8,6	8,8	8,7	8,4	8,1	8,8	12,0	8,4	16,0	
Обшивка цепного ящика форпика	W2	10,0	7,0	9,2	9,4	8,8	8,9	8,0	9,2	9,1	9,0	8,7	13,0	
Обшивка цепного ящика форпика	W3	10,0	7,0	8,1	9,2	9,4	8,0	8,6	8,4	8,9	11,0	8,3	17,0	
Обшивка цепного ящика форпика	W4	10,0	7,0	8,8	8,9	8,9	8,4	8,8	8,1	8,9	11,0	8,4	16,0	
Днищевой лист цепного ящика форпика	D1	12,0	8,4	11,2	11,6	11,8	11,4	11,8	11,2	11,5	4,2	11,5	4,2	
Днищевой лист цепного ящика форпика	D2	12,0	8,4	10,5	10,9	11,6	10,8	10,4	10,0	11,0	8,3	10,4	13,3	

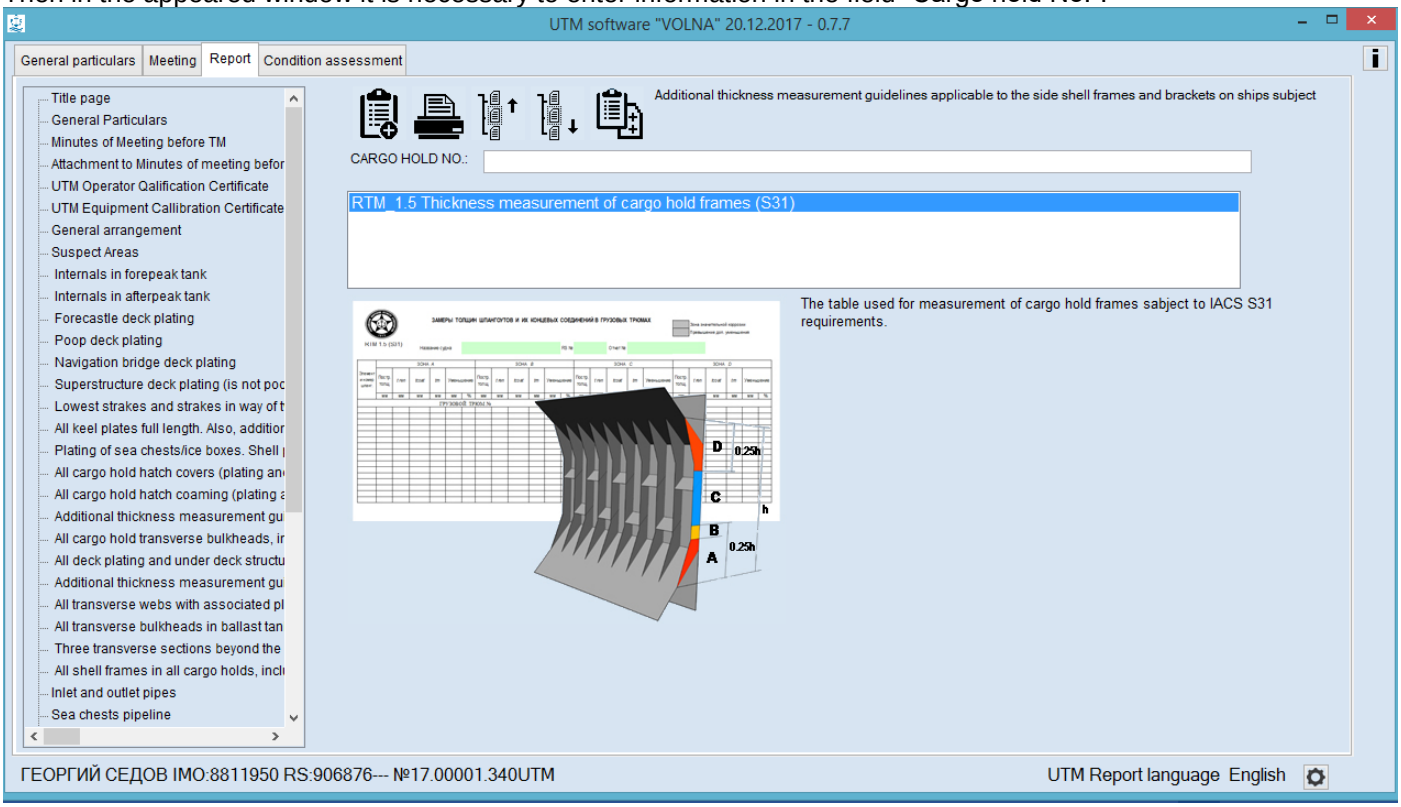
RTM-1.5

Tabular form RTM-1.5 is intended for the purpose of entering information on side frames of bulk carriers for which UR S31 applies.
In the item tree it is necessary to find and click appropriate item and:
1. to choose appropriate form.

2. to acknowledge explanations for number and points of measurements (refer to Annex 4 of the RS Rules for classification surveys of ships in service).

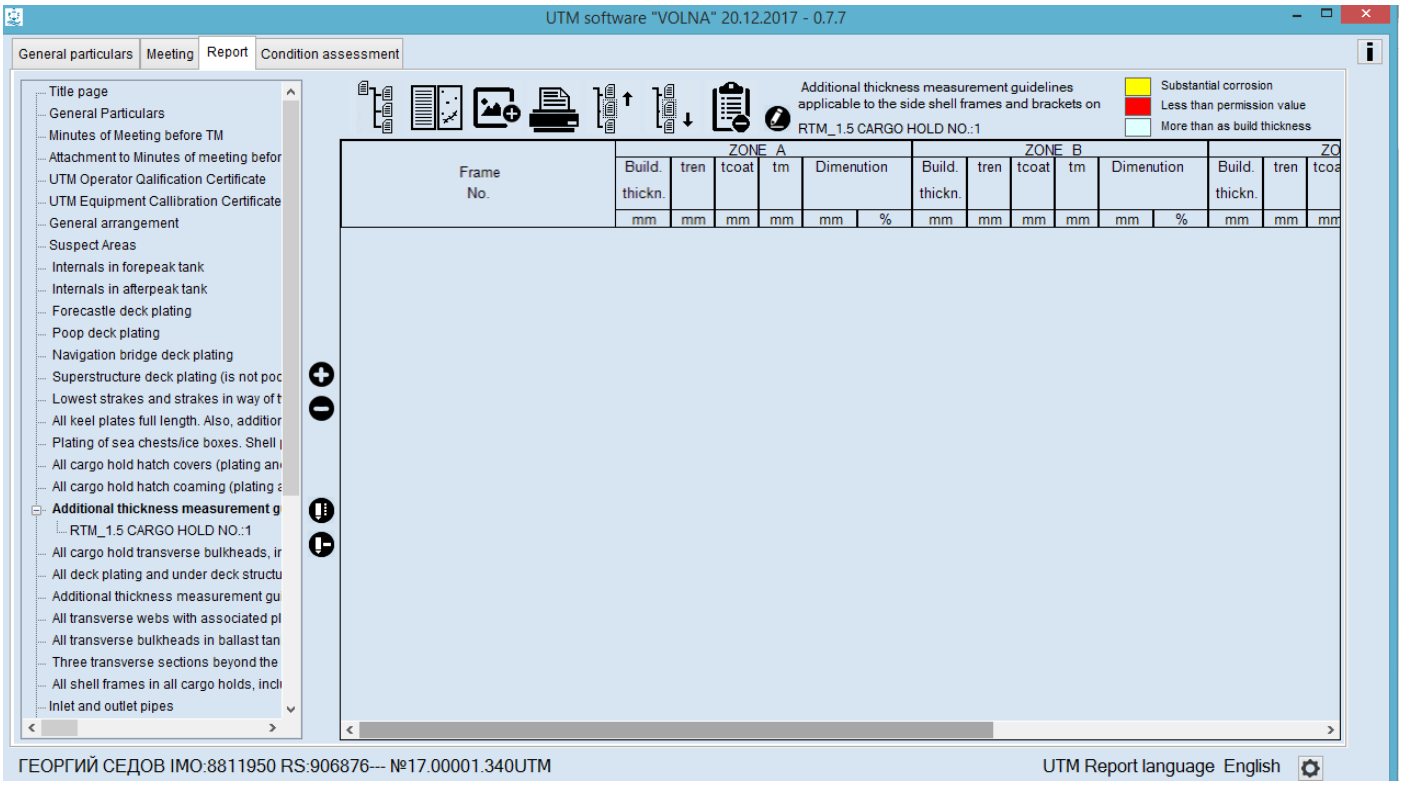


Then in the appeared window it is necessary to enter information in the field “Cargo hold No.”.



Then it is necessary to indicate frames numbers PS and STBD.

Further the following table will appear with frames numbers related to the cargo hold chosen earlier. Permissible scantling will be displaced too (from the file of norms).

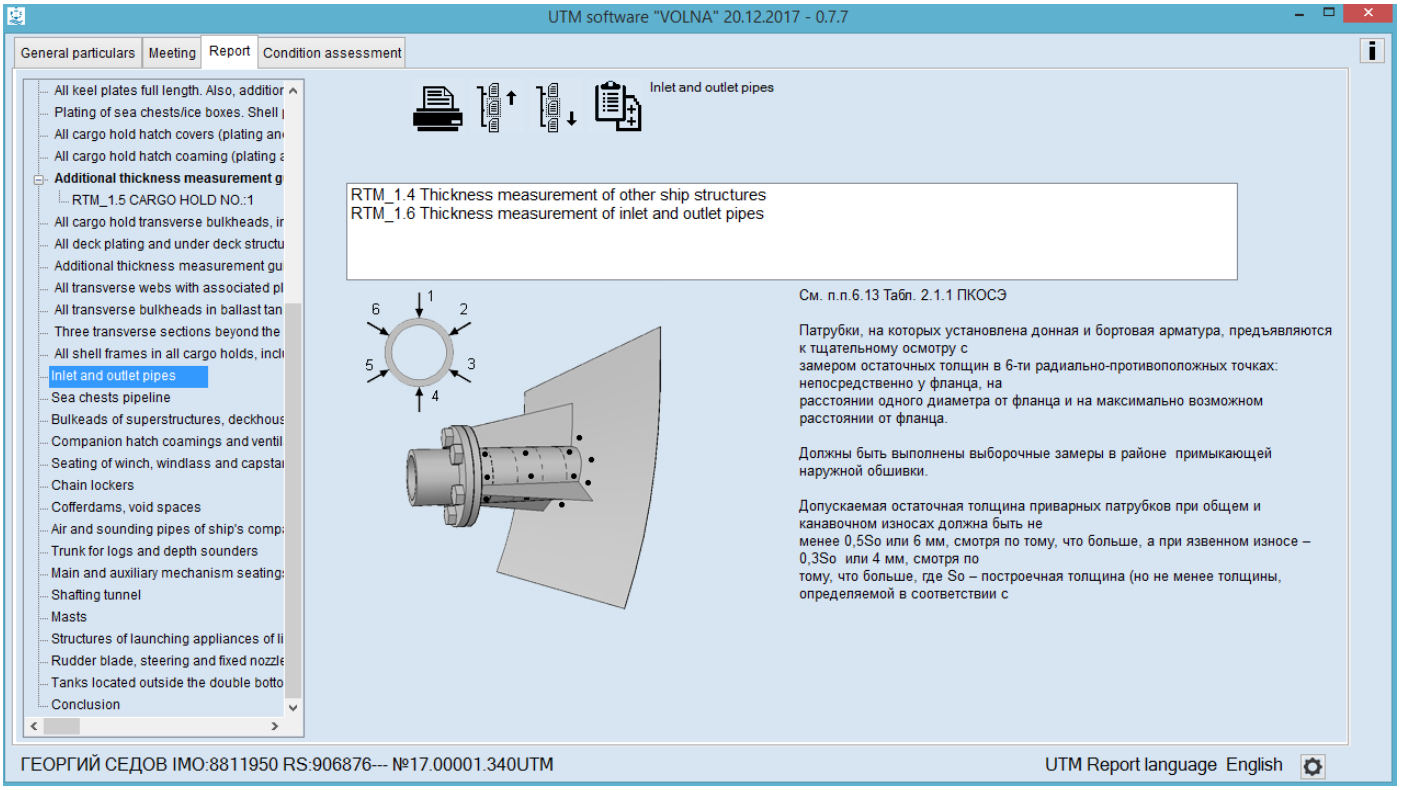


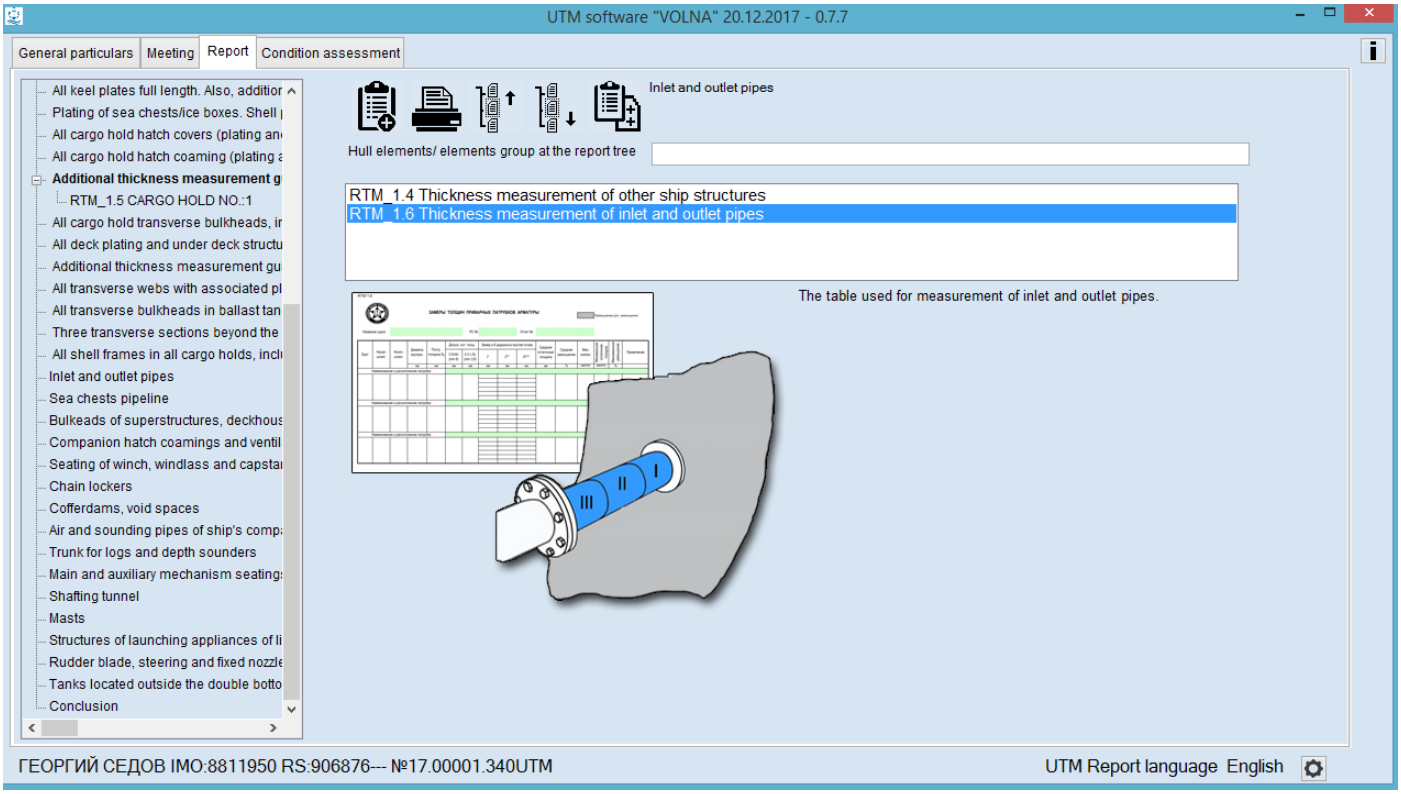
To draw up information on measurements in row "tm" – in each frame zone according to the requirement of URS31.

RTM-1.6

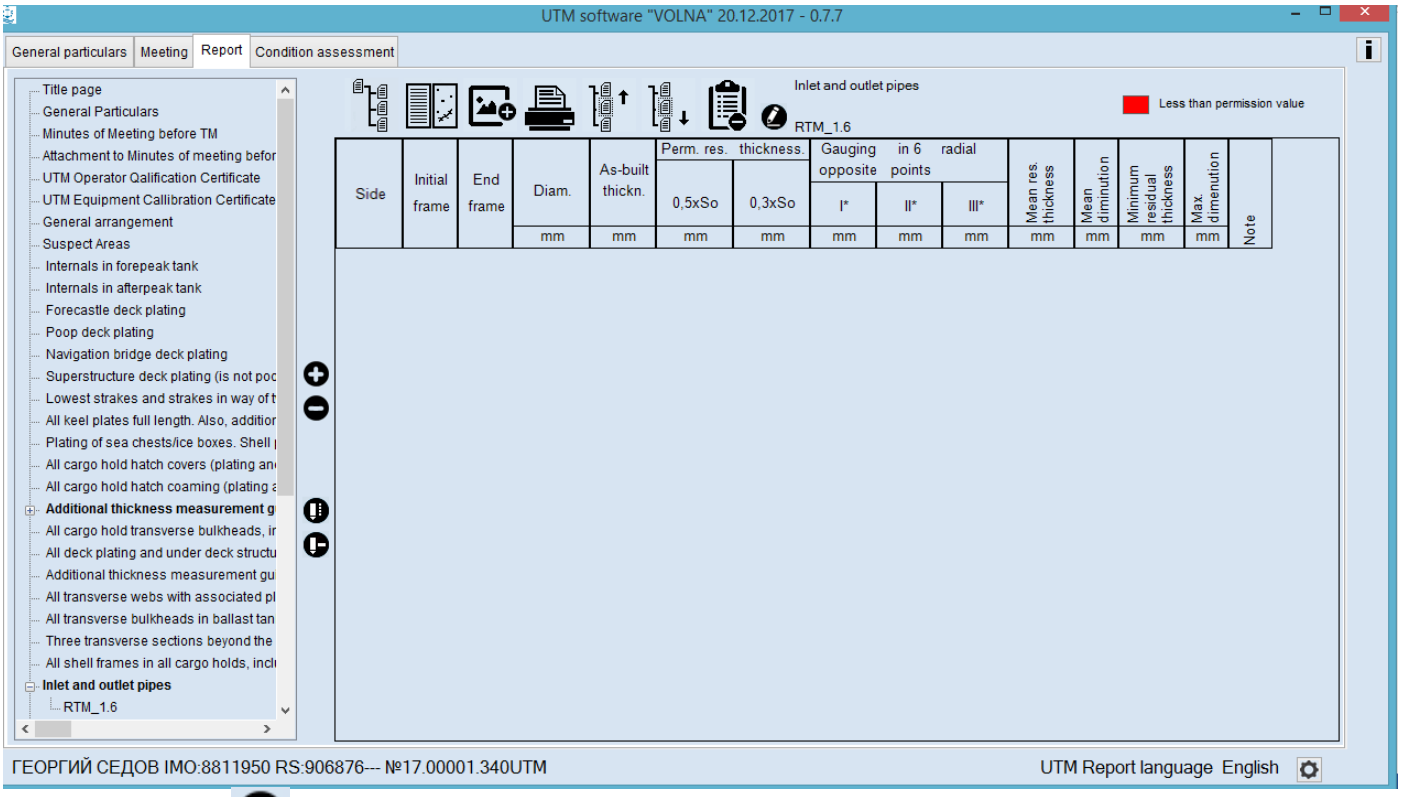
Tabular form RTM-1.6 is intended for the purpose of entering information on inlet and outlet pipes.

In the item tree it is necessary to find and click appropriate item (inlet and outlet pipes) and:
1. to choose appropriate form.
2. to acknowledge explanations for number and points of measurements (refer to Annex 26 to the Guidelines for the technical supervision of ships in service and relevant Annex to the RS Rules for classification surveys of ships in service).





Then click the following table will appear

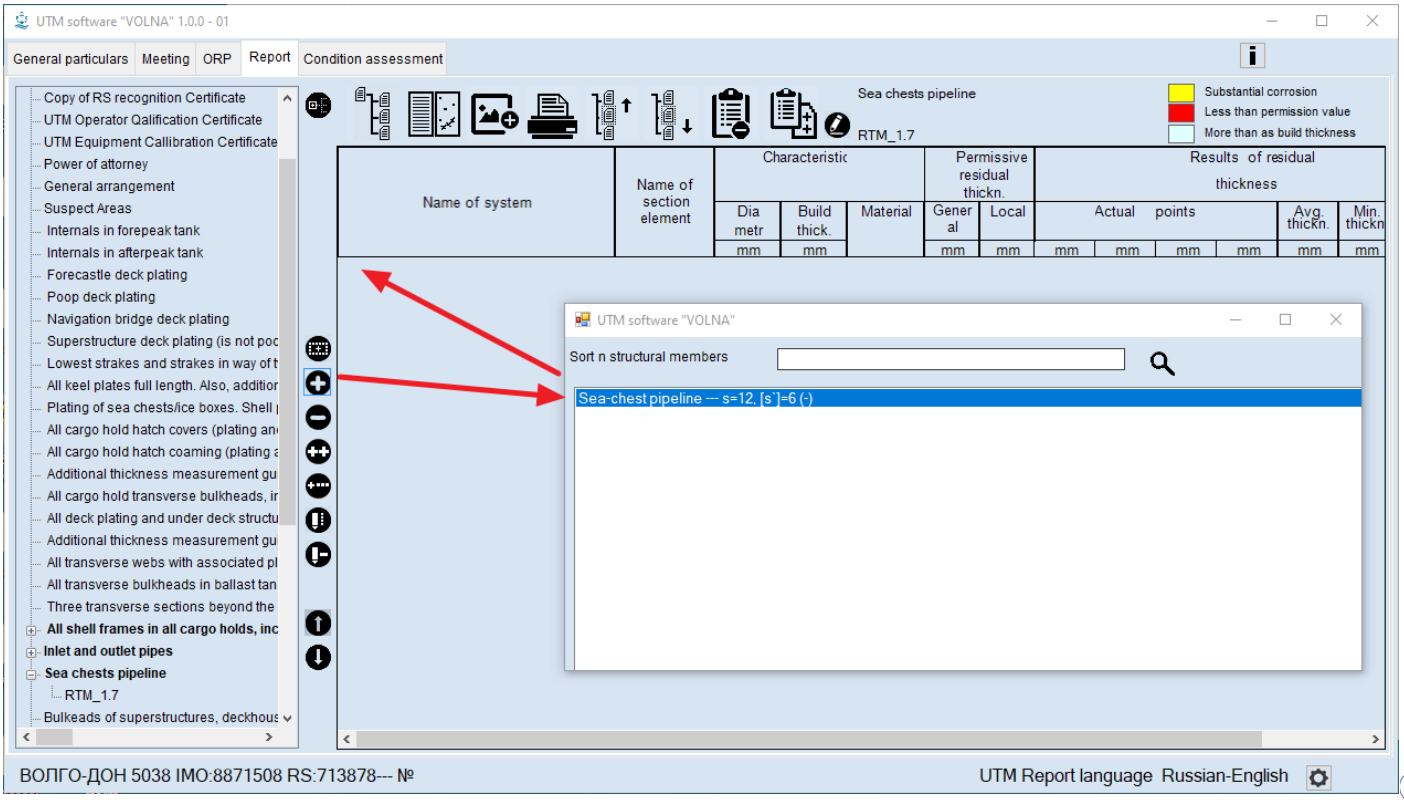


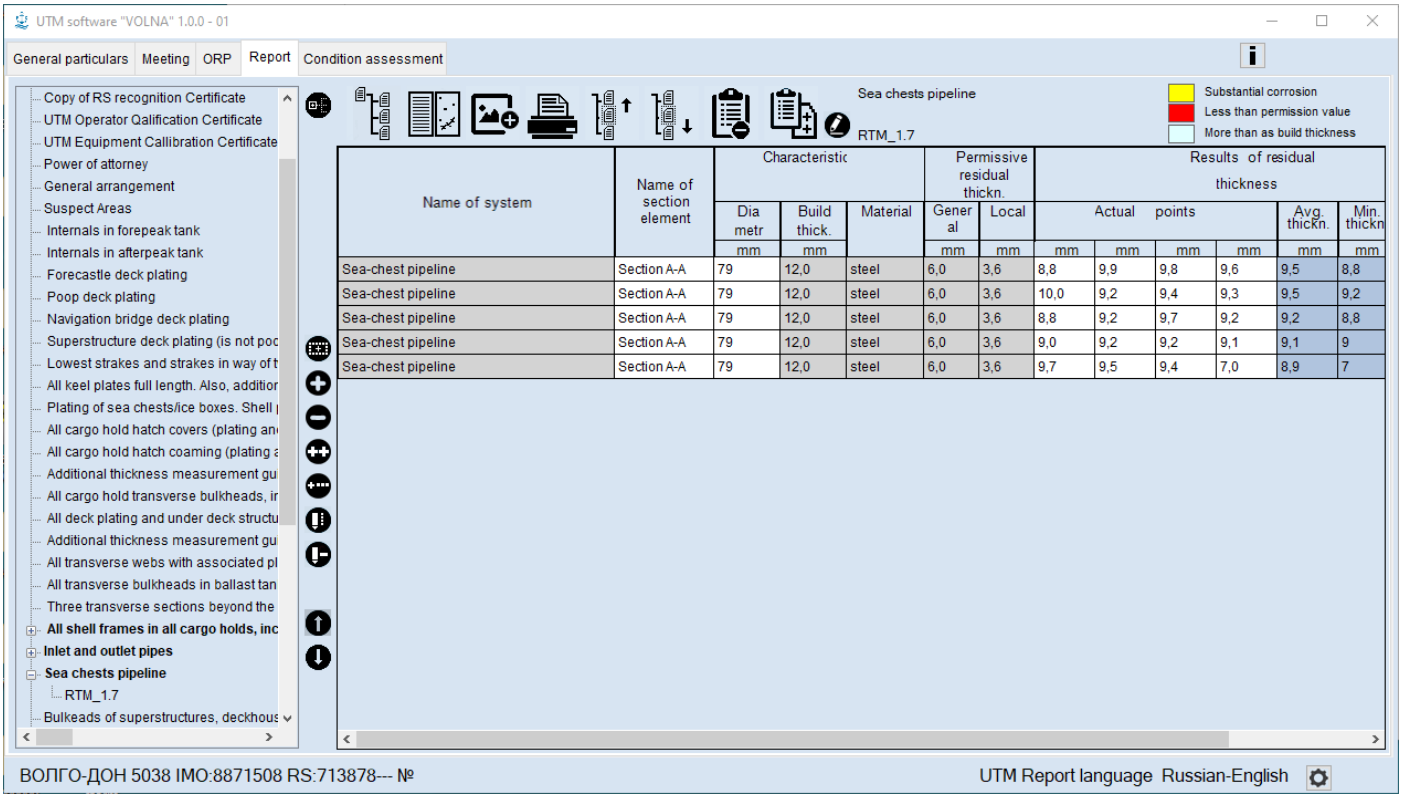
Then click the icon and choose the appropriate pipe from the list (information from section with norms).

To draw up the table there are two groups of fields:
1. Particulars and location of the pipe (side, initial frame and end frame, diameter)
2. Measurements in six radial opposite points.

RTM-1.7

Table form RTM-1.7 is intended for filling in the results of thickness measurements of ship's pipelines.
To fill in the table it is necessary to identify the places of measurements (sections) and pipeline diameter.



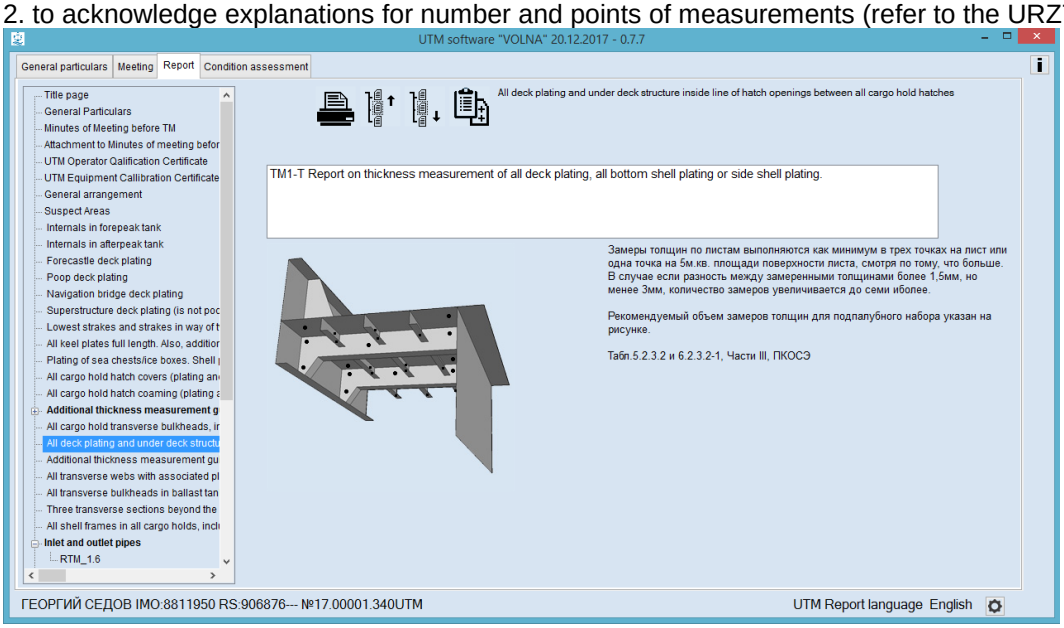


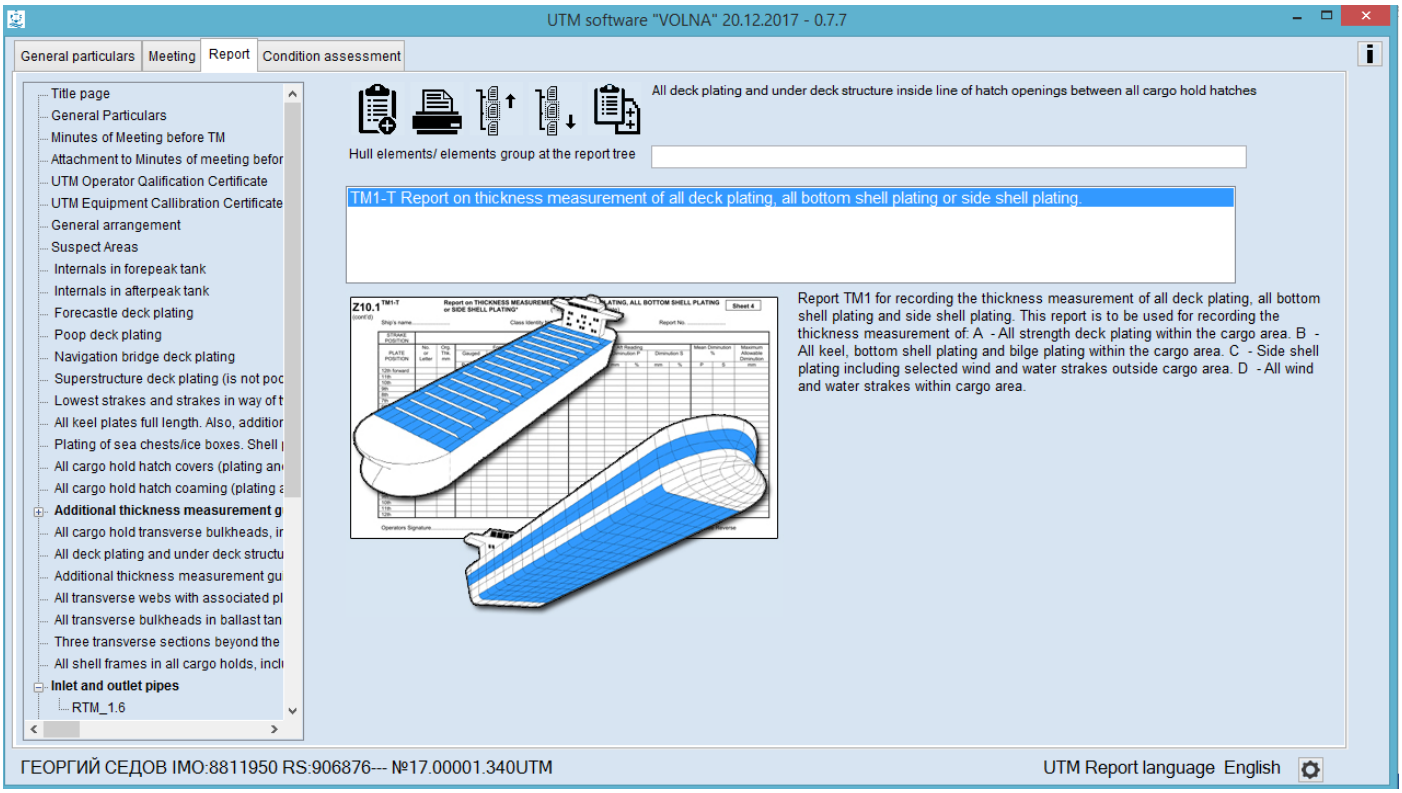
1.2 Instruction for tabular forms recommended by IACS UR (these forms may be used only upon agreement with RS surveyor in exceptional cases described in RS Rules)

TM1

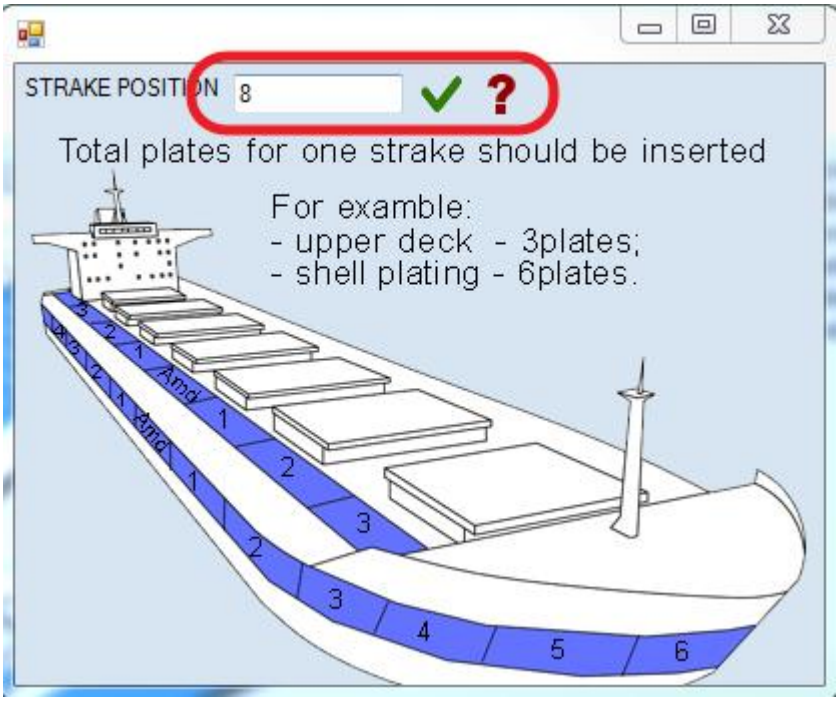
Tabular form TM1 is intended for drawing up of measurements of deck plating, bottom and side shell plating.

In the item tree it is necessary to find and click appropriate item (deck plating, bottom and side shell plating) and:
1. to choose appropriate form.
2. to acknowledge explanations for number and points of measurements (refer to the URZ7, Z10.s).

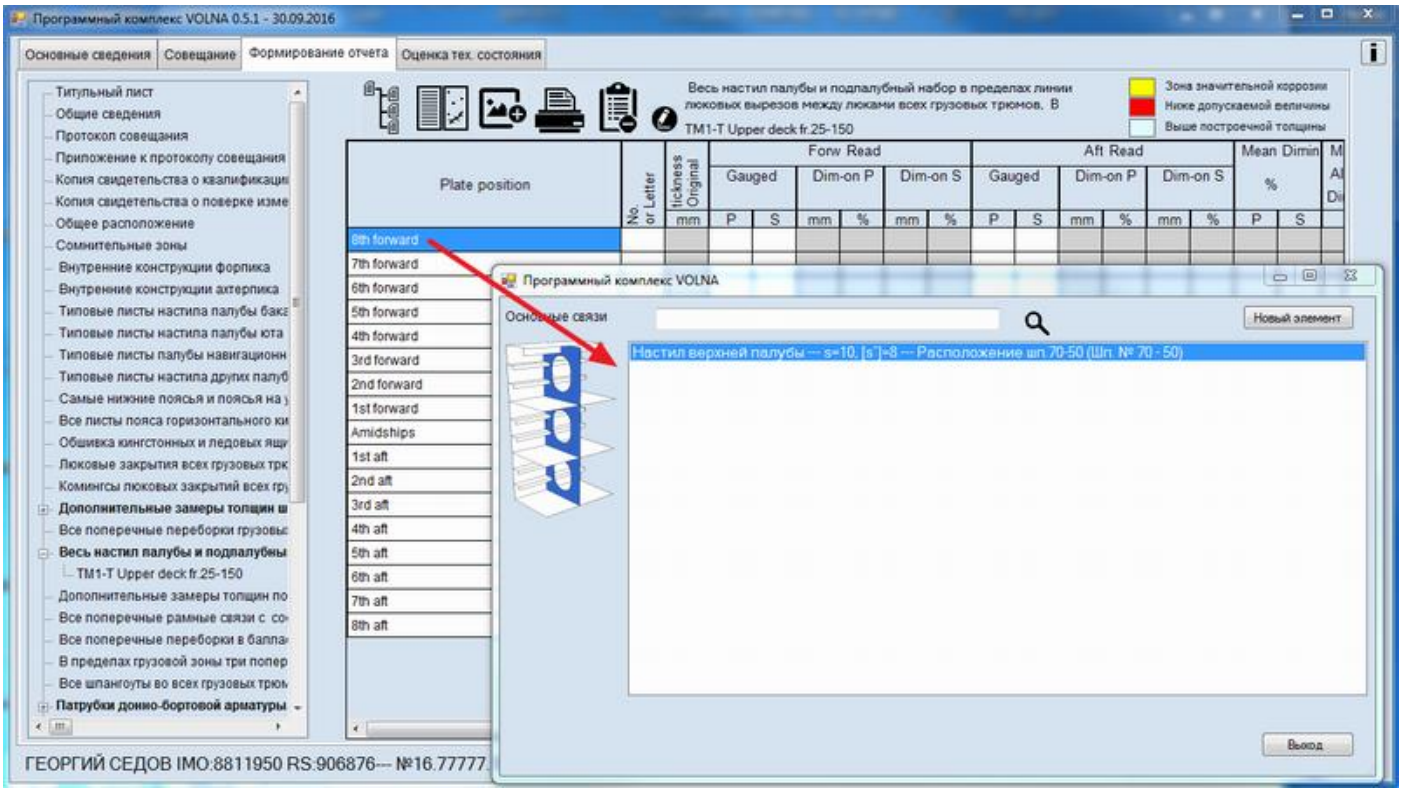




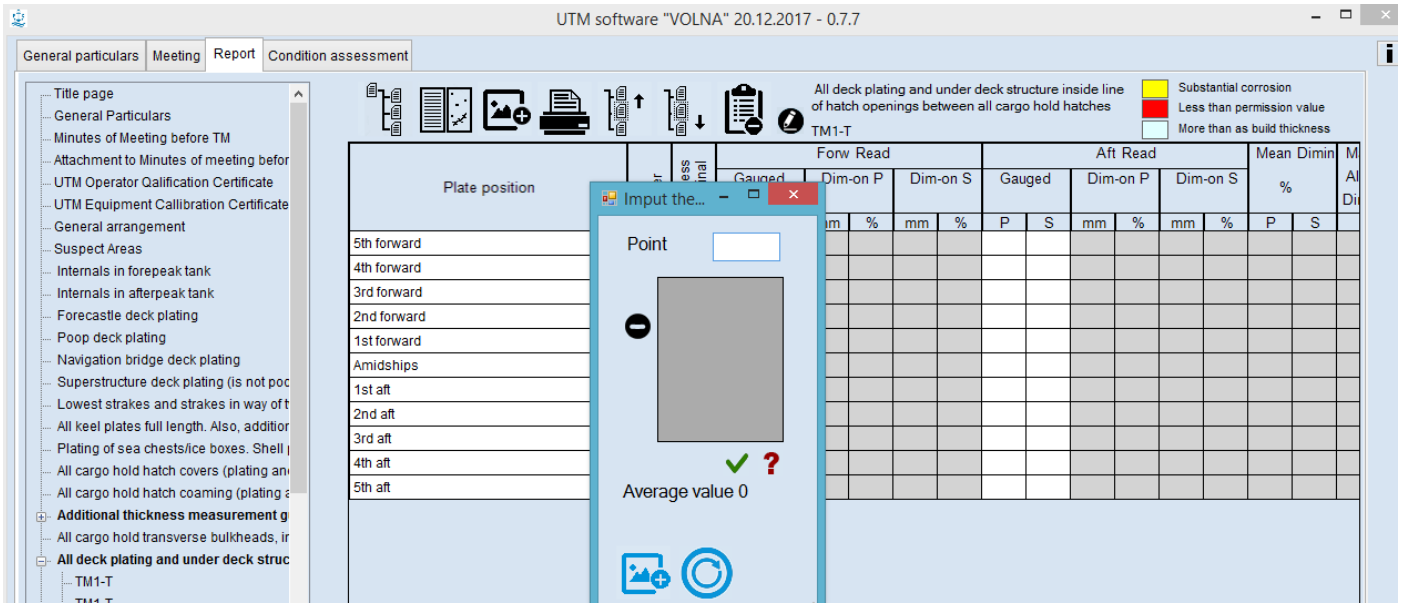
Upon double clicking on the form number, it is necessary to indicate necessary number of plate on a current strake.



Upon entering of a number of plates, the following table will appear for each strake.
To draw up the lines of the table, it is necessary to double click the item in row “Plate position” and choose appropriate item from the list (the values of permissible thickness and permissible diminution will be introduced in the table thereto).



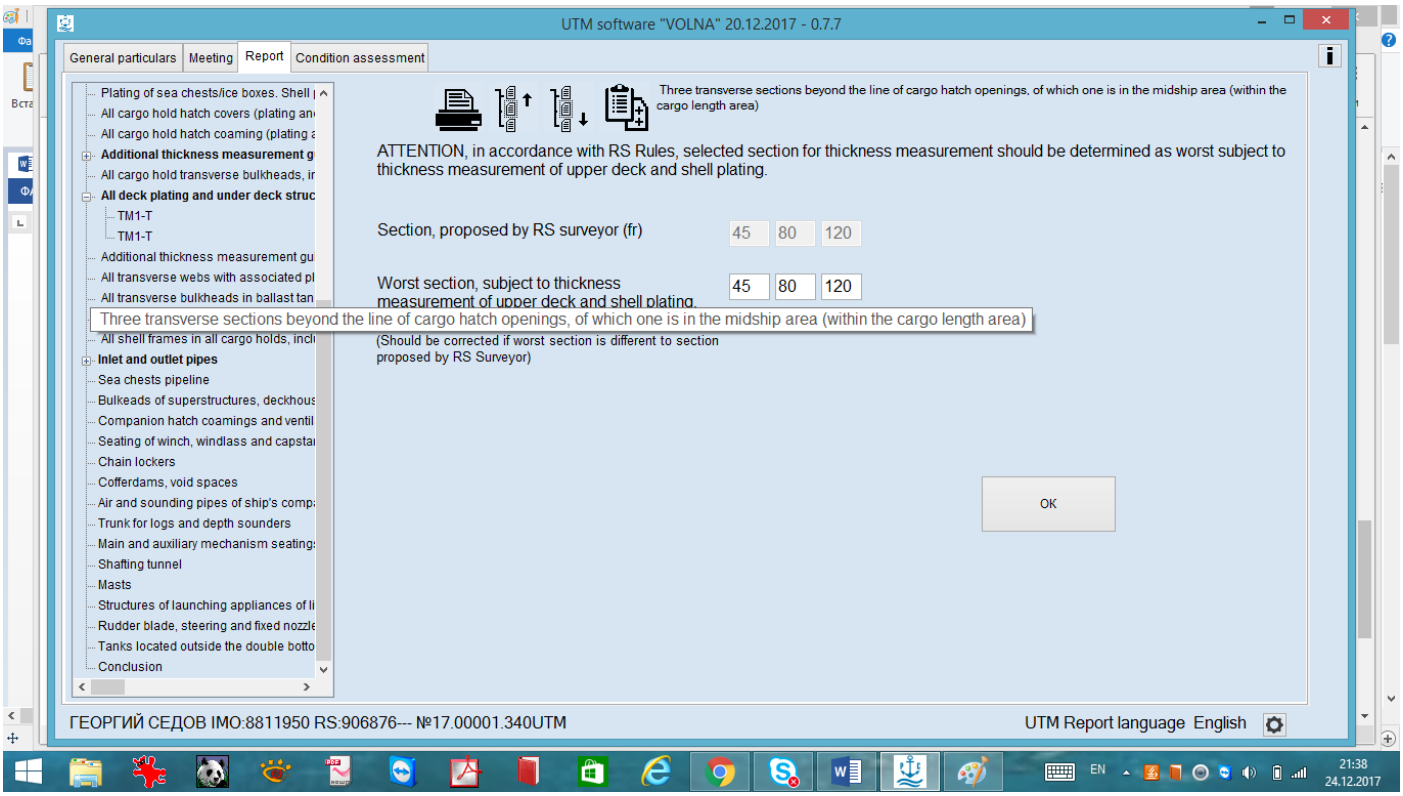
The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).
IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.
To draw up measurements it is necessary to click appropriate cells, at that the software offers to enter free number of measurements.



TM2i

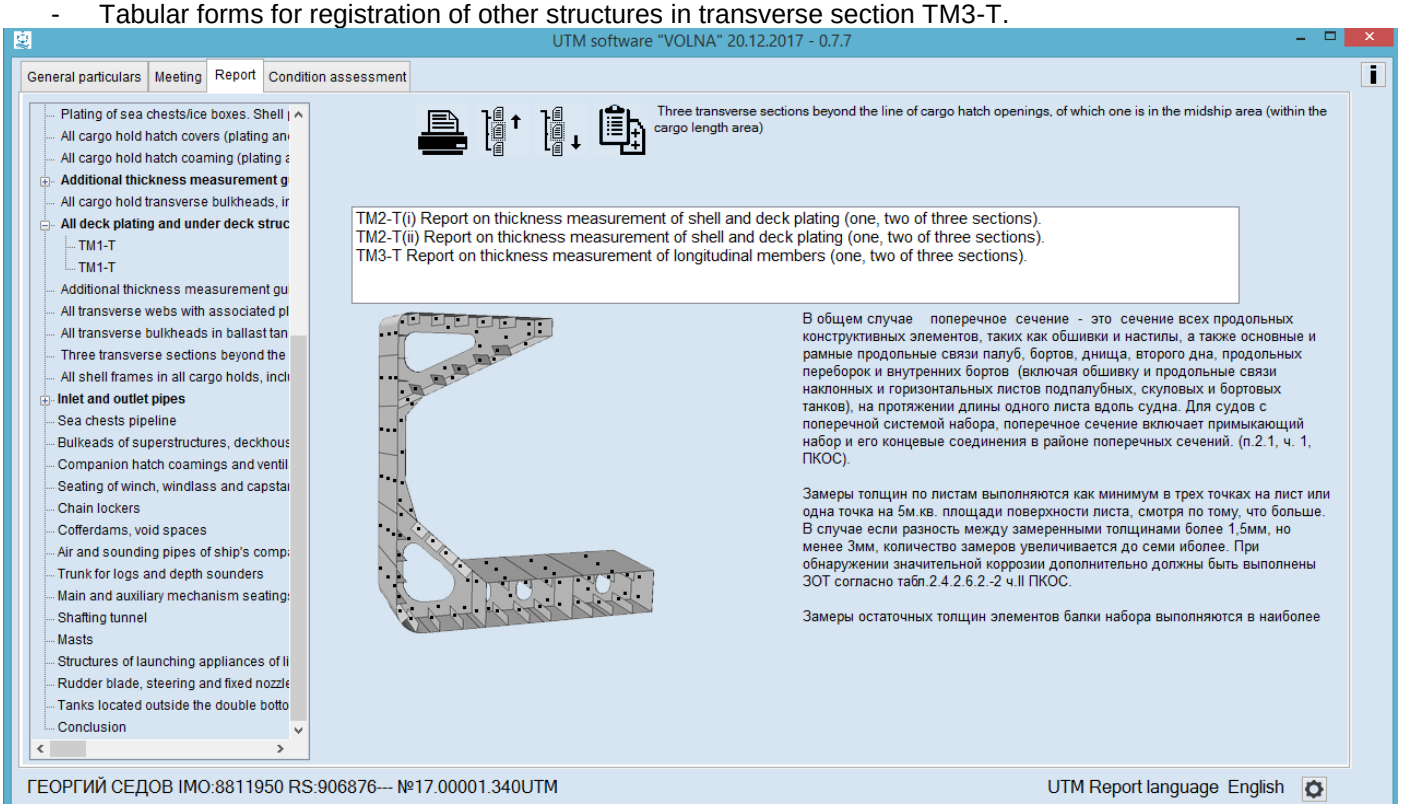
Tabular form TM2i is intended for drawing up of measurements of items of an upper deck plating.

1) In the item tree it is necessary to find and click appropriate item containing words "transverse sections" and
2) Clarify location of sections on the basis of actual thickness measurements of deck plating as follows (the location of fore and aft sections may be changed on the basis of the results of thickness measurements of deck and bottom (i.e. more deteriorated sections is to be chosen):

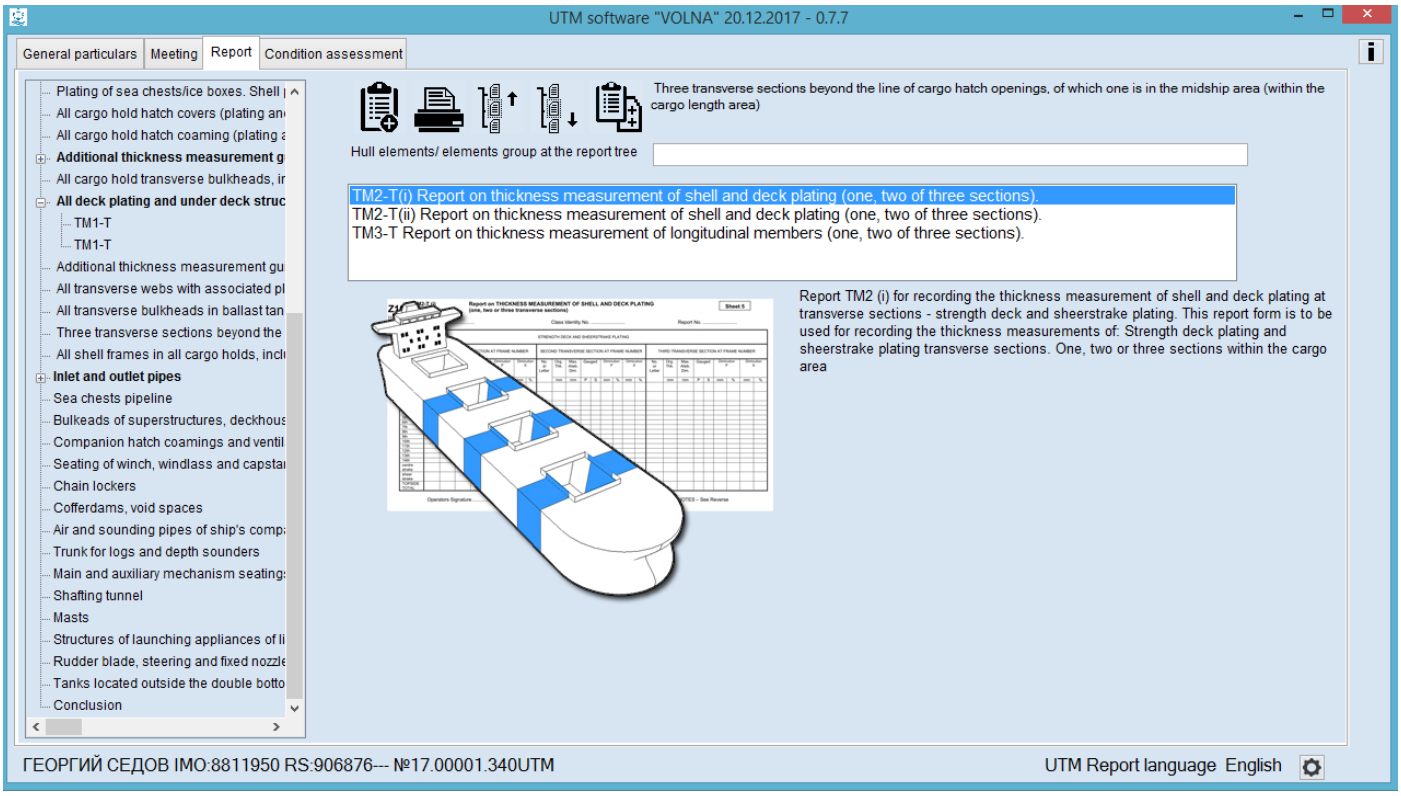


3) Then click “OK” and the following window will appear with the following options:

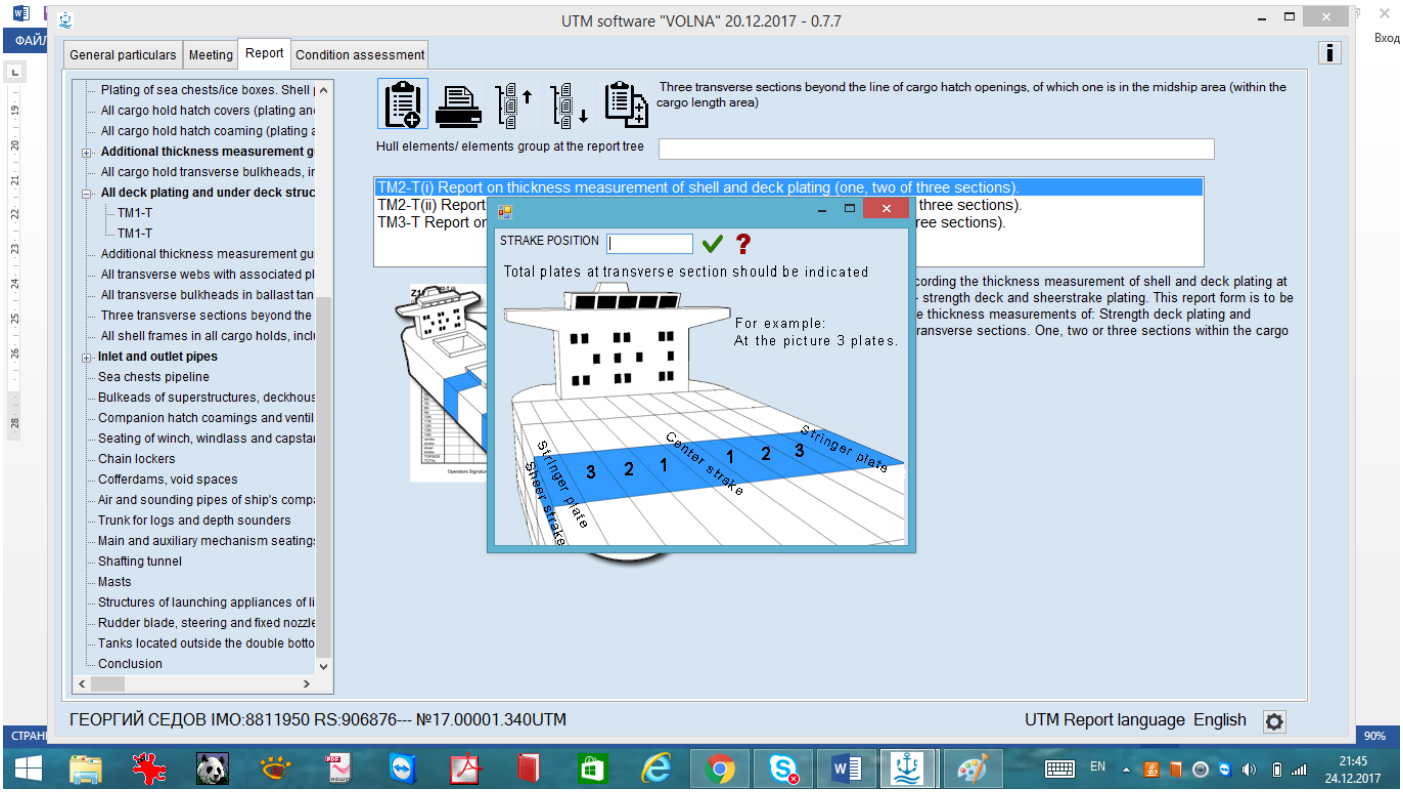
- Tabular forms for registration of data on main structures of the upper deck TM2-Ti;
- Tabular forms for registration of main structures of bottom and side plating TM2-Tii;
- Tabular forms for registration of other structures in transverse section TM3-T.

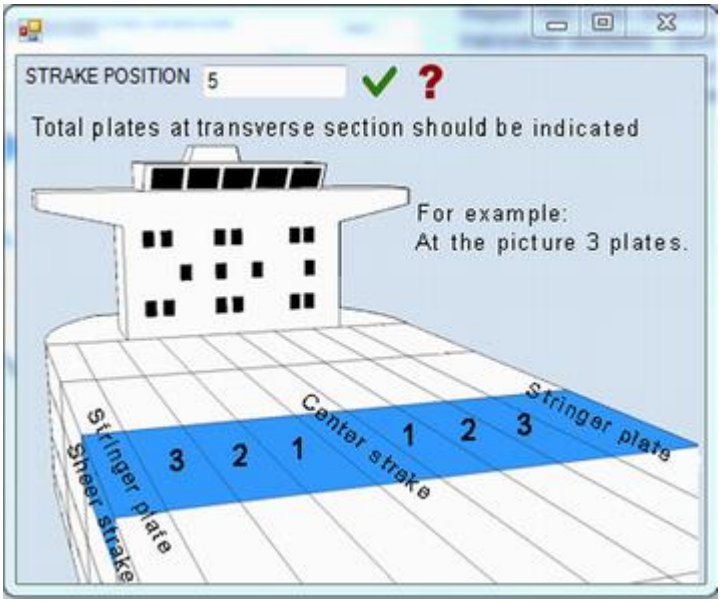


After selection of an appropriate form the software provides information with description of the table and name of structures/group of structures in the report tree.

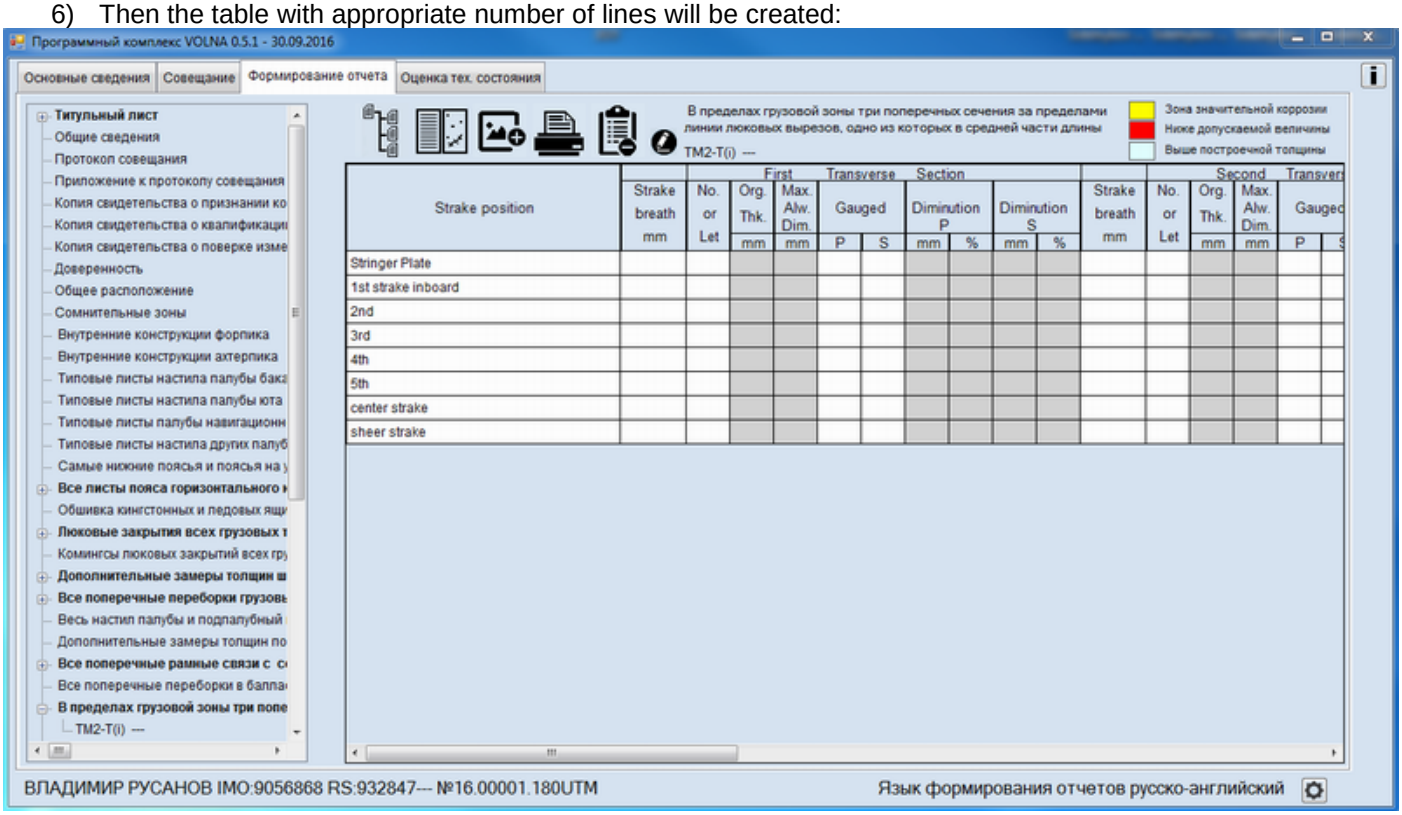


4) Further click on and
5) Then enter the number of plates of upper deck from central strake to deck stringer in the window as follows:

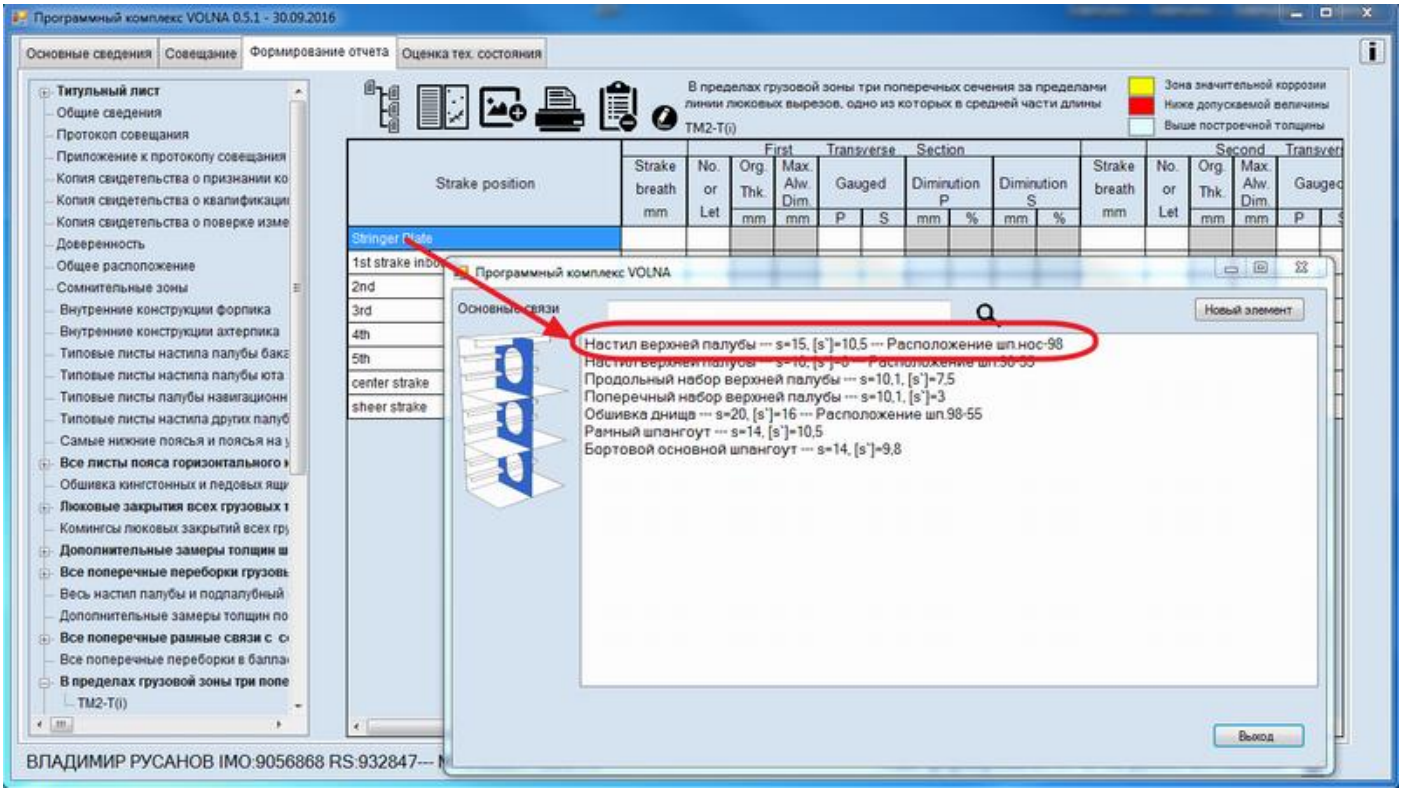




6) Then the table with appropriate number of lines will be created:

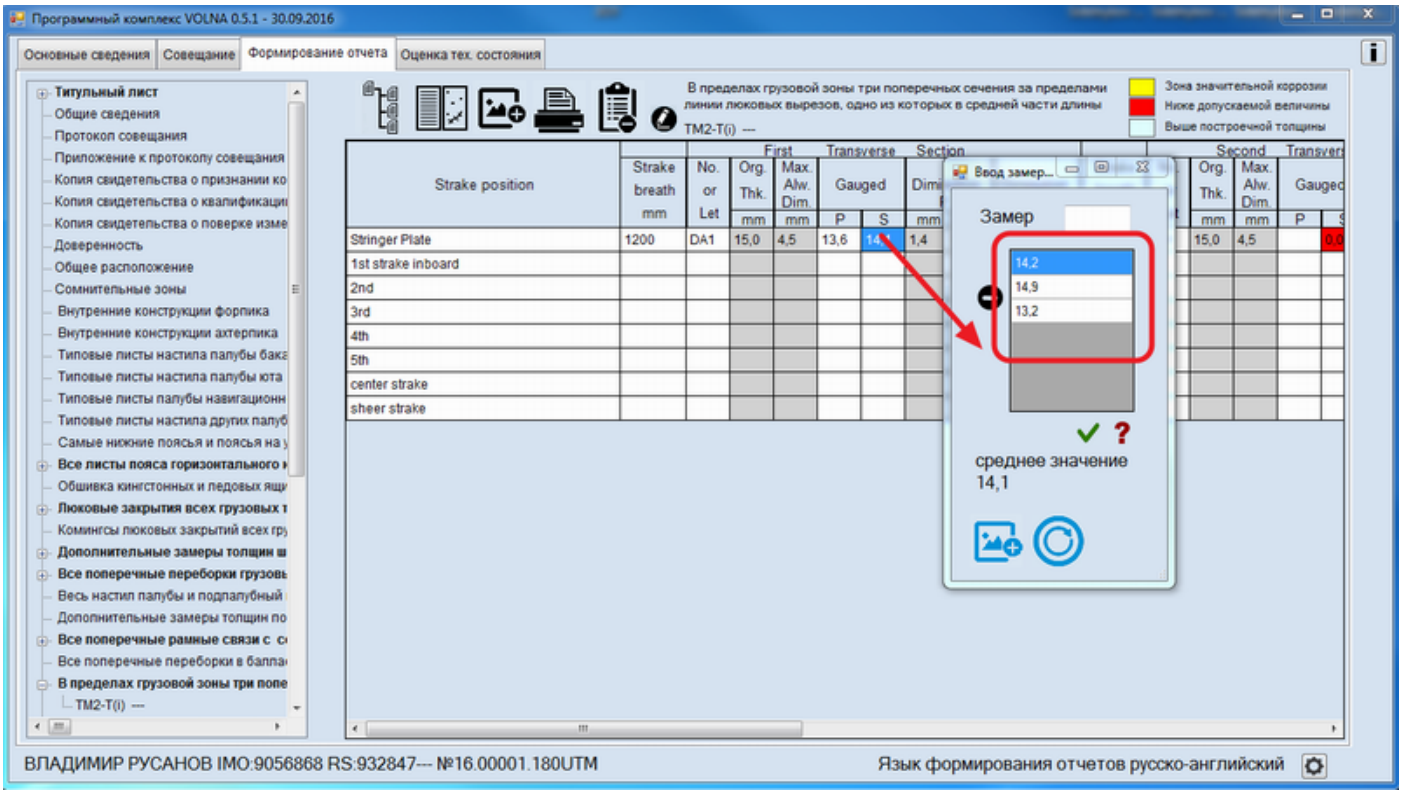


7) To enter measurements it is necessary to follow to the line and double click on the mouse, then to choose necessary item from the list of items. At that permissible thickness and permissible diminution will be entered into the table from the norms database created earlier.



The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).
IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.

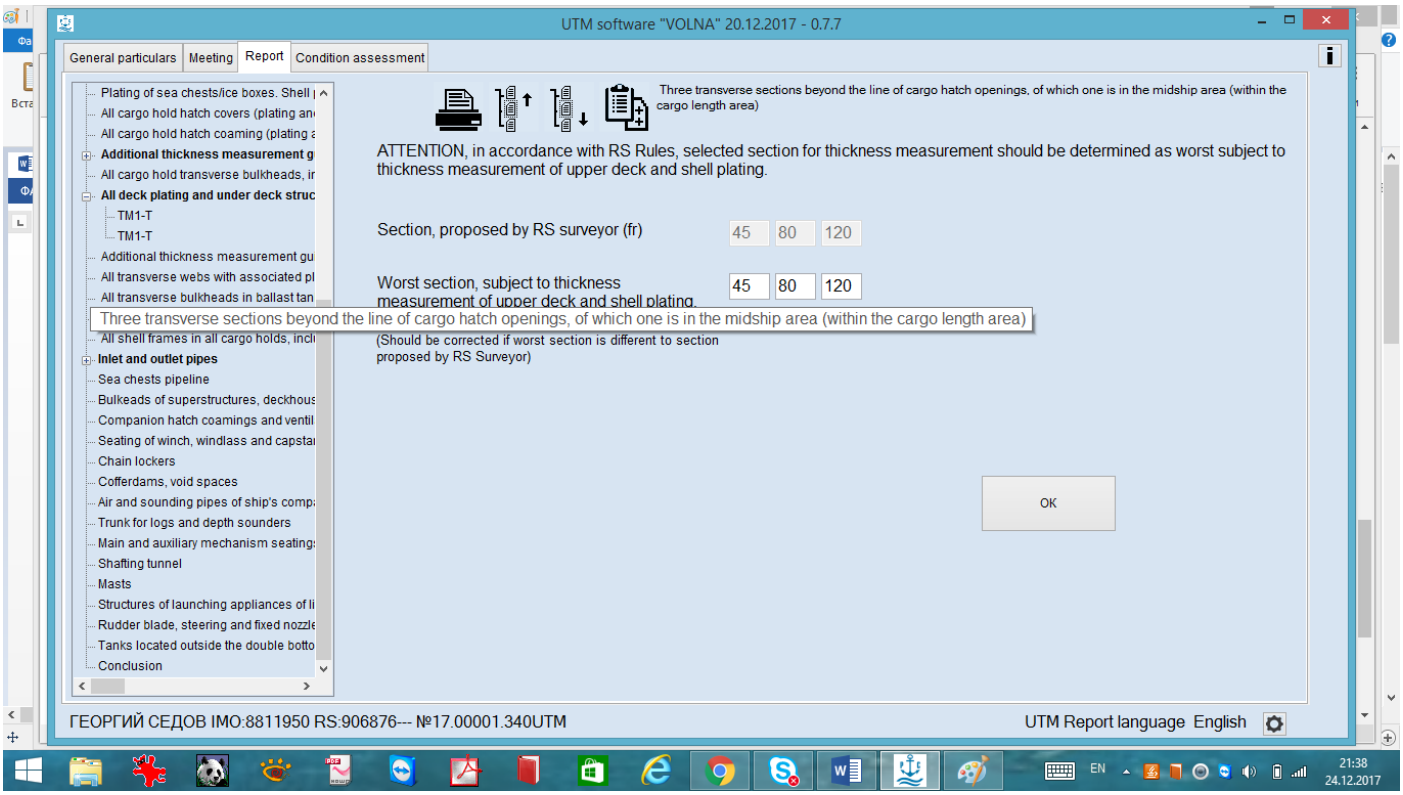
8) To draw up measurements it is necessary to click appropriate cell, the software offers to enter free number of measurements (enter appropriate value, click "Enter" and so on).



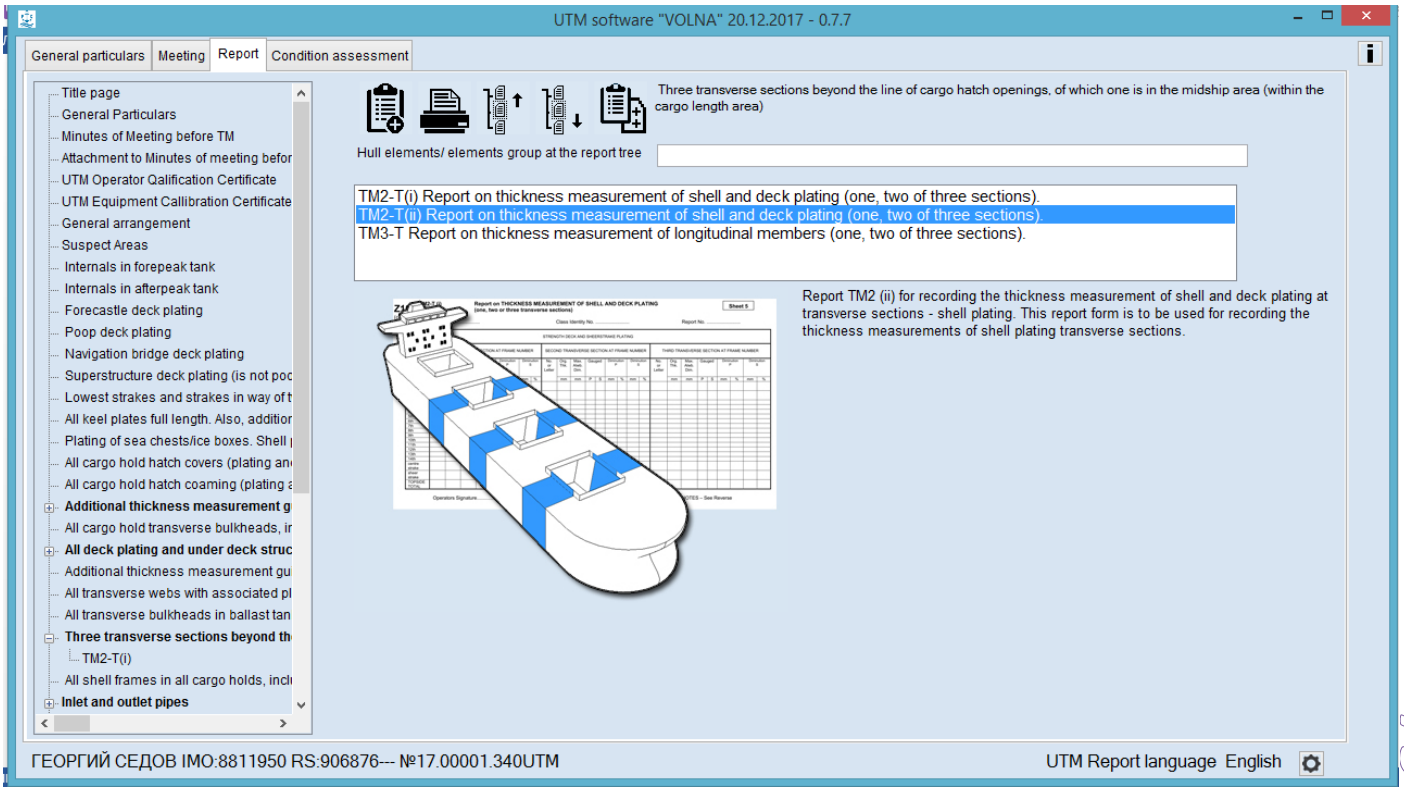
TM2ii

Tabular form TM2ii is intended for drawing up of measurements of shell plating items.

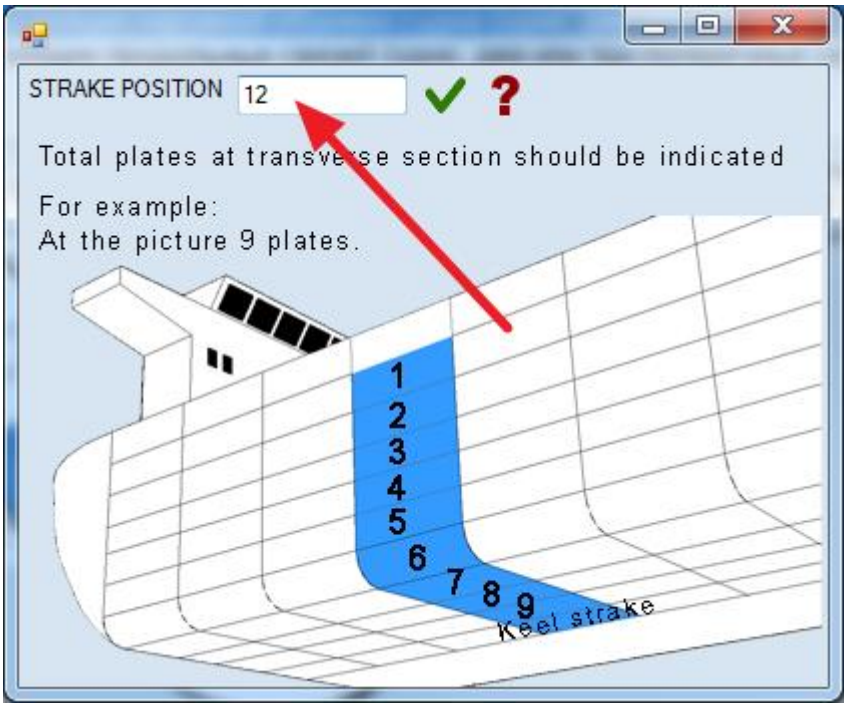
1) In the item tree it is necessary to find and click appropriate item containing words "transverse sections" and
2) Clarify location of sections on the basis of actual thickness measurements of deck and bottom plating as follows:



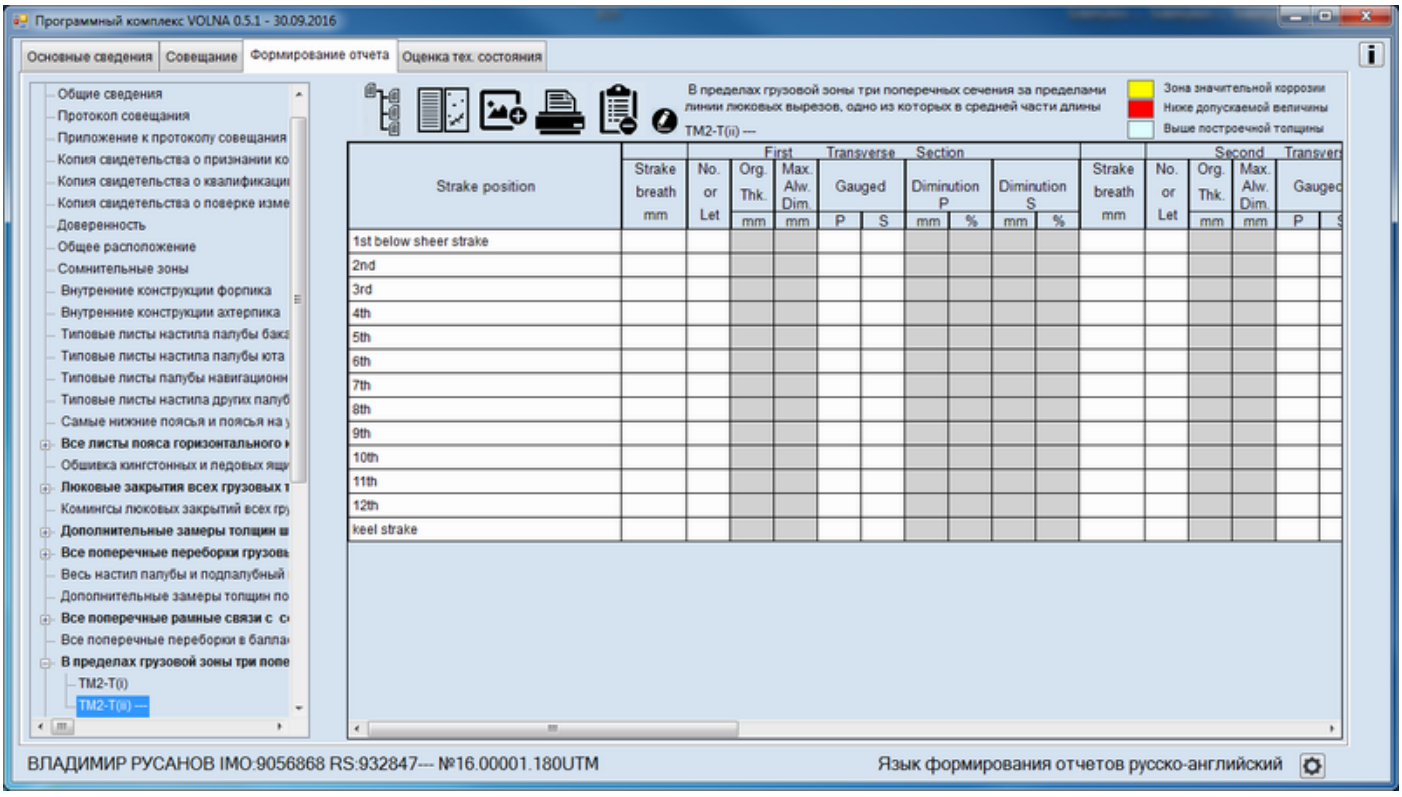
3) choose TM-2ii from the appeared list (the prompt message gives description of the table)



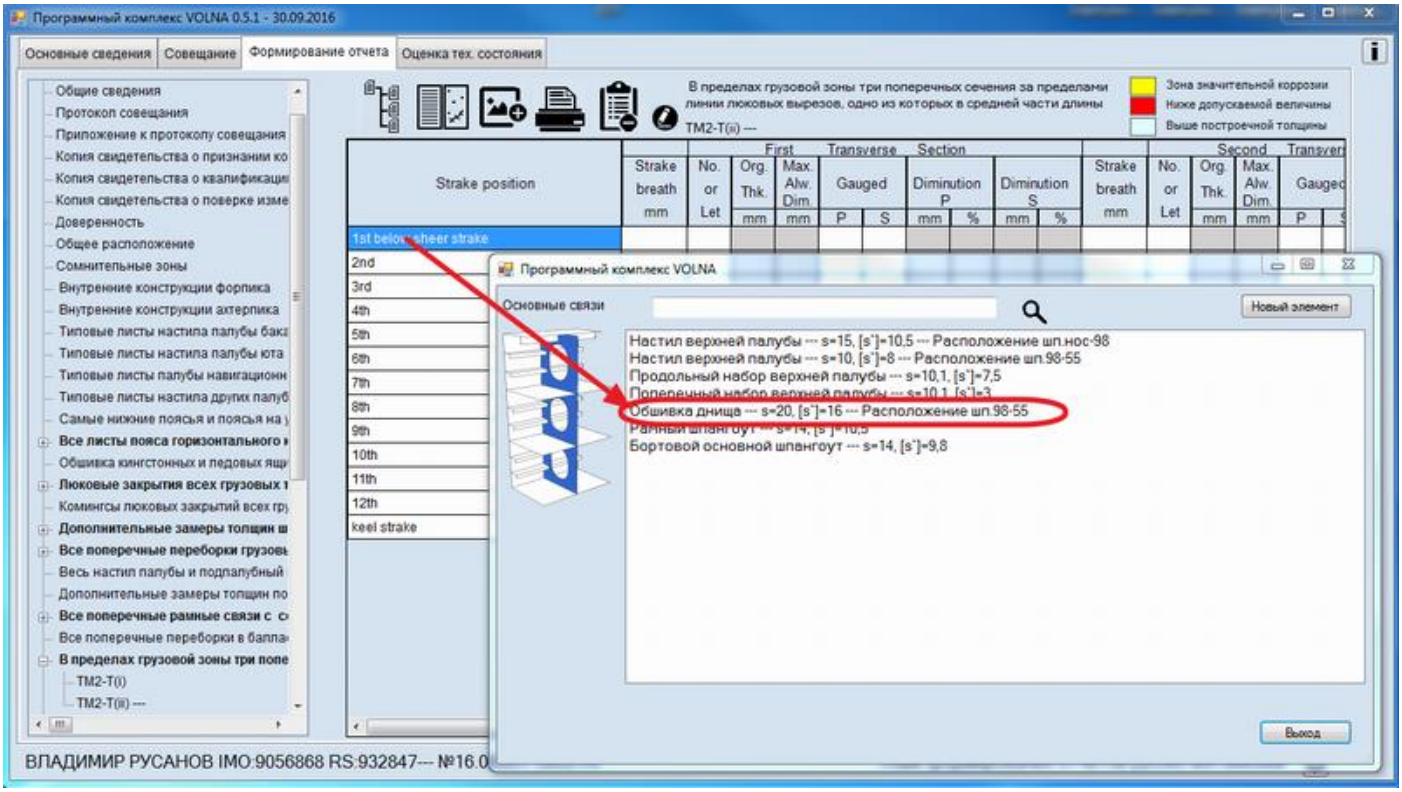
3) Then to enter necessary number of strakes of shell plating from sheerstrake to horizontal keel, for instance:



4) The table with required number of lines will appear.

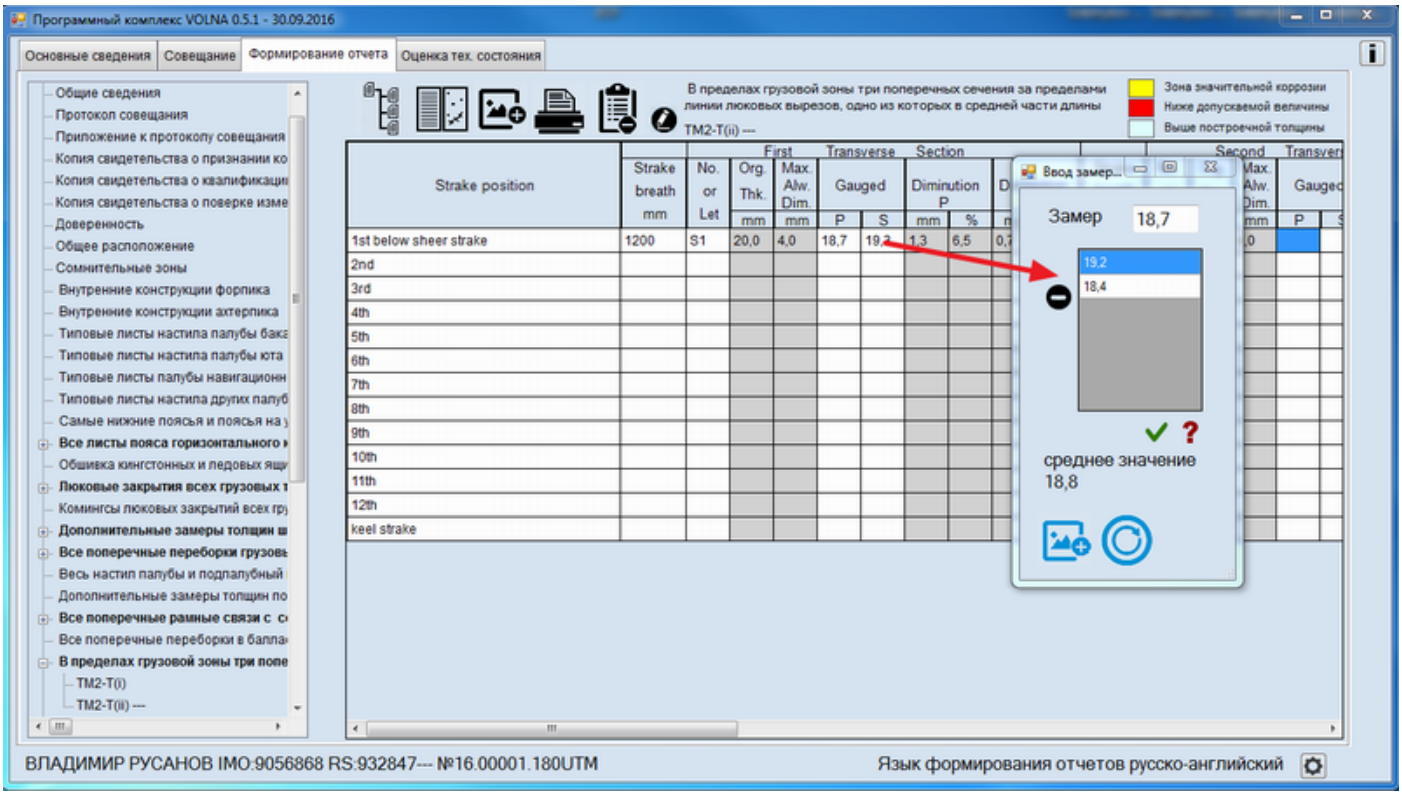


5) To enter measurements it is necessary to follow to the line and double click on the mouse, then to choose necessary item from the list of items. At that permissible thickness and permissible diminution will be entered into the table from the norms database created earlier.



The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).
IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.

1) To draw up measurements it is necessary to click appropriate cell, the software offers to enter free number of measurements (enter appropriate value, click "Enter" and so on).

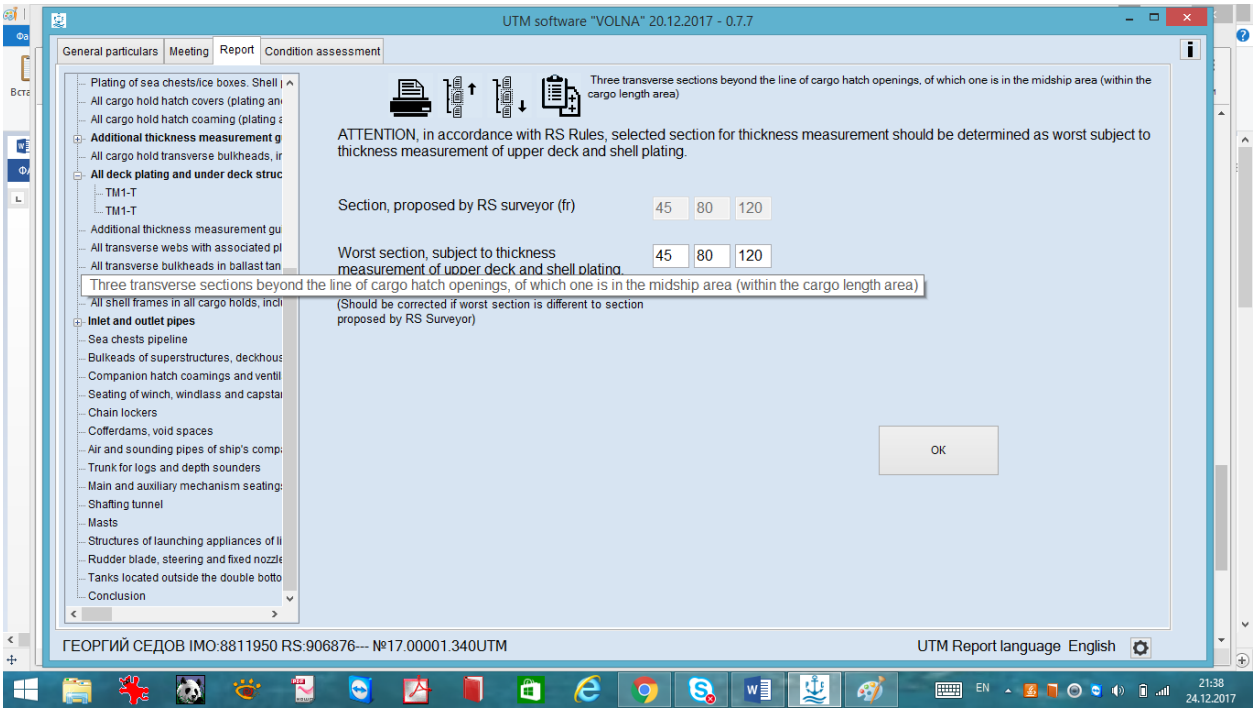


TM3

Tabular form TM3 is intended for drawing up of miscellaneous items related to the transverse section and which are not mentioned in the tables TM2i and TM2ii.

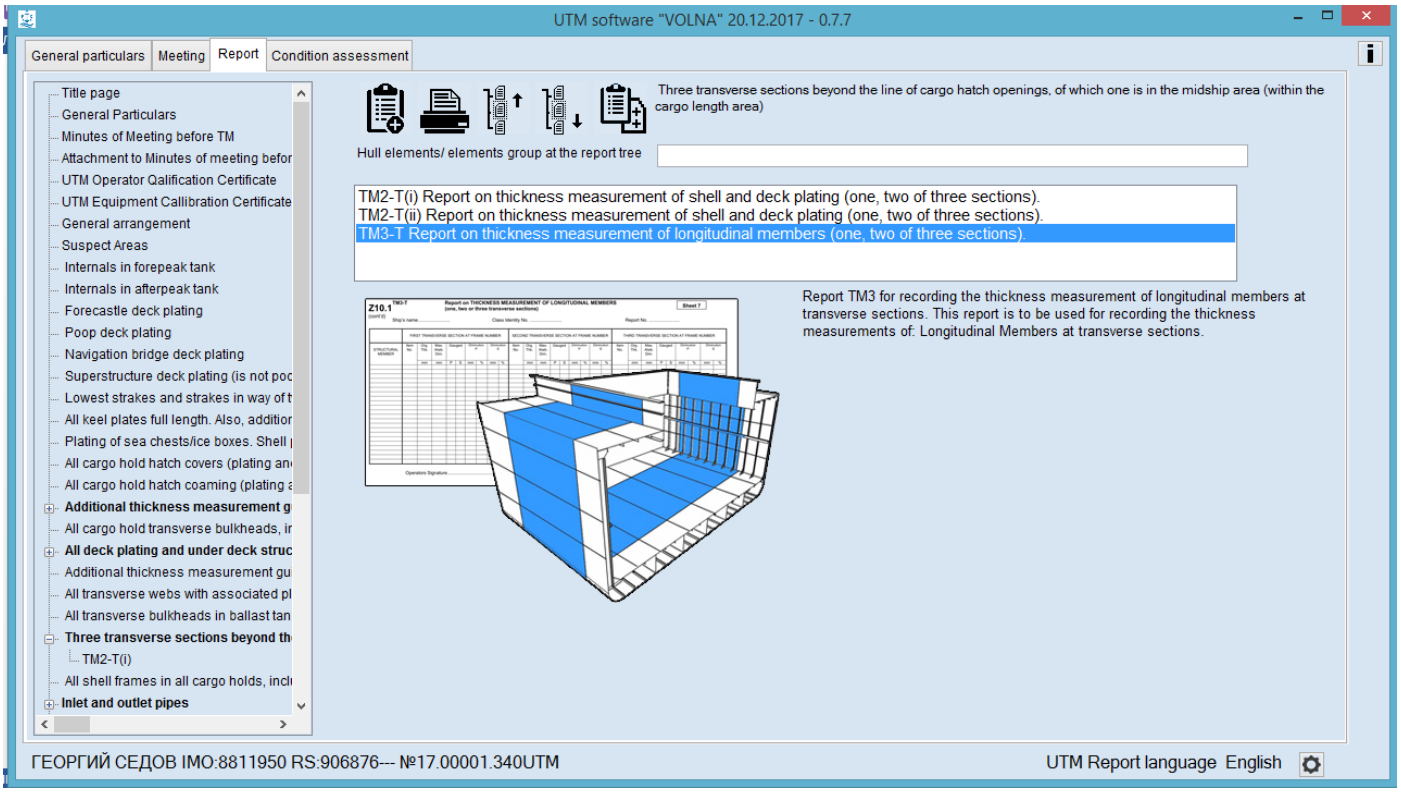
The process of drawing up of this form is the same as for forms TM 2i and TM 2ii.

1) In the item tree it is necessary to find and click appropriate item containing words “transverse sections” and
2) Clarify location of sections on the basis of actual thickness measurements of deck and bottom plating as follows:

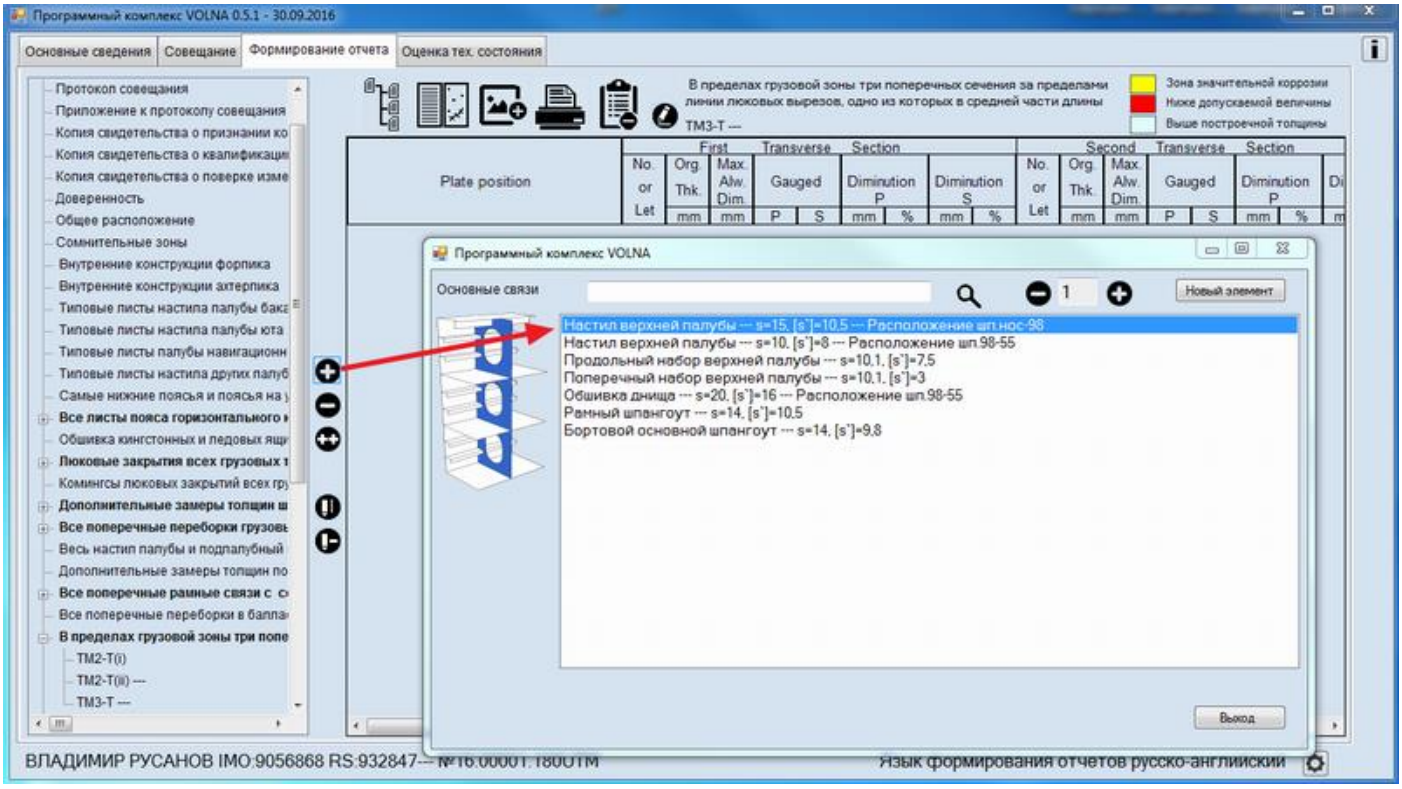


3) then choose an appropriate form from the list in the following window:

- TM2i (for TM registration of primary members of deck plating, or
- TM2ii (for TM registration of primary members of bottom and deck plating or
- TM3 (for TM registration of miscellaneous items in transverse section).

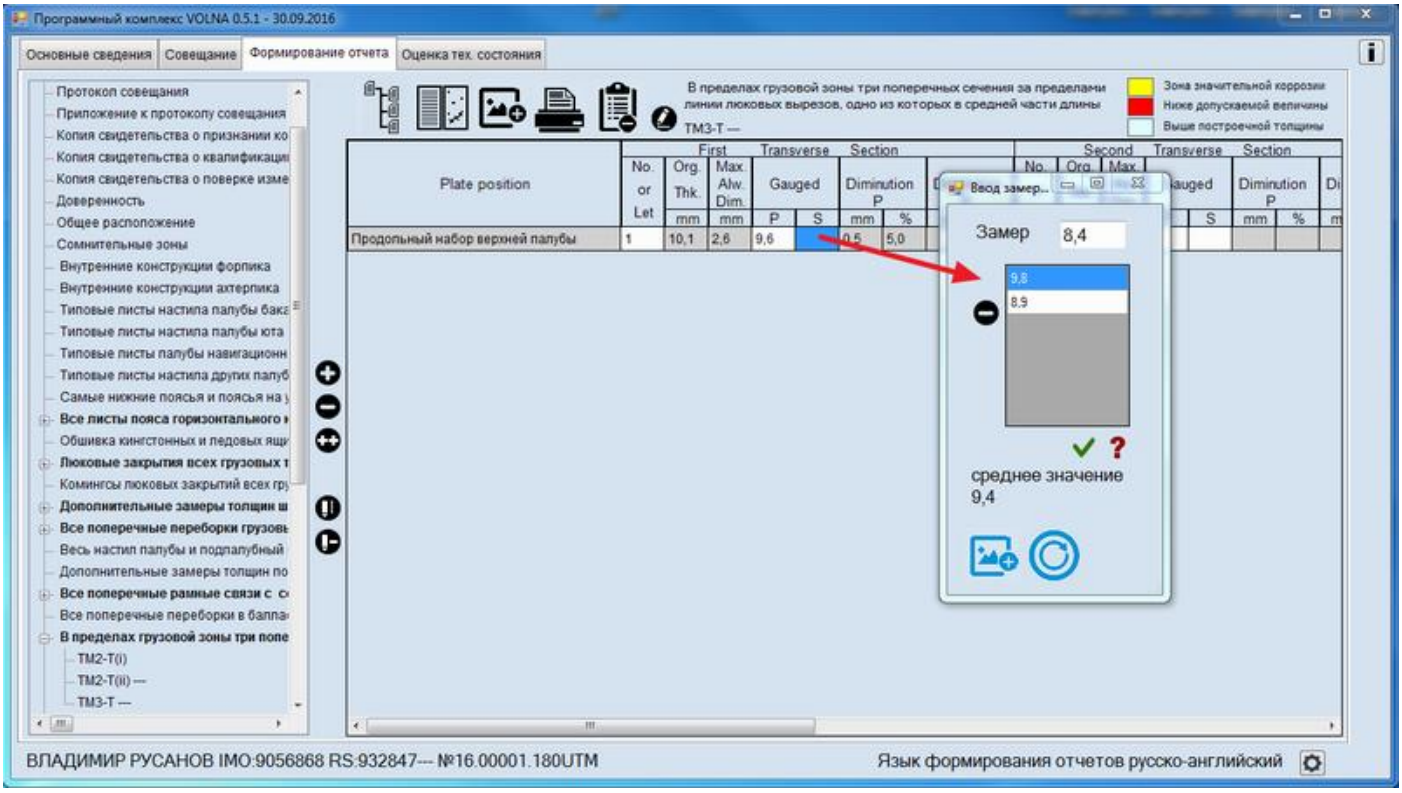


4) Click the button " and further in the appeared table click the button and choose necessary item from the list.



The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).
IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.

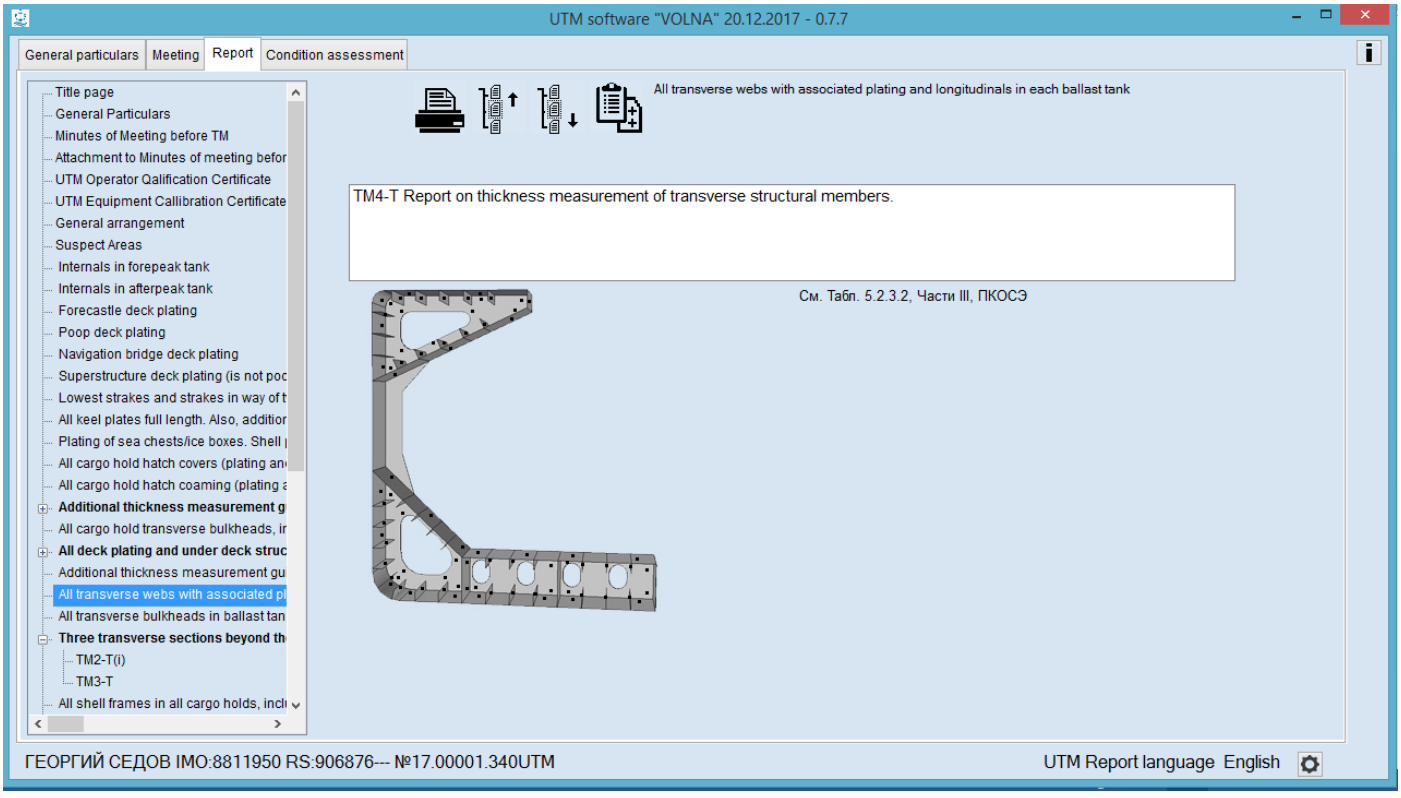
5) To draw up measurements it is necessary to click appropriate cell, the software offers to enter free number of measurements (enter appropriate value, click "Enter" and so on).



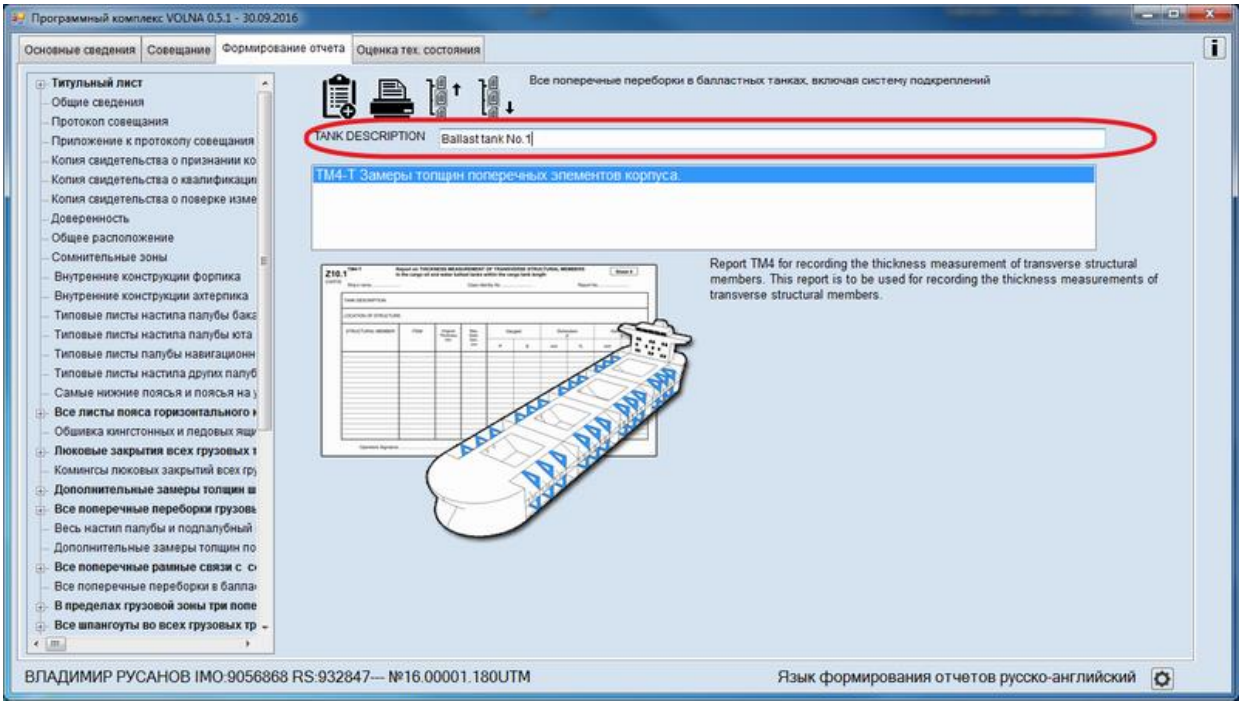
TM4

Tabular form TM4 is intended for drawing up of transverse items within ship's spaces.

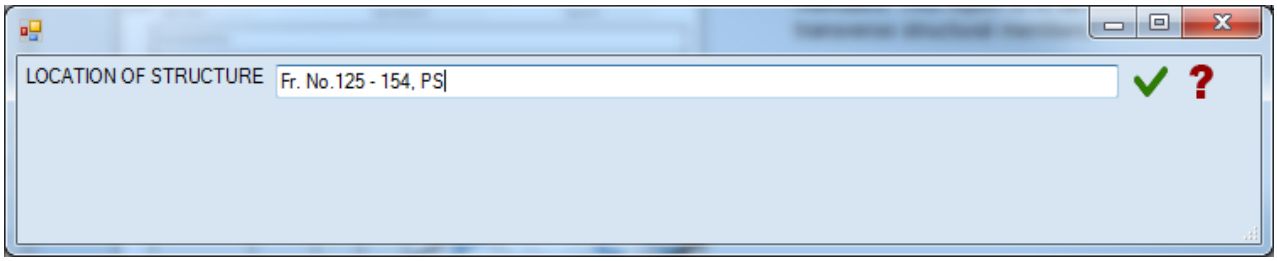
During selection of an appropriate item from the tree (for instance, all transverse webs….) the following window will appear:



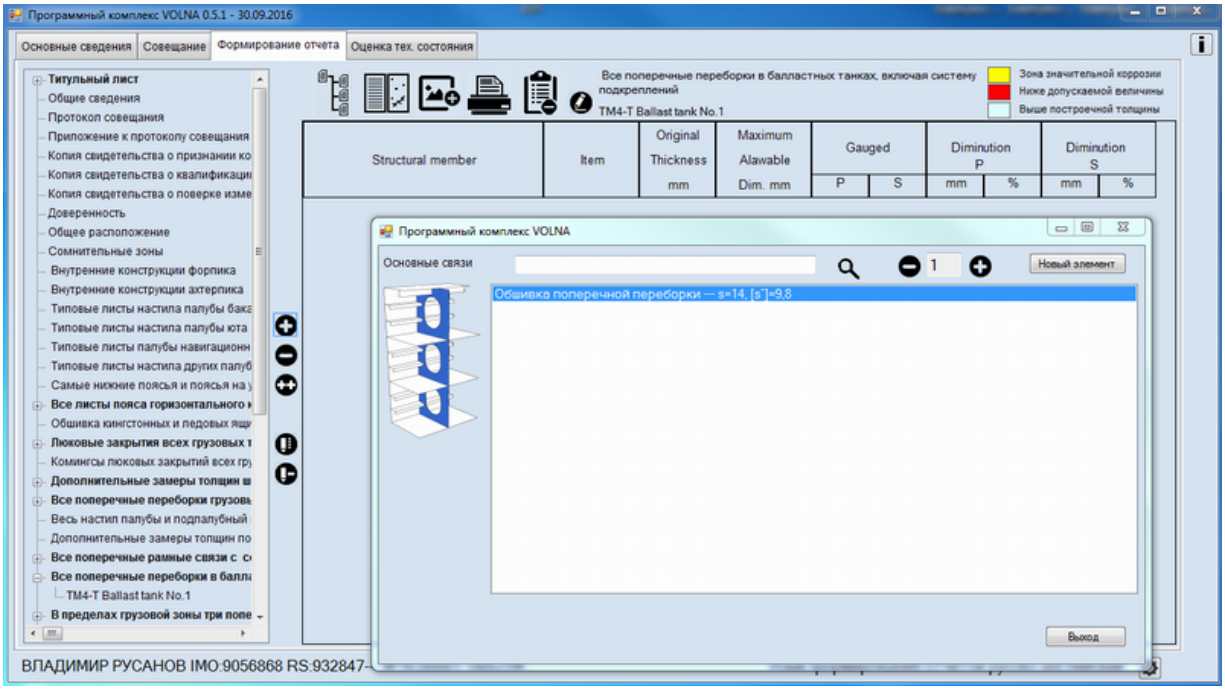
2) Then it is necessary to enter description of the space in the field "Tank description" and to choose appropriate form from the list as follows:



3) Further in the window "LOCATION OF STRUCTURE" it is necessary to describe location of the space.



4) To add the line in the table to click the button , and then to choose an appropriate item:

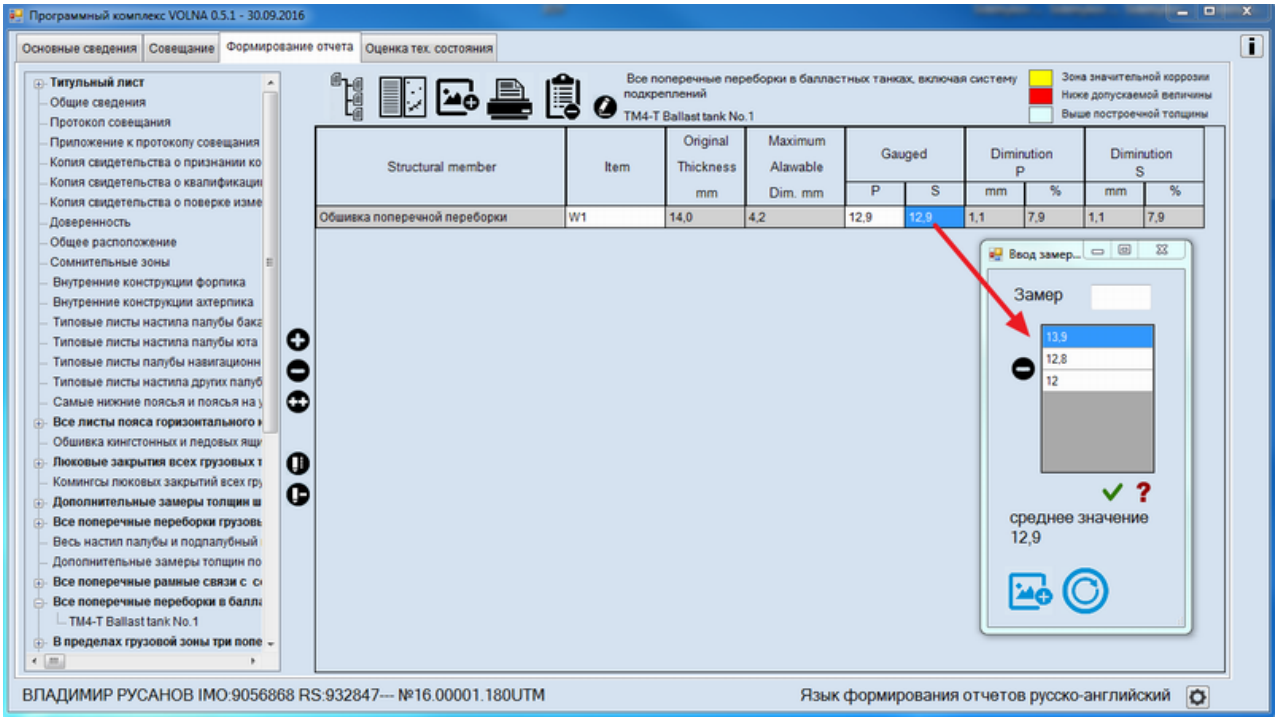


5) To enter empty fields (item index and gauged thicknesses).

The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).

IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.

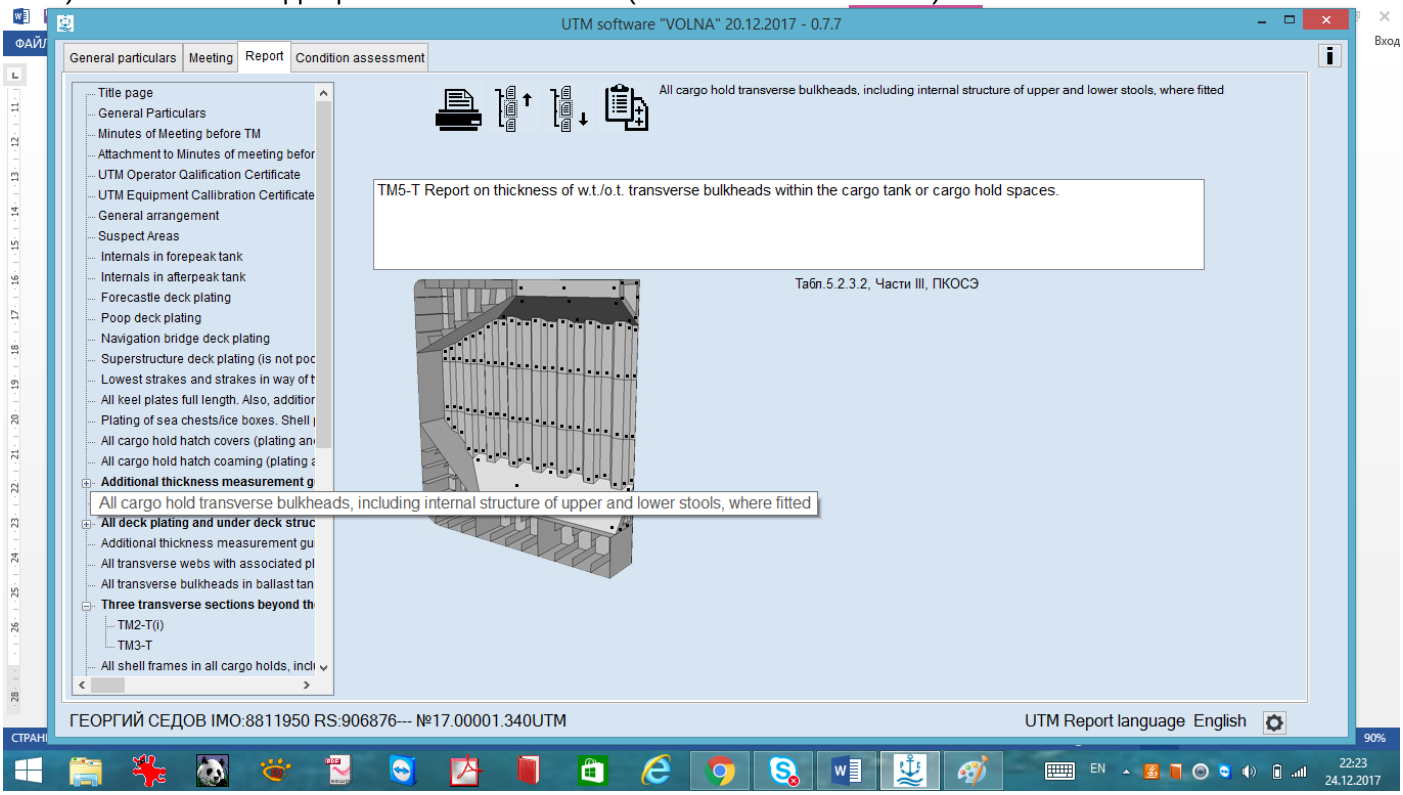
6) To draw up measurements it is necessary to click appropriate cell, the software offers to enter free number of measurements (enter appropriate value, click “Enter” and so on).



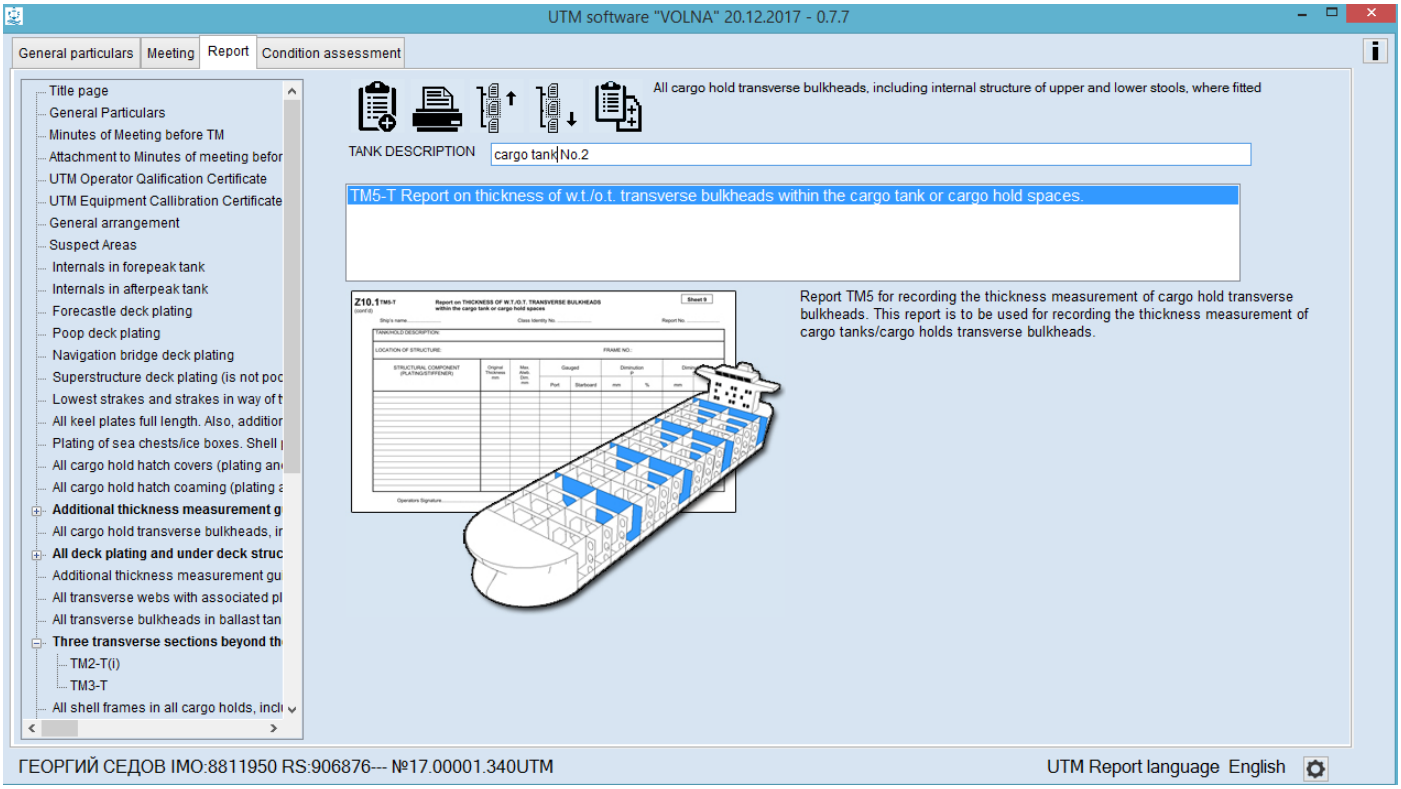
TM5

Tabular form TM5 is intended for drawing up of measurements of transverse bulkheads in cargo holds.

1) To choose an appropriate item from the tree (i.e. transverse bulkheads).

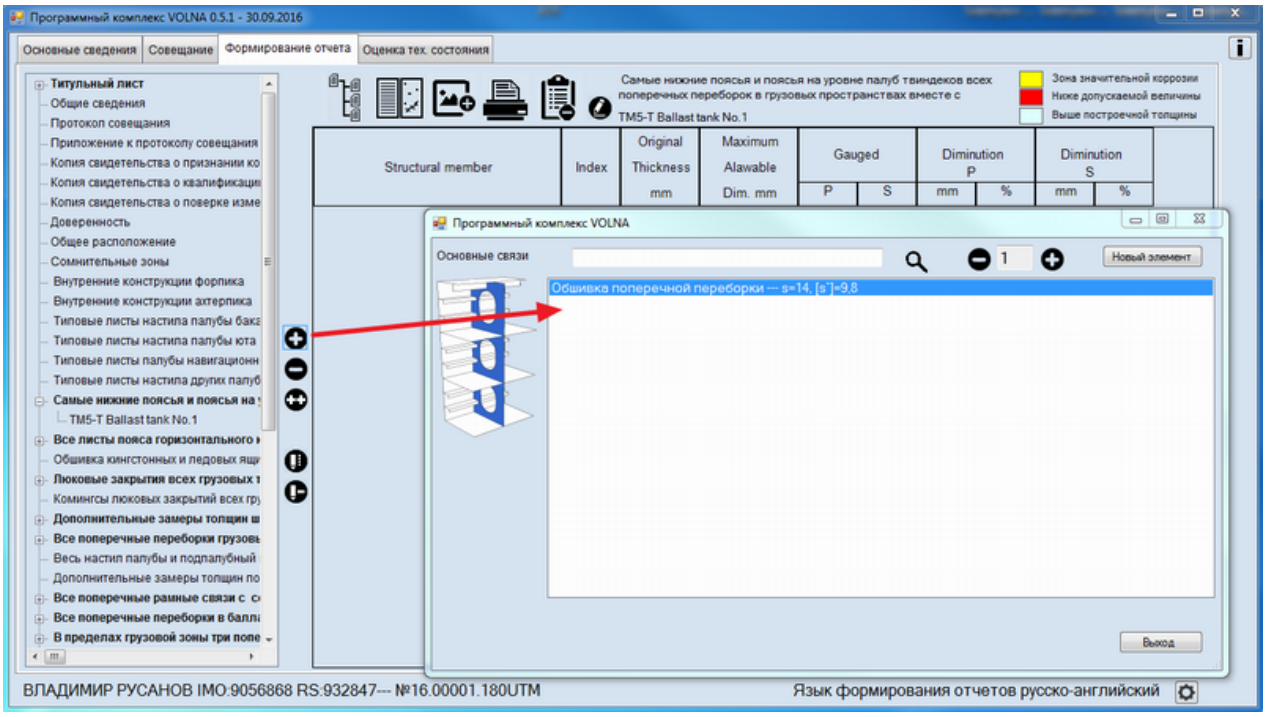


2) To describe the space in the field “Tank description” and to choose form from the list as follows.



3) Then, in the appeared window "LOCATION OF STRUCTURE" to enter information on location of the space.

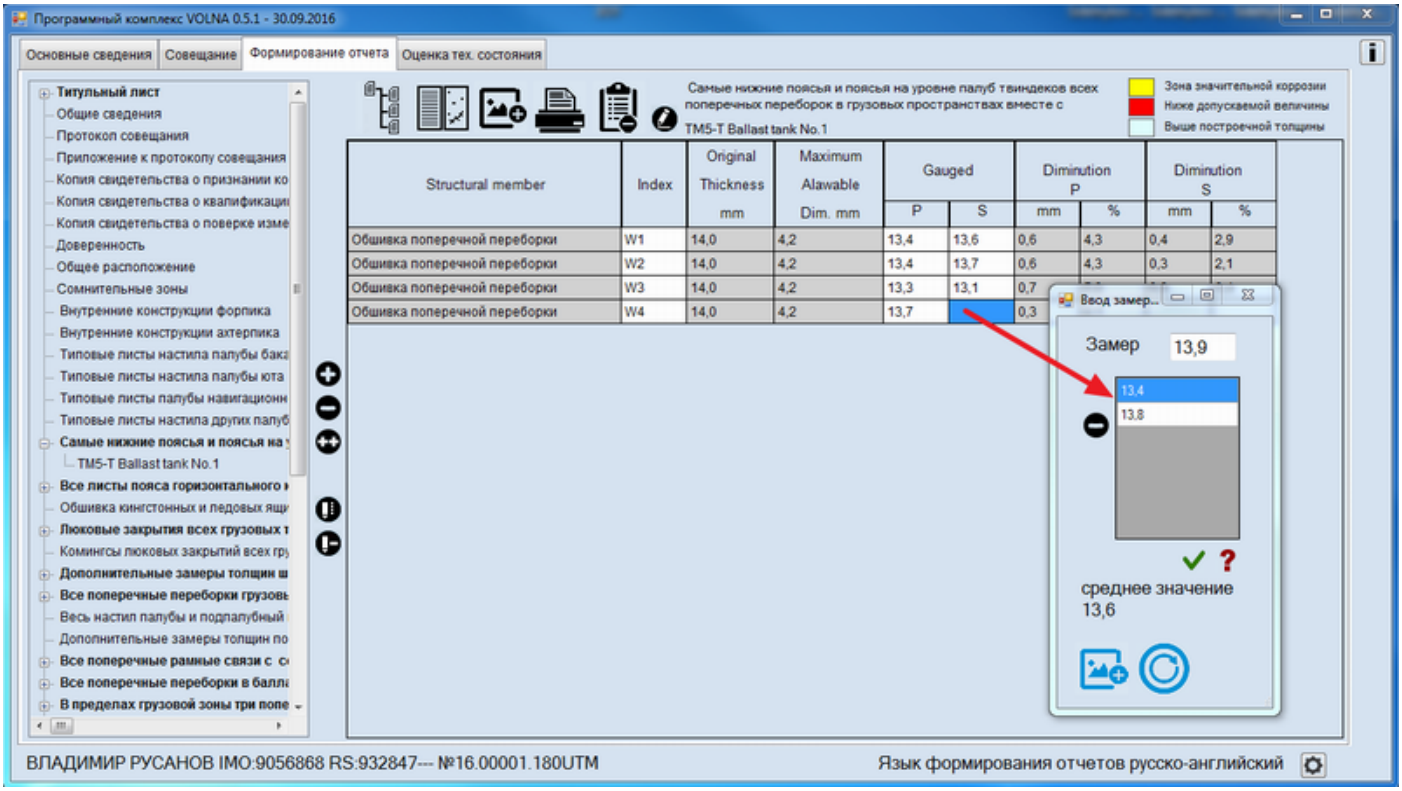
4) To add a line in the table to click the button , and further to choose an appropriate item.



5) To draw up empty fields (item index and gauged thicknesses).

The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).
IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.

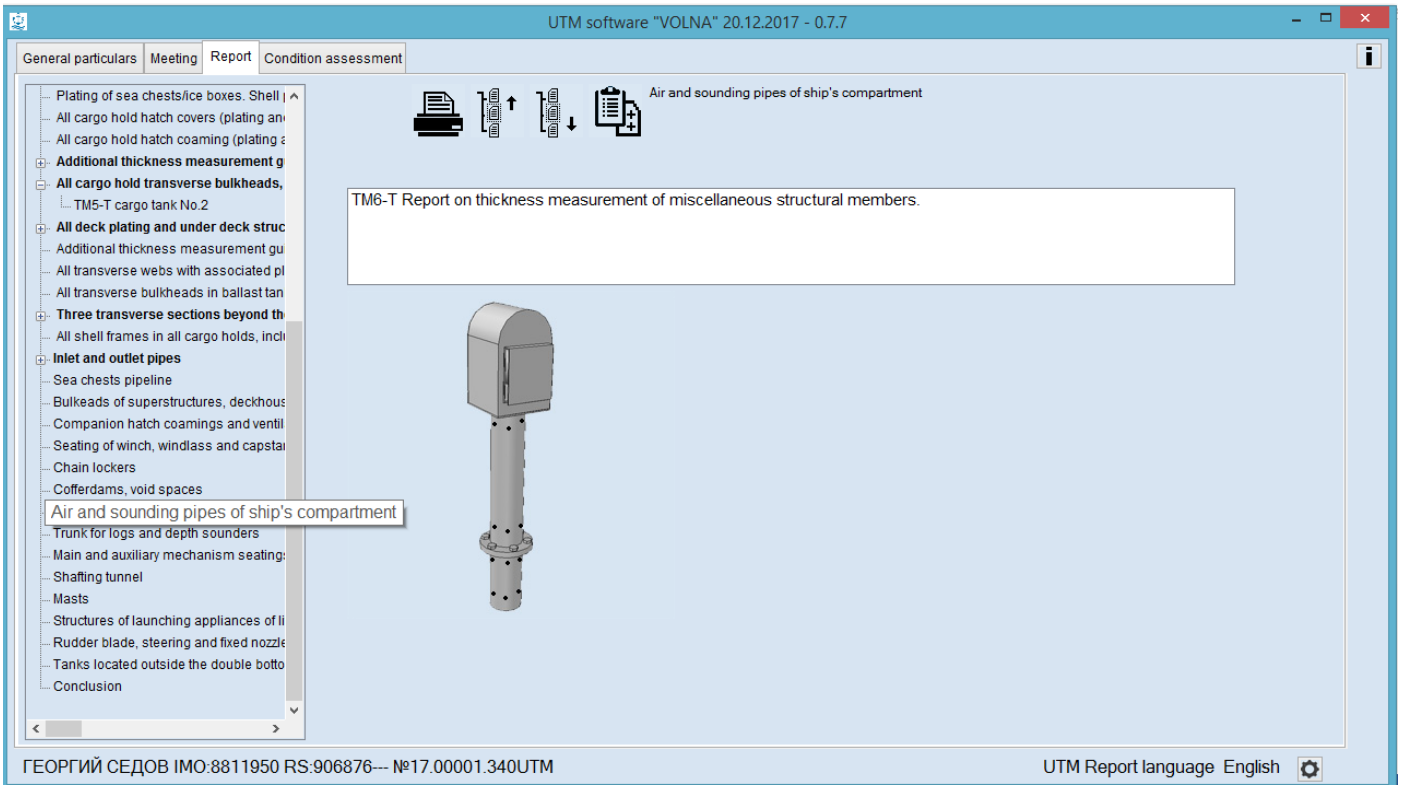
6) To draw up measurements it is necessary to click appropriate cell, the software offers to enter free number of measurements (enter appropriate value, click “Enter” and so on).



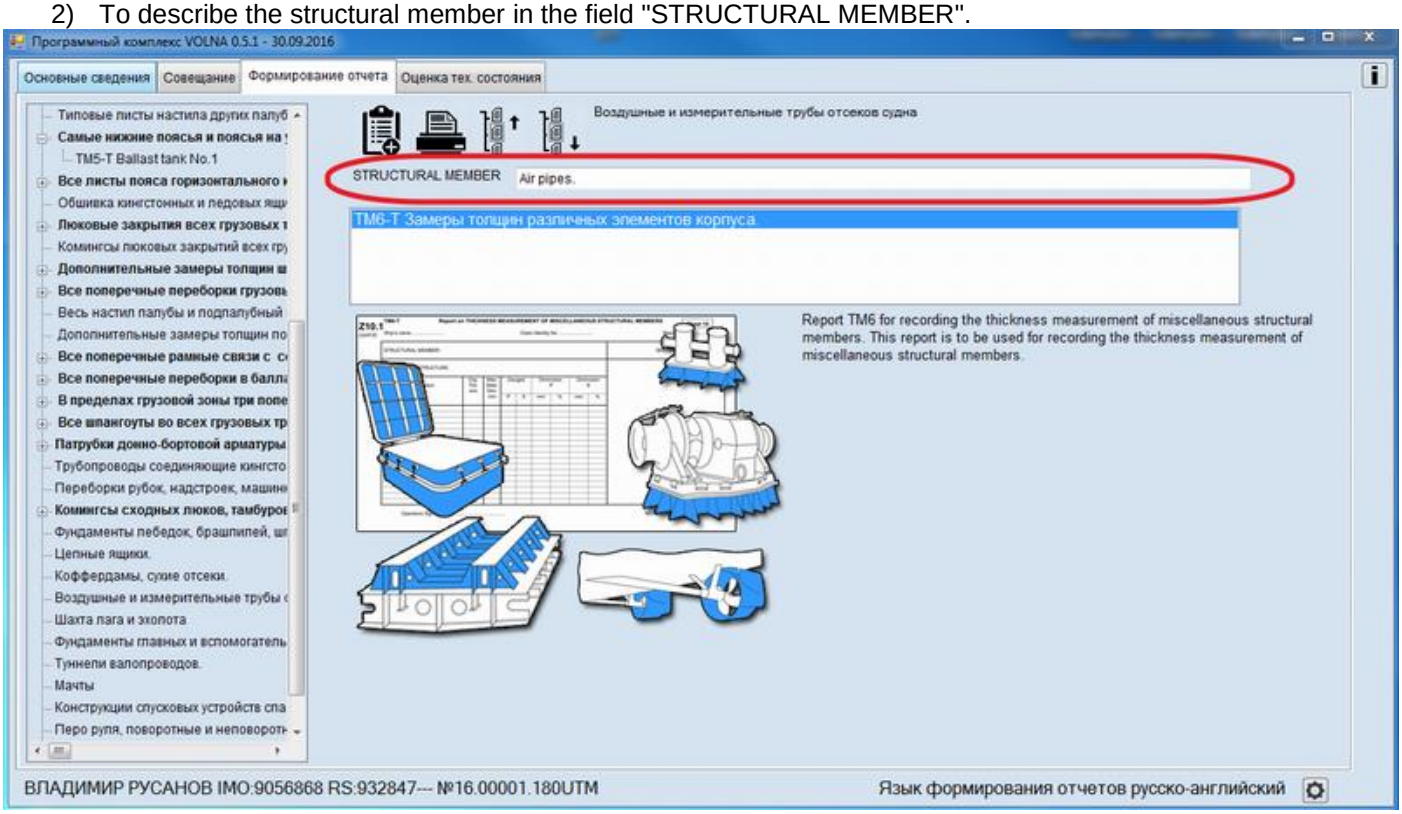
TM6

Tabular form TM6 is intended for drawing up of miscellaneous items which are not mentioned in forms TM1-TM5, TM7 and TM7(31).

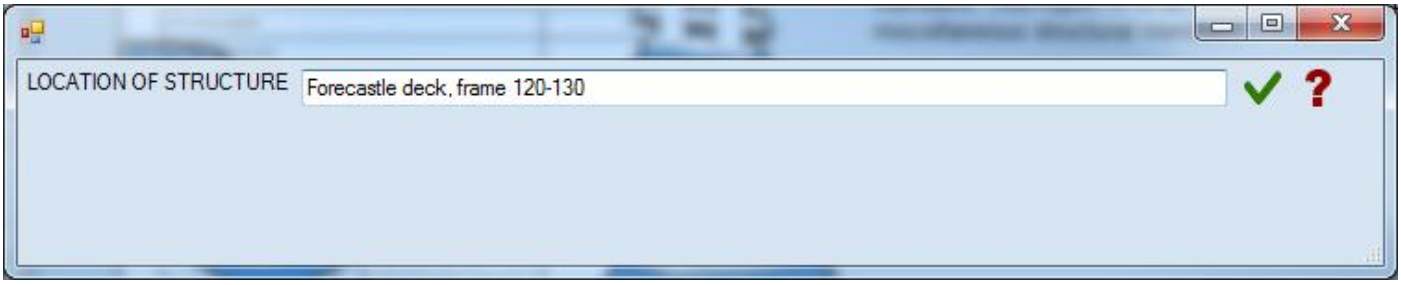
1) To choose relevant item from the tree (for instance, air and sounding pipes)



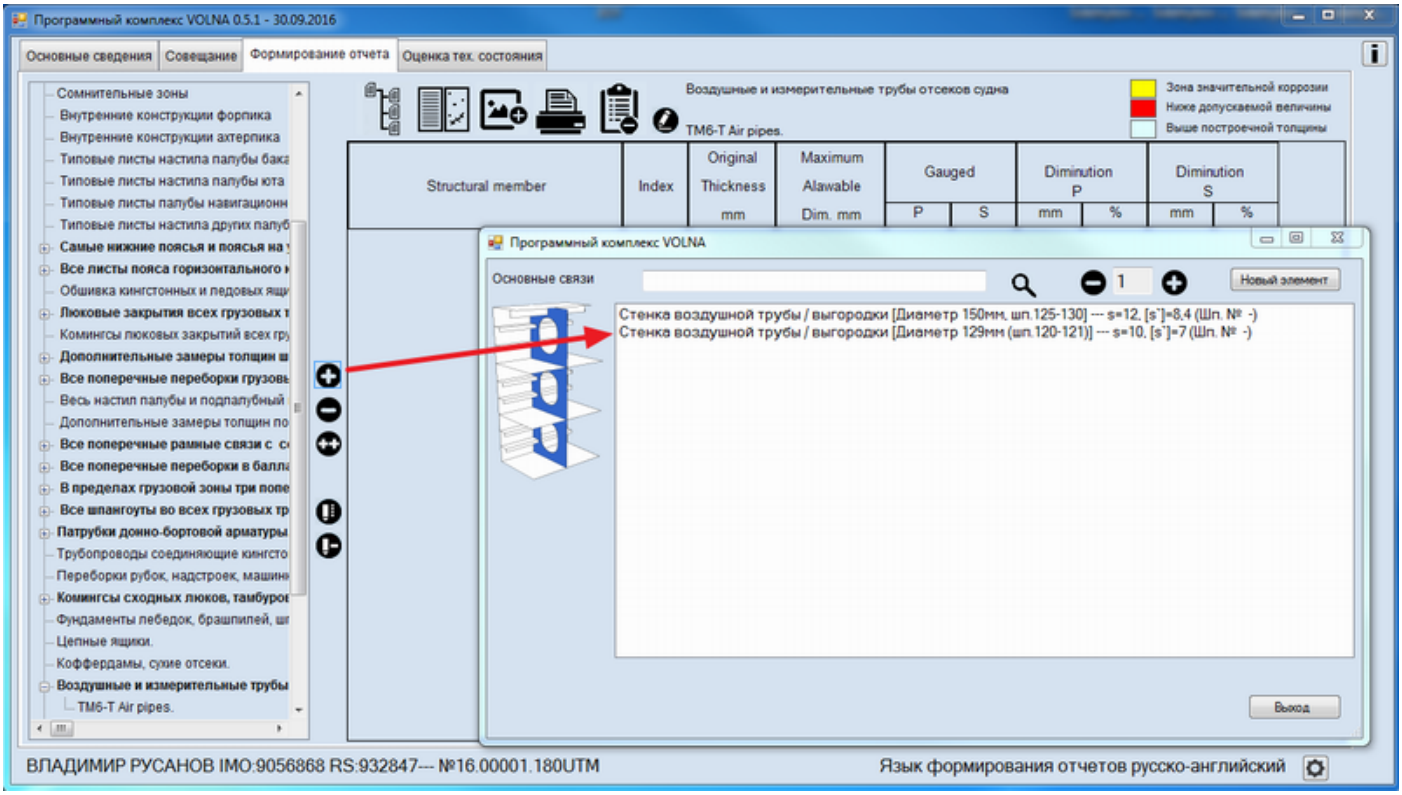
2) To describe the structural member in the field "STRUCTURAL MEMBER".



3) Further, in the window "LOCATION OF STRUCTURE" to enter necessary in formation on location of the structure, for example:



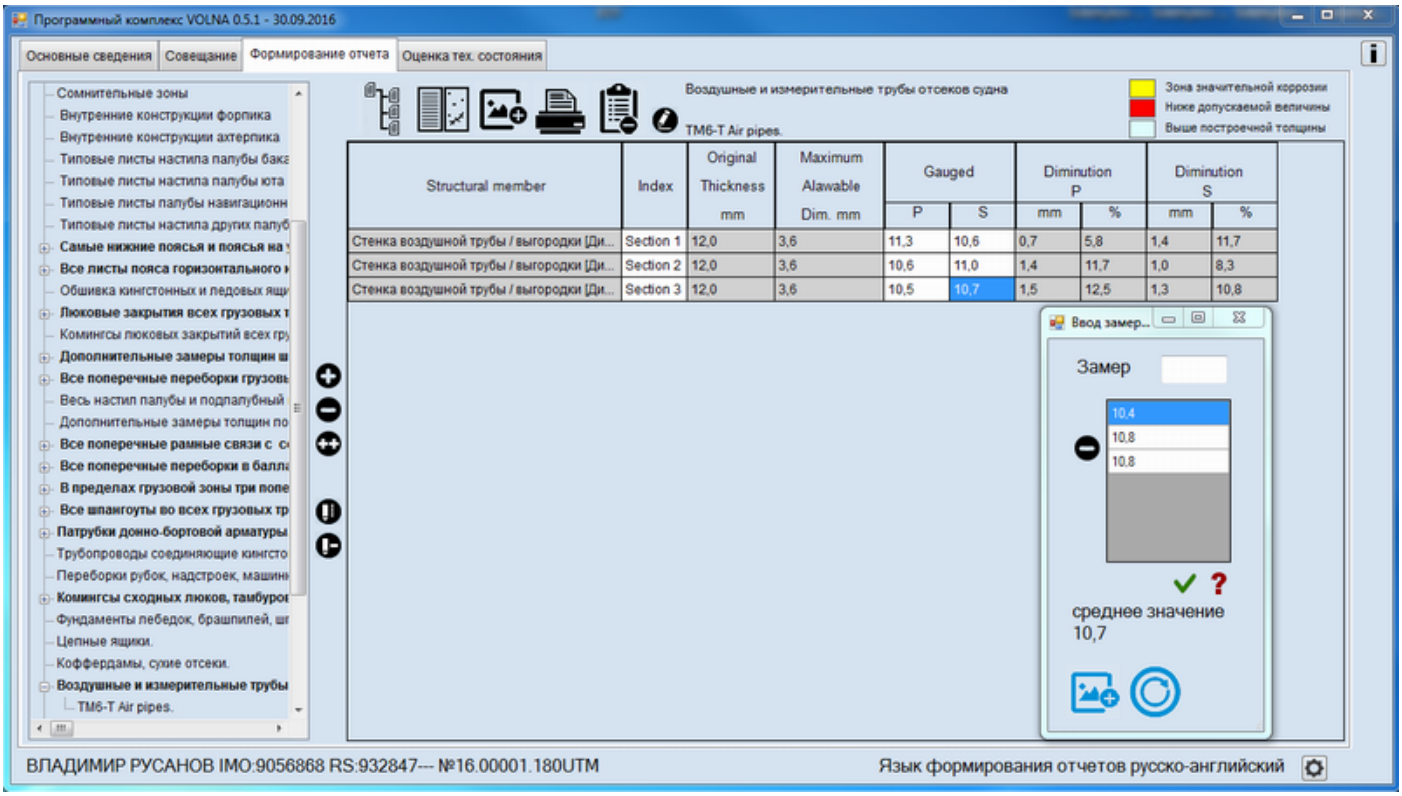
4) To add a line in the table to click the icon , and further in the appeared window to select an appropriate item.



5) To draw up empty fields (item index, gauged thicknesses).

The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).
IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.

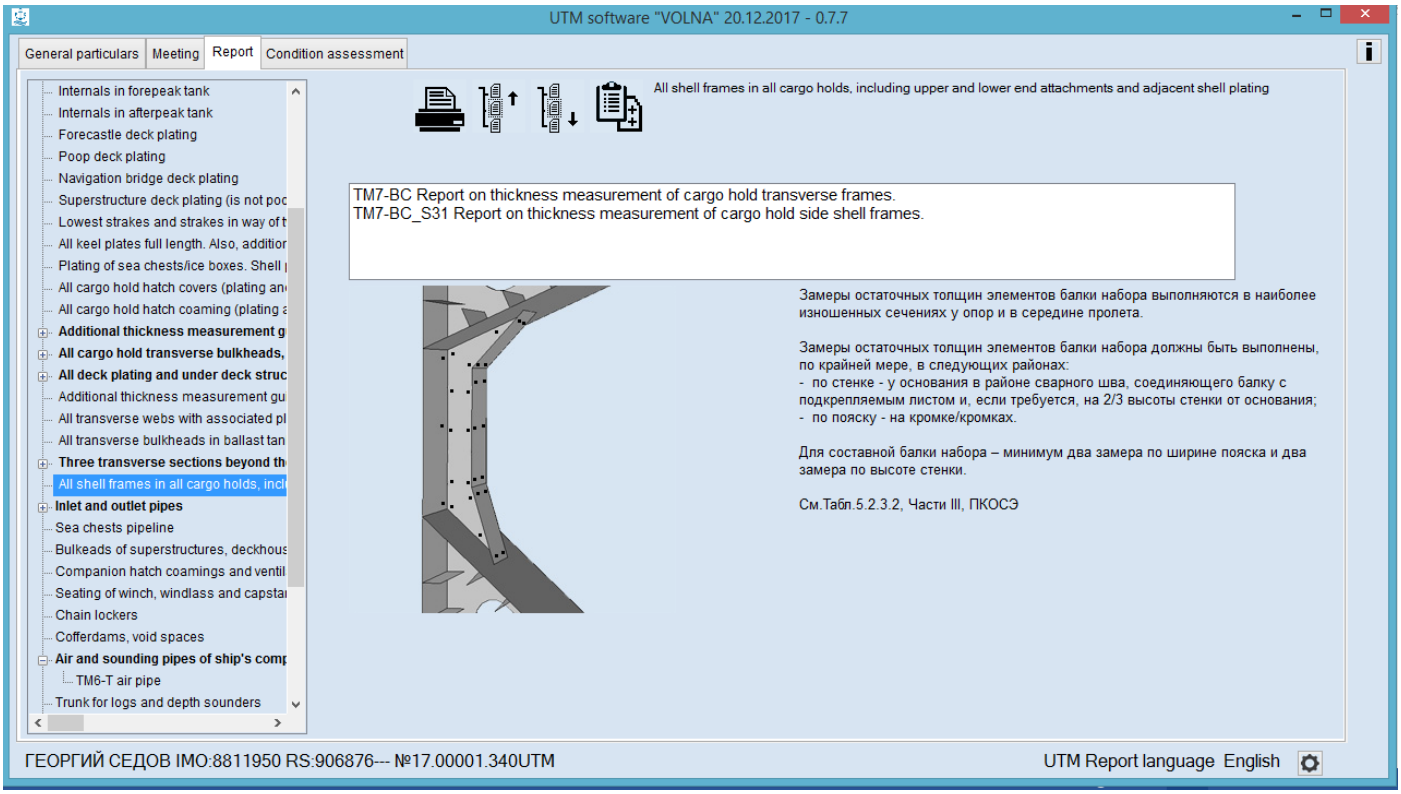
6) To draw up measurements it is necessary to click appropriate cell, the software offers to enter free number of measurements (enter appropriate value, click "Enter" and so on).



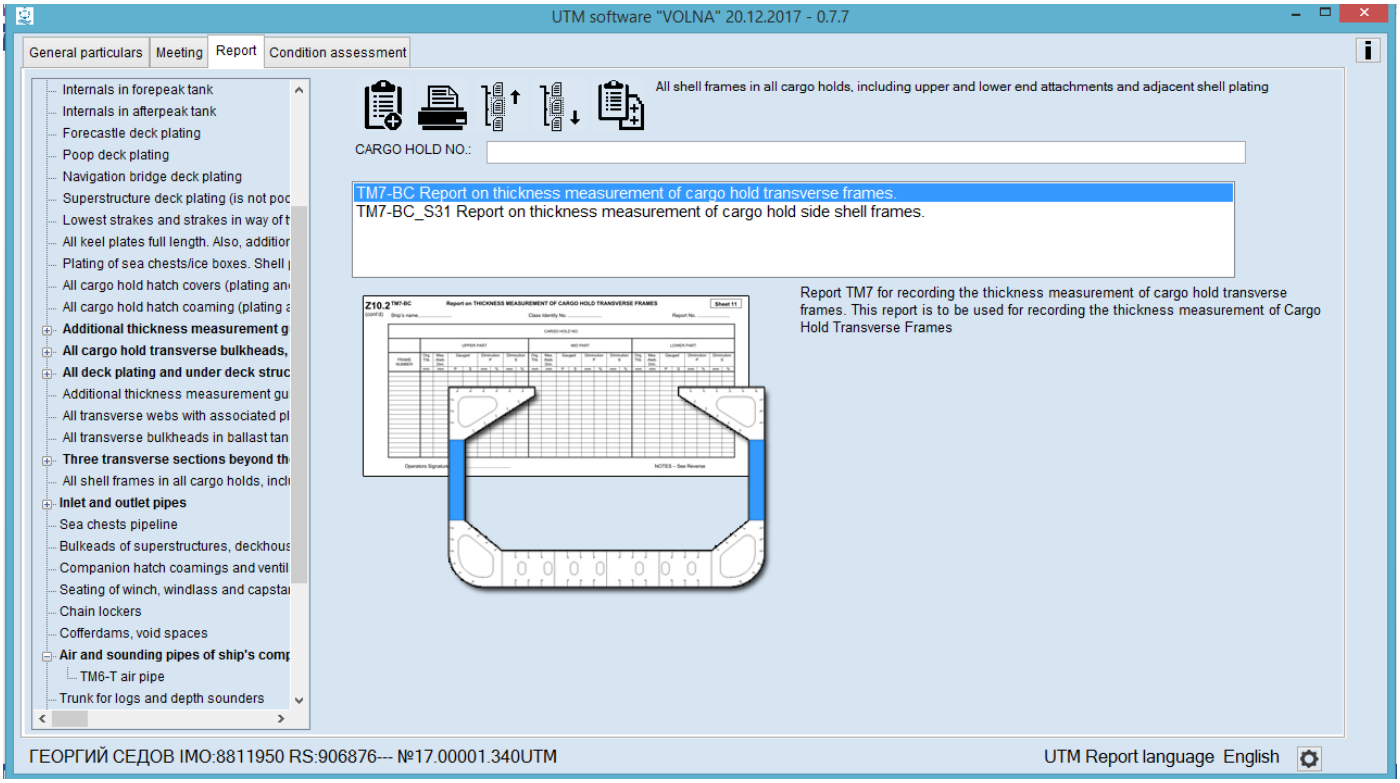
TM7

Tabular form TM7 is intended for drawing up of cargo hold side shell frames.

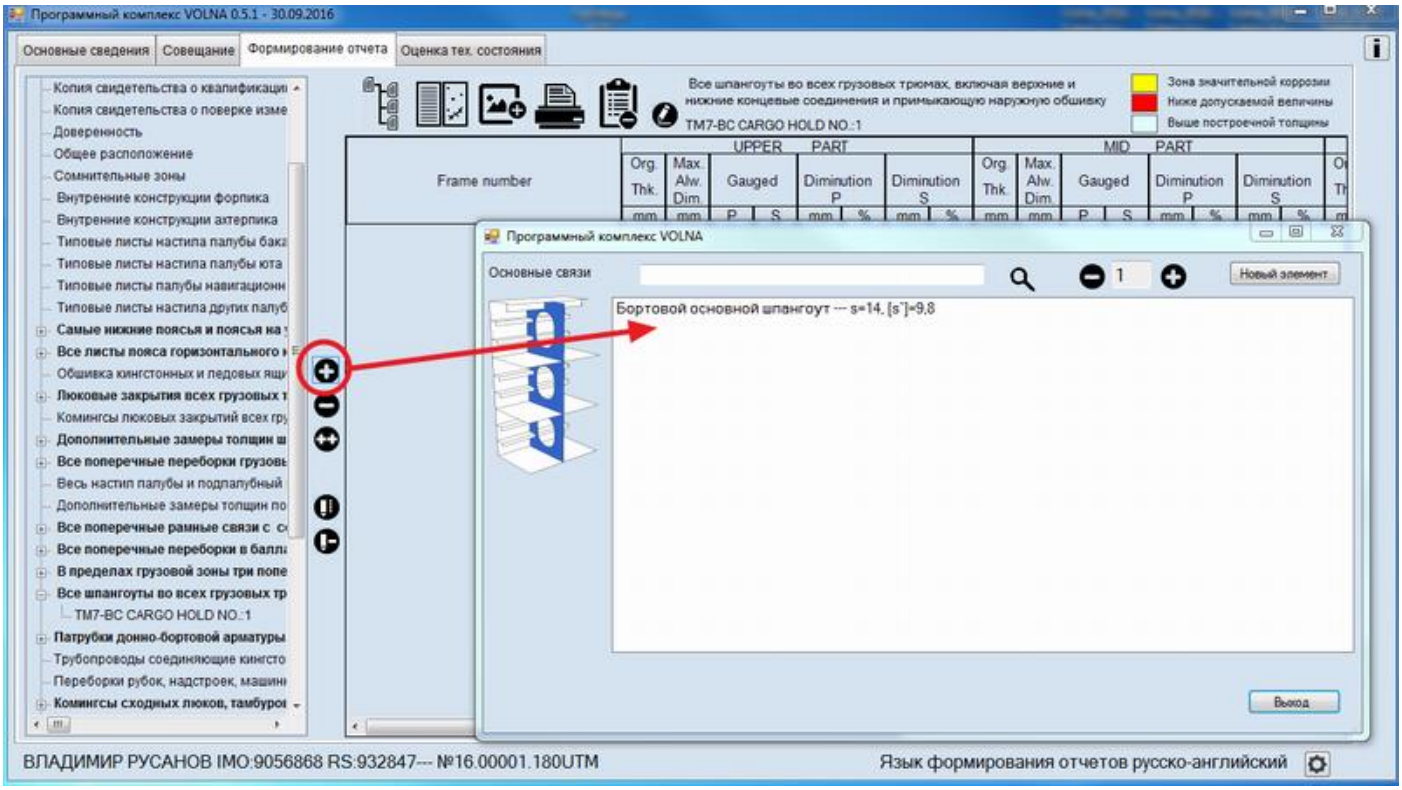
1) To select appropriate item from the tree (shell frames in cargo holds….)



2) To select an appropriate form (TM7-BC) and enter cargo hold No, in the field "CARGO HOLD No."



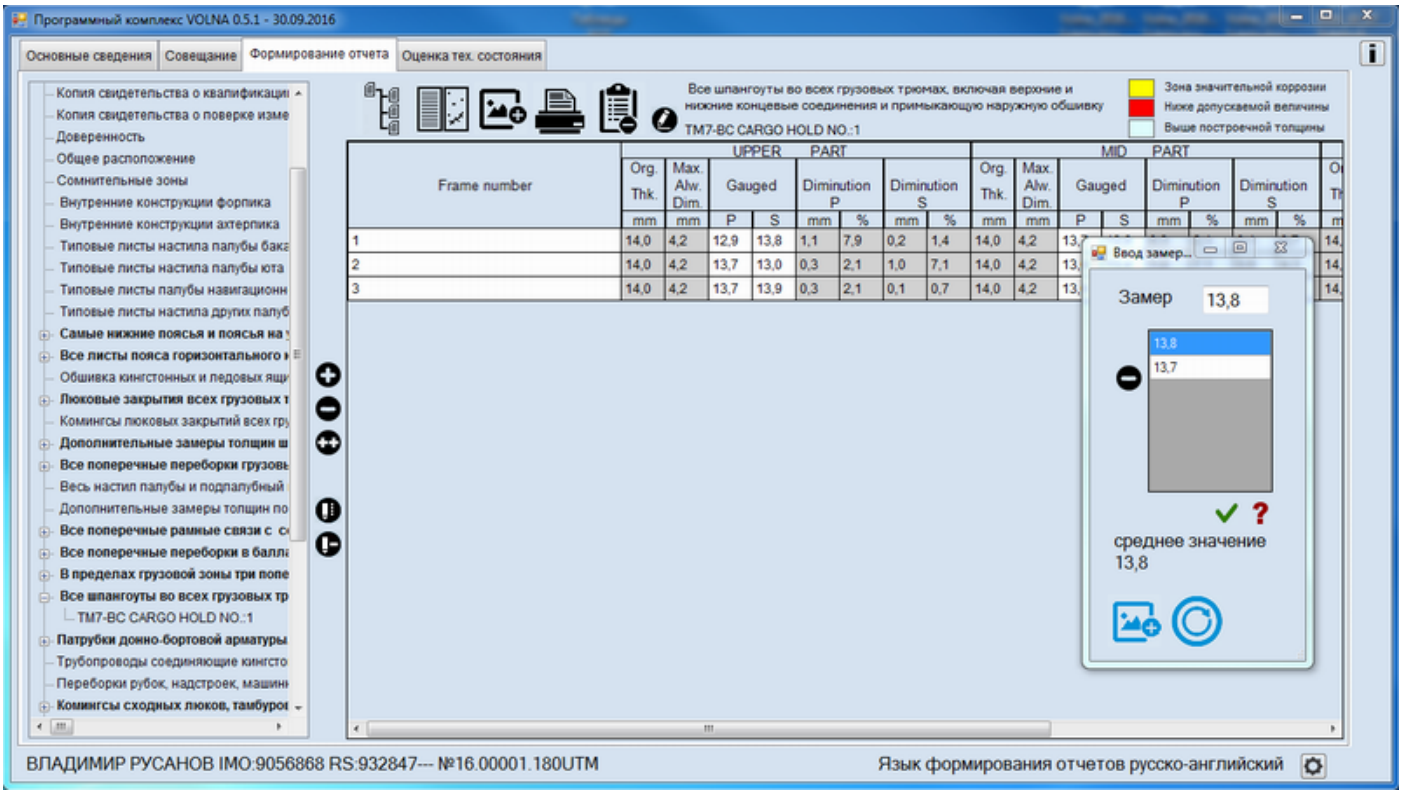
3) Click the button and then to add the line click the icon ,
4) Further in the appeared table to choose an appropriate item.



5) To draw up empty fields (frame number and gauged thicknesses).

The process of drawing up of measurements in IACS recommended forms differs from the process applied in RS forms (RTM).
IACS forms require to enter average thickness in the appropriate cells. In this software it is possible to enter all measurements taken and the average thicknesses will be introduced in the table further.

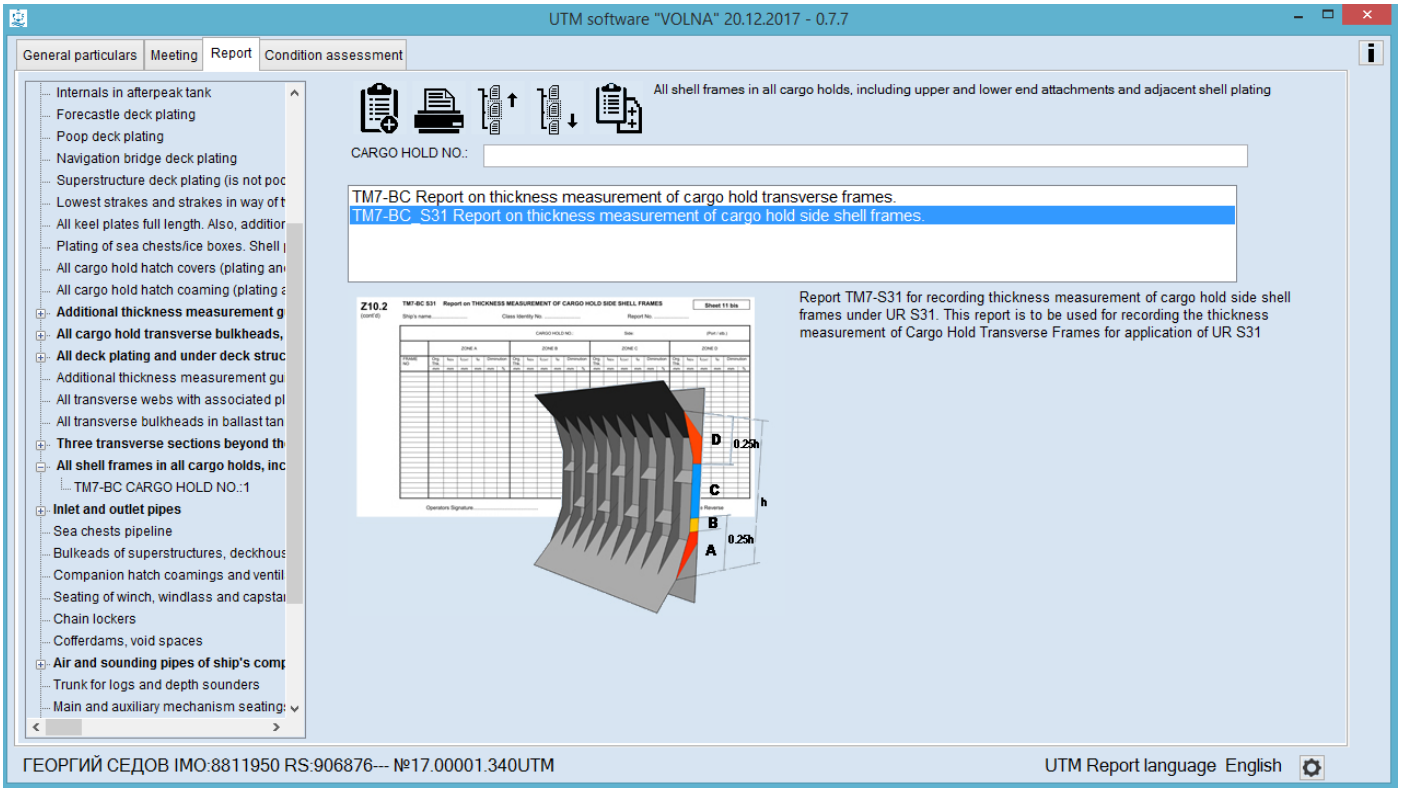
6) To draw up measurements it is necessary to click appropriate cell, the software offers to enter free number of measurements (enter appropriate value, click “Enter” and so on).



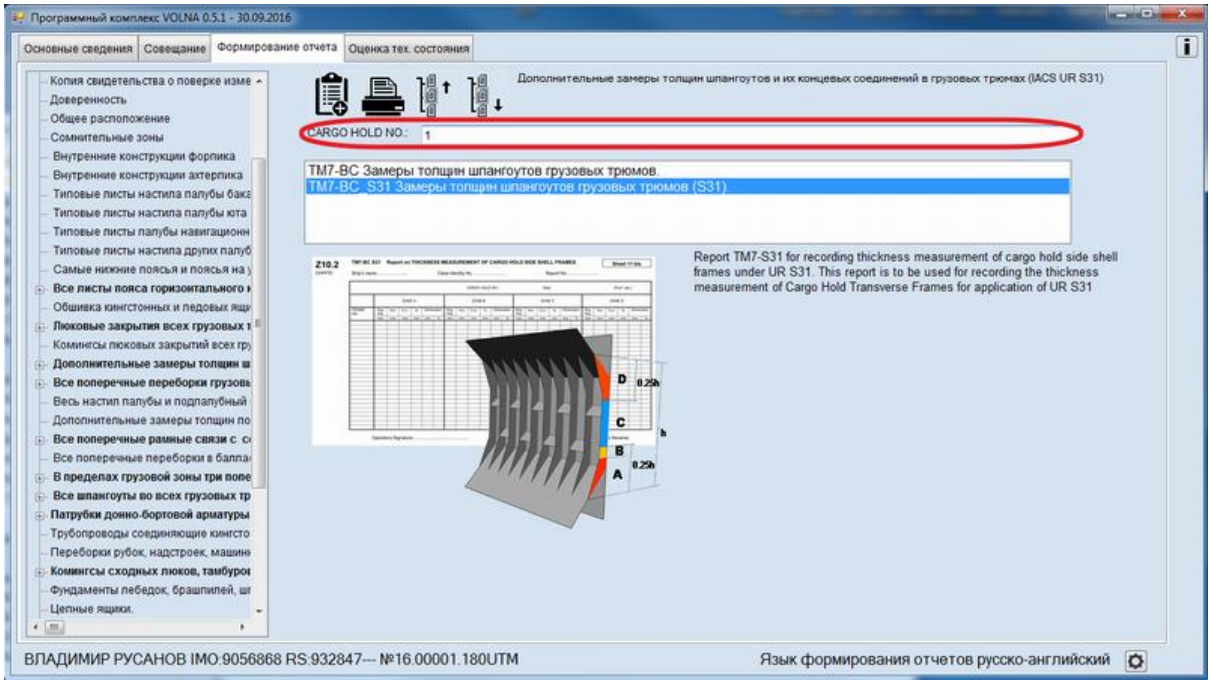
TM7 (S31)

Tabular form TM7 (S31) is intended for drawing up measurements of cargo hold side shell frames on bulk carriers for which UR S31 applies.

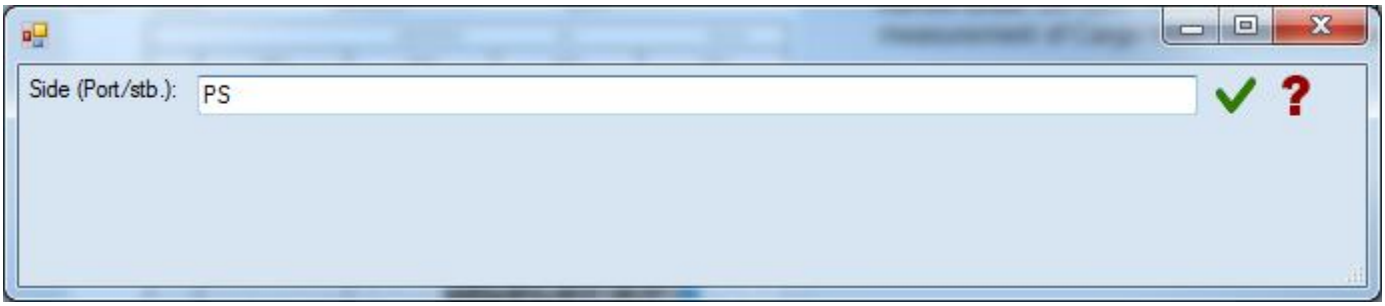
1) To select an appropriate item from the tree (shell frames in cargo holds).



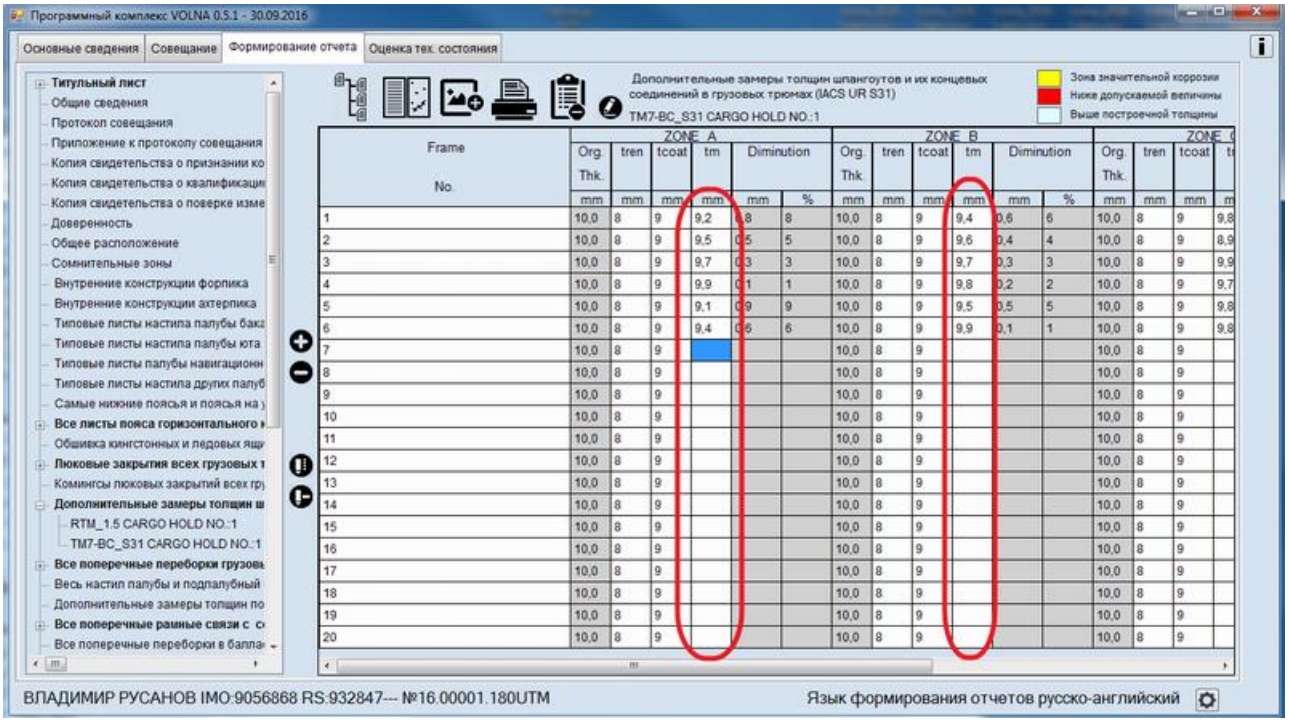
2) To enter cargo hold No. In the field "CARGO HOLD No." and choose form TM7-BC-S31



3) To enter side of the ship in the window as follows (PS or STBD) and click



4) Further the following table will be created containing information from the file with norms. It s necessary to add gauged thicknesses in the rows (tm) for each zone.

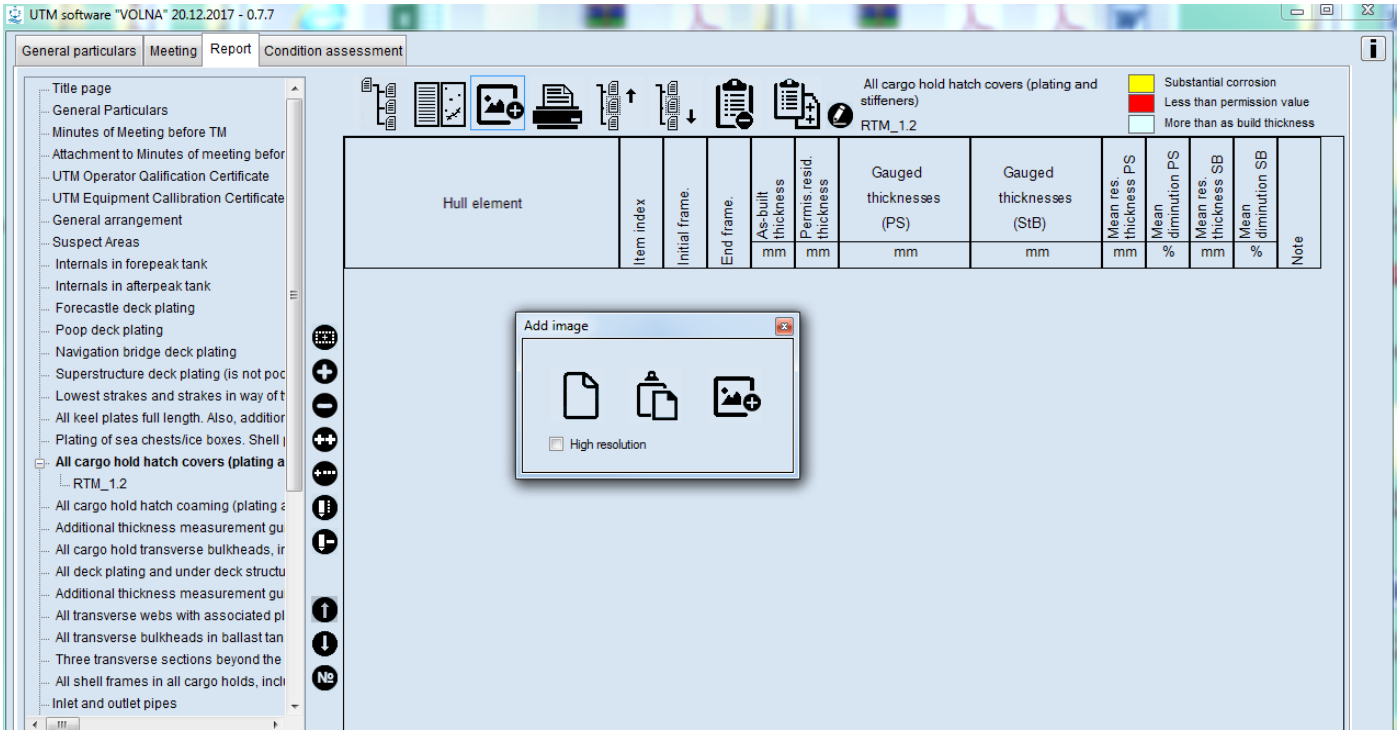


Frame No.	ZONE A						ZONE B						ZONE C			
	Org. Thk.	tren	tcoat	tm	Diminution		Org. Thk.	tren	tcoat	tm	Diminution		Org. Thk.	tren	tcoat	t
	mm	mm	mm	mm	mm	%	mm	mm	mm	mm	mm	%	mm	mm	mm	m
1	10,0	8	9	9,2	0,8	8	10,0	8	9	9,4	0,6	6	10,0	8	9	9,8
2	10,0	8	9	9,5	0,5	5	10,0	8	9	9,6	0,4	4	10,0	8	9	8,9
3	10,0	8	9	9,7	0,3	3	10,0	8	9	9,7	0,3	3	10,0	8	9	9,9
4	10,0	8	9	9,9	0,1	1	10,0	8	9	9,8	0,2	2	10,0	8	9	9,7
5	10,0	8	9	9,1	0,9	9	10,0	8	9	9,5	0,5	5	10,0	8	9	9,8
6	10,0	8	9	9,4	0,6	6	10,0	8	9	9,9	0,1	1	10,0	8	9	9,8
7	10,0	8	9				10,0	8	9				10,0	8	9	
8	10,0	8	9				10,0	8	9				10,0	8	9	
9	10,0	8	9				10,0	8	9				10,0	8	9	
10	10,0	8	9				10,0	8	9				10,0	8	9	
11	10,0	8	9				10,0	8	9				10,0	8	9	
12	10,0	8	9				10,0	8	9				10,0	8	9	
13	10,0	8	9				10,0	8	9				10,0	8	9	
14	10,0	8	9				10,0	8	9				10,0	8	9	
15	10,0	8	9				10,0	8	9				10,0	8	9	
16	10,0	8	9				10,0	8	9				10,0	8	9	
17	10,0	8	9				10,0	8	9				10,0	8	9	
18	10,0	8	9				10,0	8	9				10,0	8	9	
19	10,0	8	9				10,0	8	9				10,0	8	9	
20	10,0	8	9				10,0	8	9				10,0	8	9	

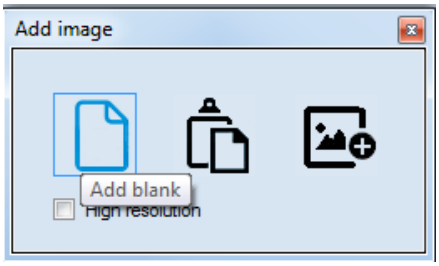
2 Attachment of sketches

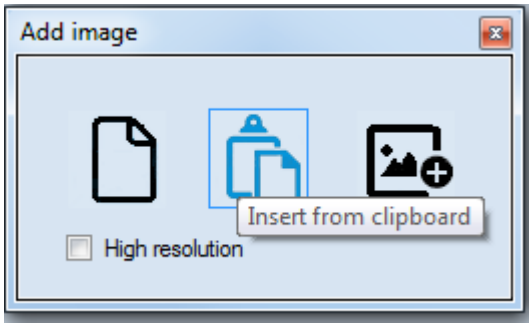
2.1 Attachment of ready-made figure.

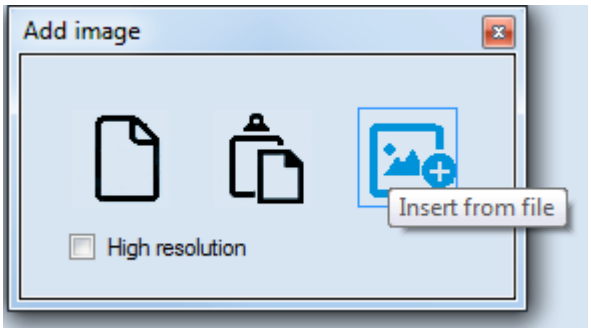
1) To attach figure it is necessary choose appropriate tabular form in the tab “Report” and to click icon



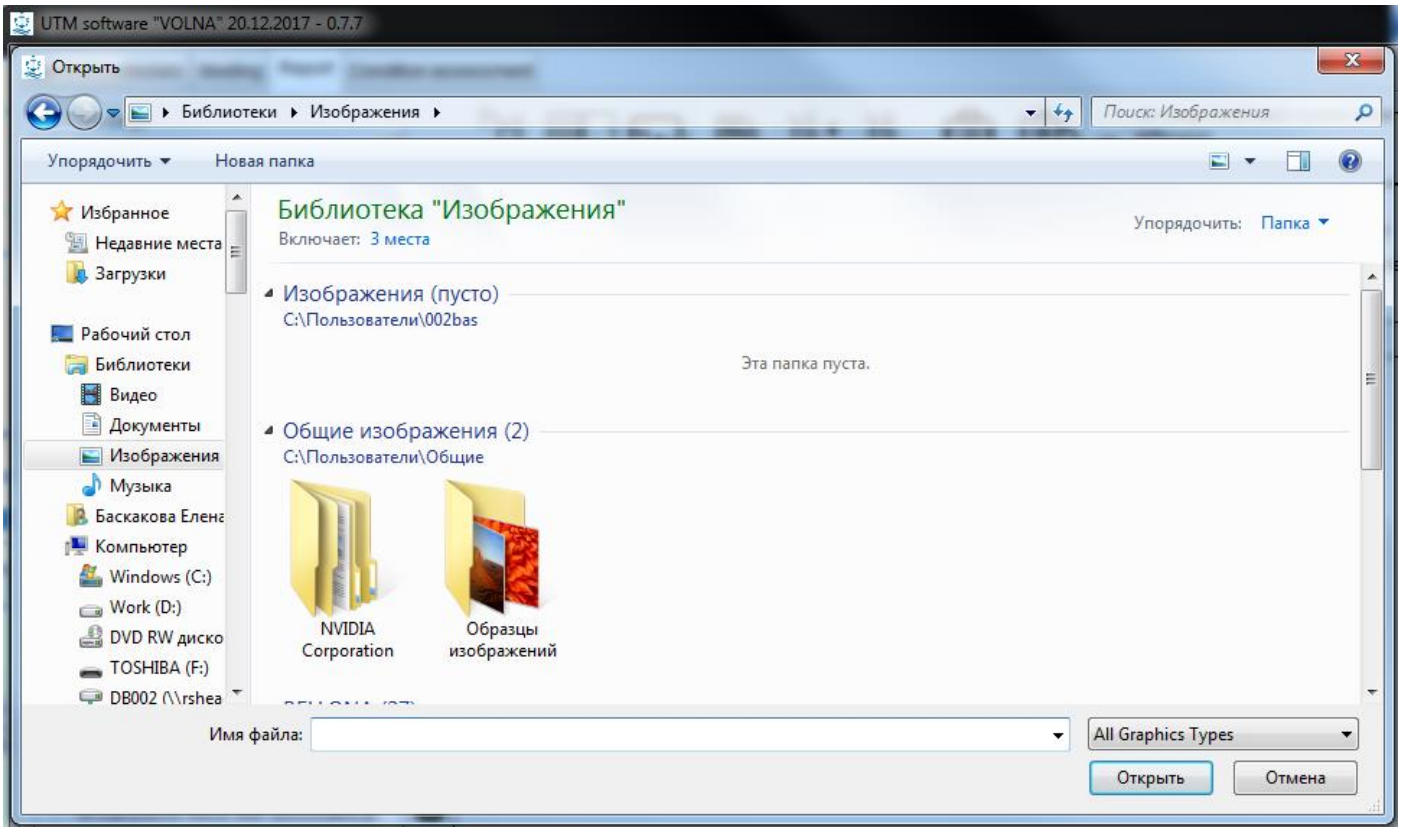
2) To choose applicable option for creation of sketch as follows:

2.1) to create new figure with the software “VOLNA “ choose icon 

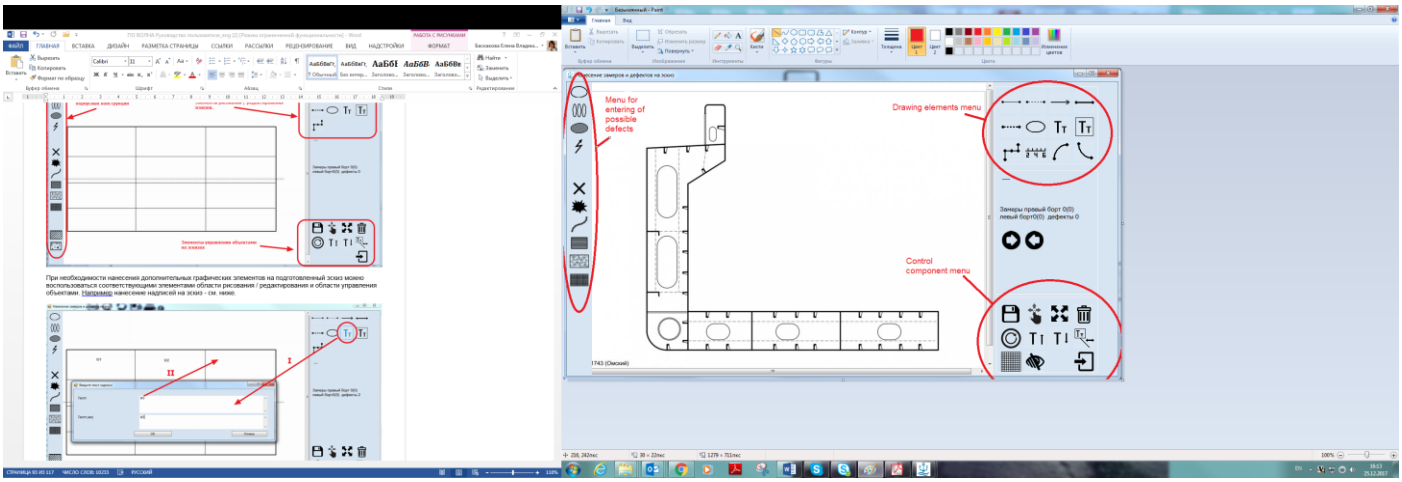
2.2) to insert figure from a clipboard 

2.3) To attach ready-made figure 

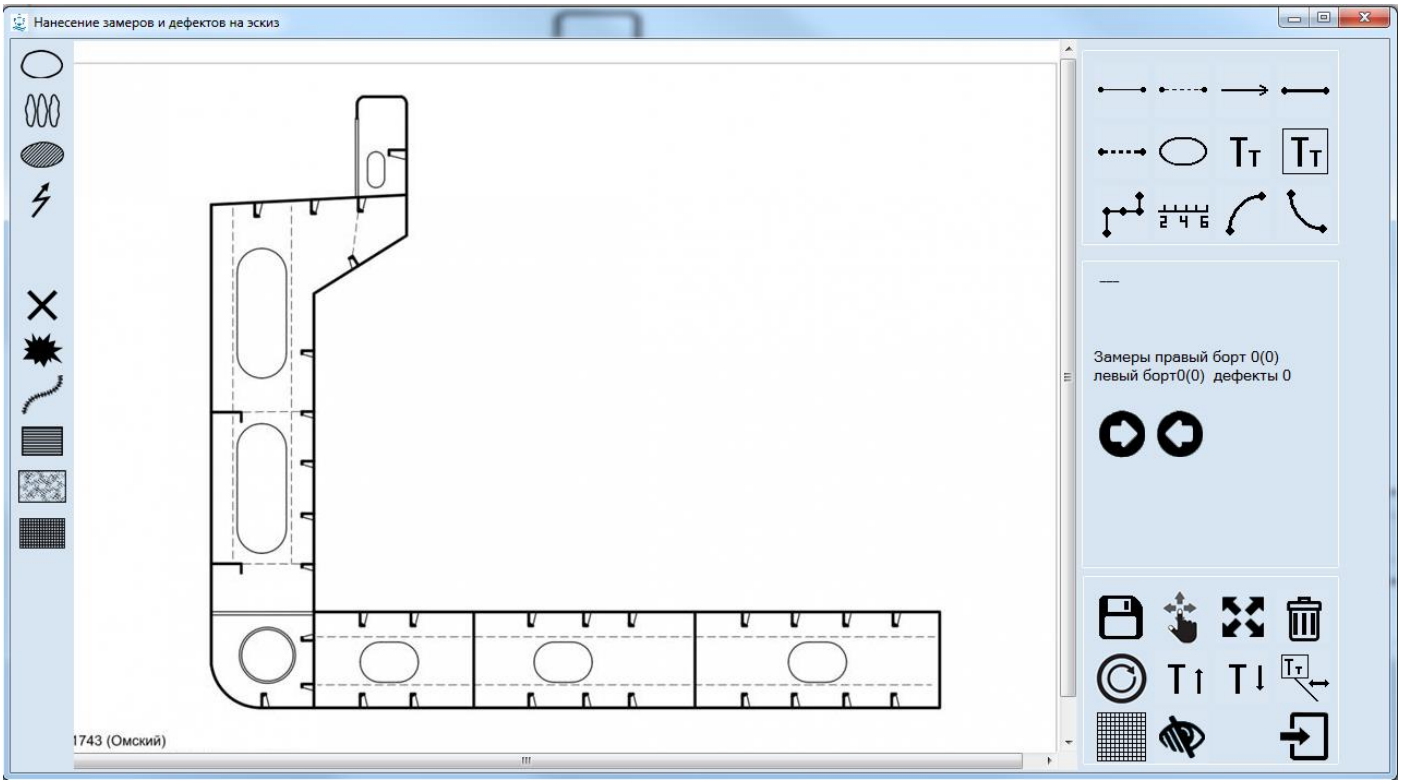
3) If option 2.3 is chosen it is necessary to select relevant file with figure from a computer folder (file shall be of jpg, bmp, tif, PDF format).

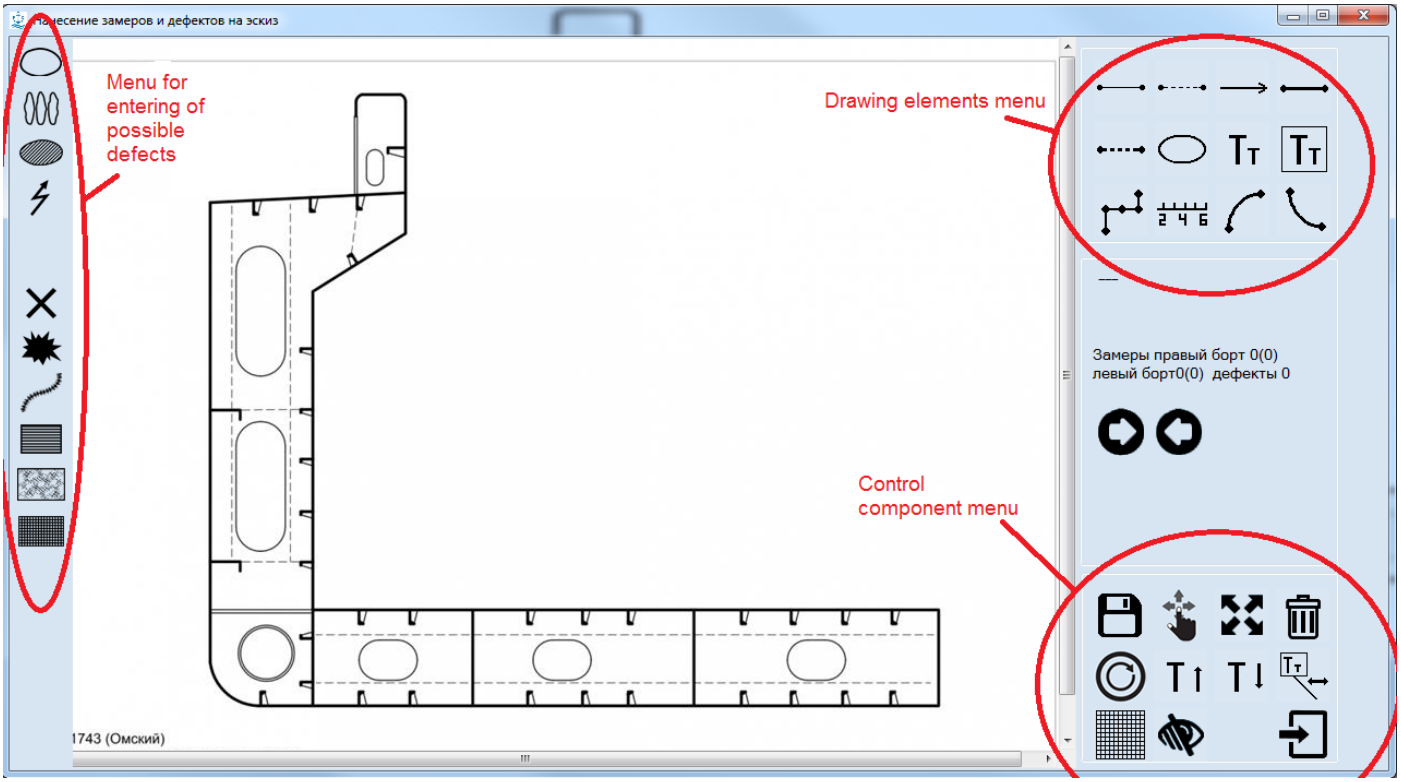


4) Under relevant item in the tree a new item with figure will be created. By clicking on it the view mode will be available.

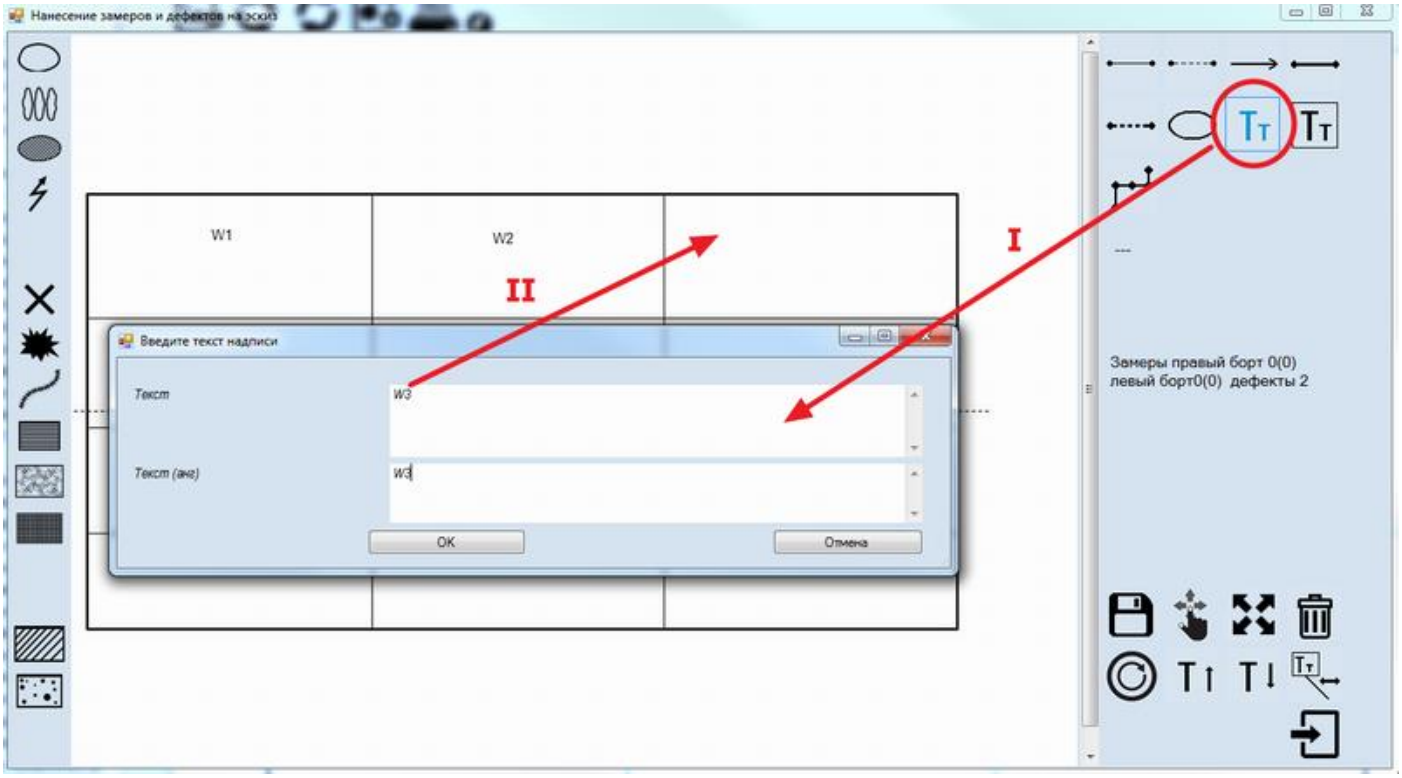


5) To amend sketch it is necessary to enter editor mode by clicking on icon .



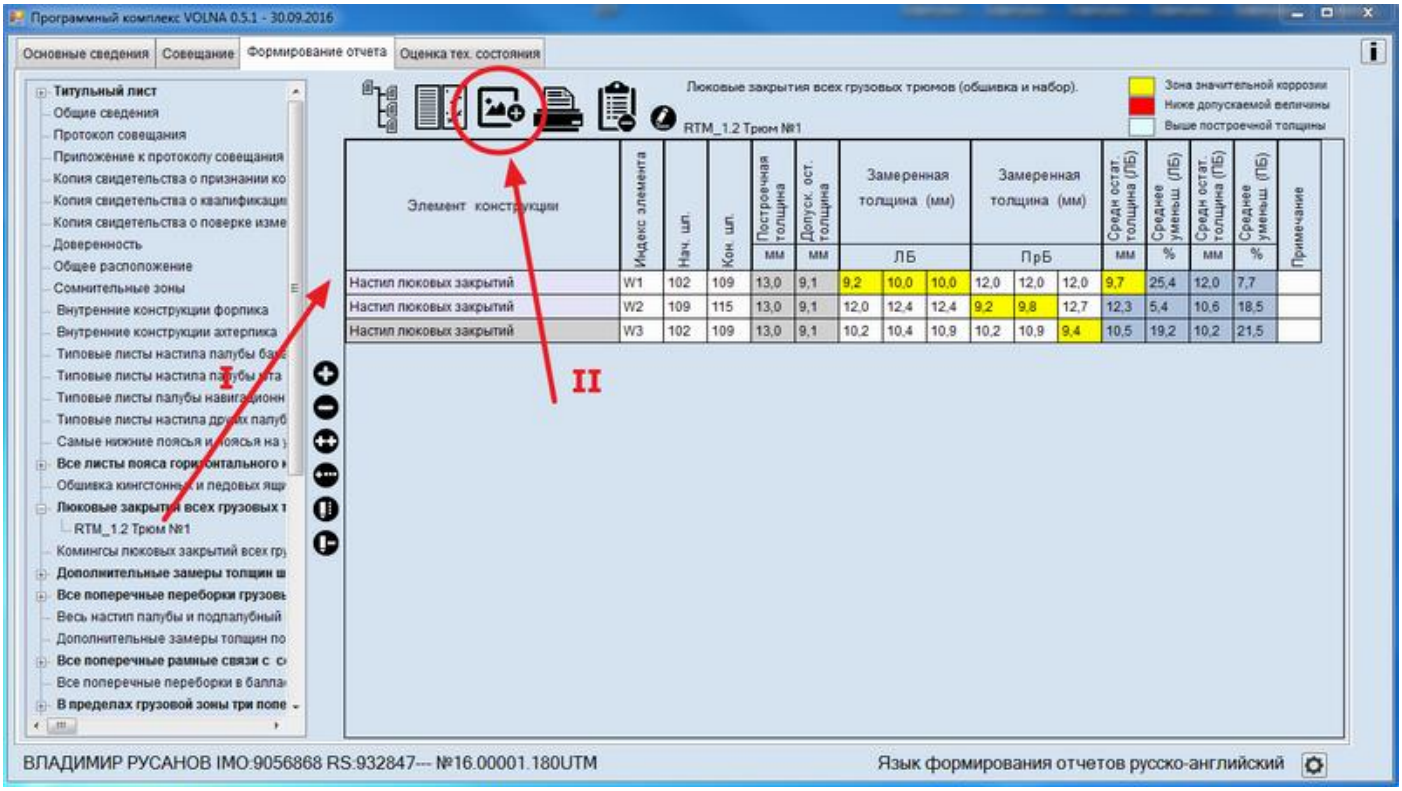


6) To add necessary graphic item on the ready-made sketch to use the “Drawing element menu”/ “Control component menu”, for instance to add the text:



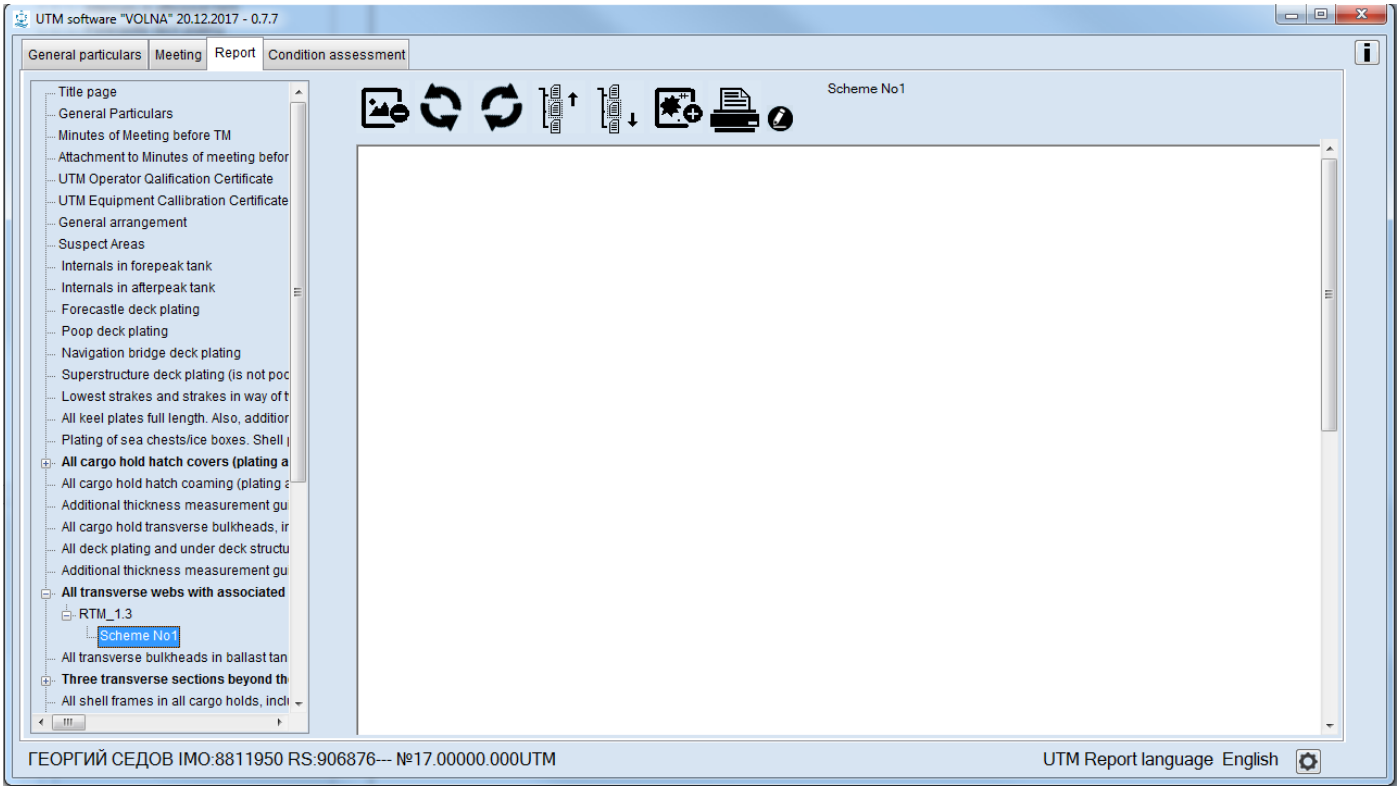
2.2 New sketch creation:

1) To create new sketch – to select appropriate tabular form from the tree of tab “Report” and click the button

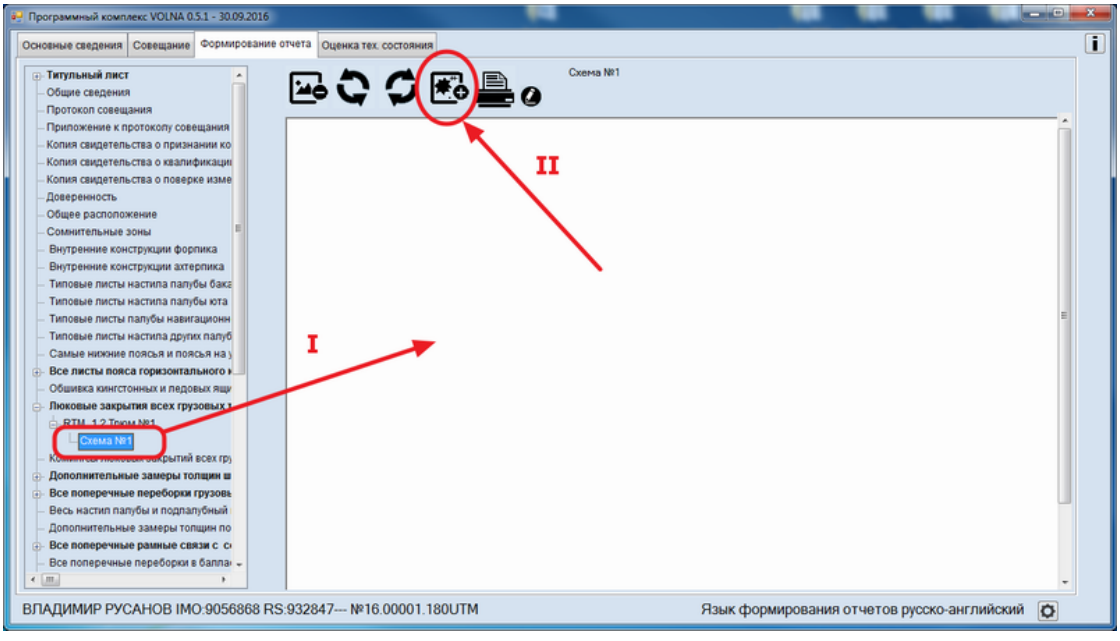


2) Then to choose an appropriate option for creation of sketch and click "Add blank"-

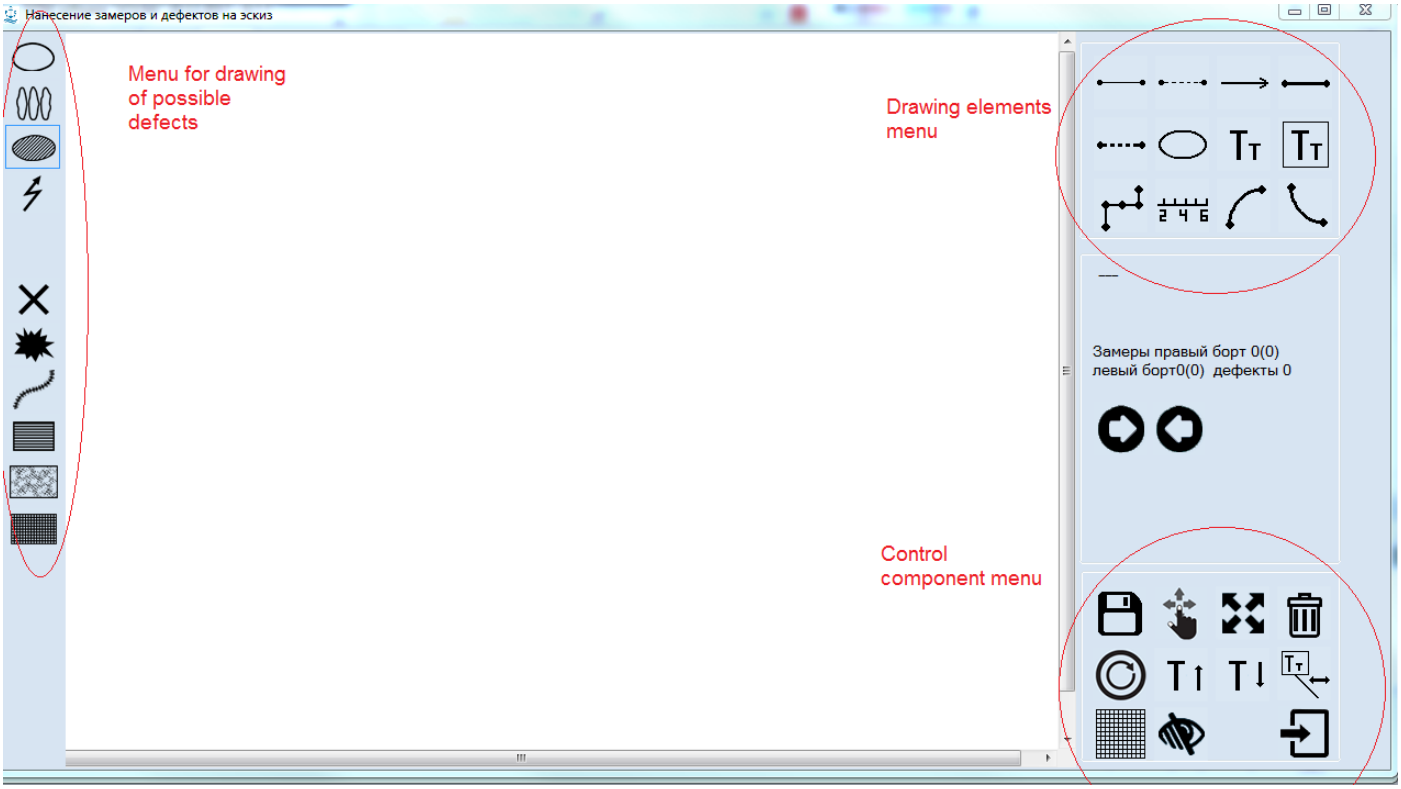
3) The new item «Scheme No.» will appear in the tree and white zone in the right part of the screen as follows:



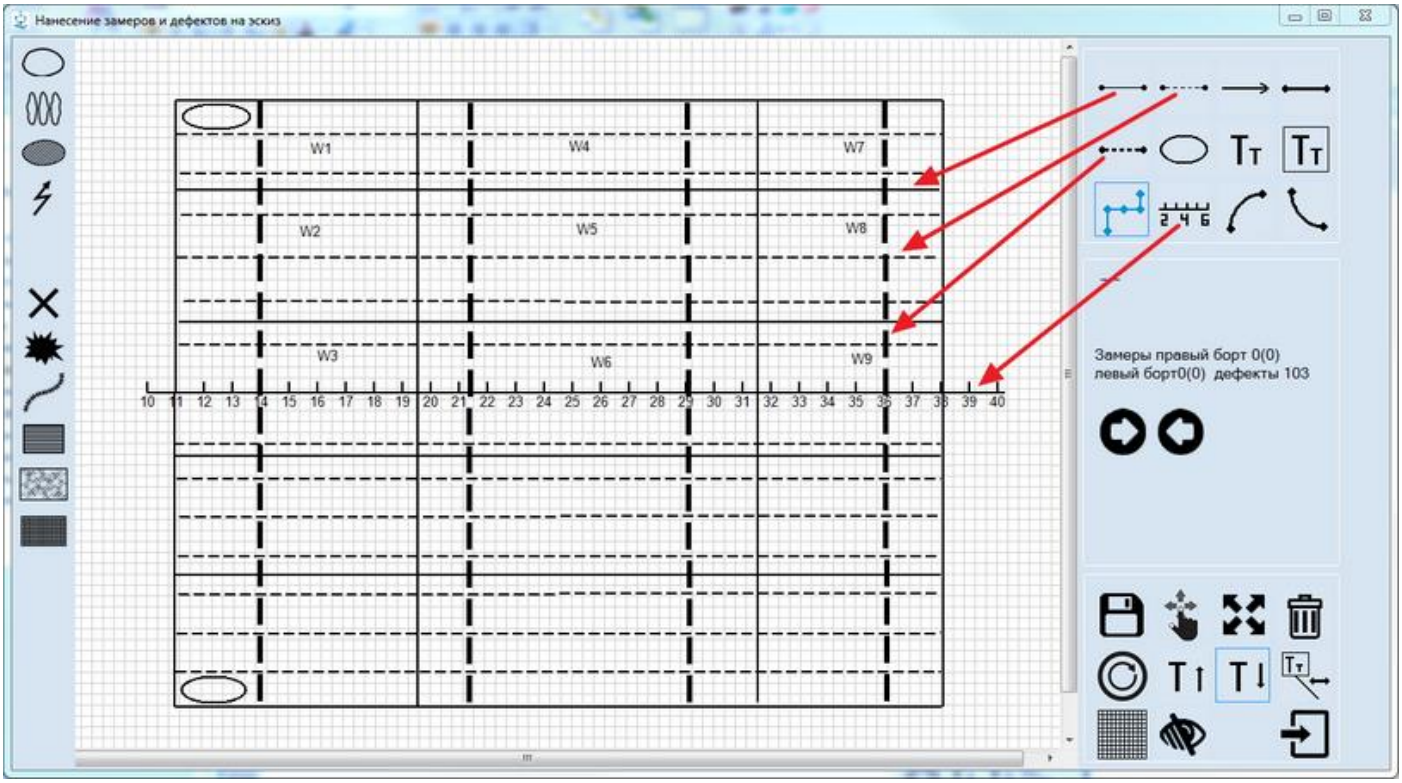
4) Then move to editor mode by clicking icon .



5) The editor window will appear:



6) Using “Drawing elements menu” user creates own sketch, for instance:



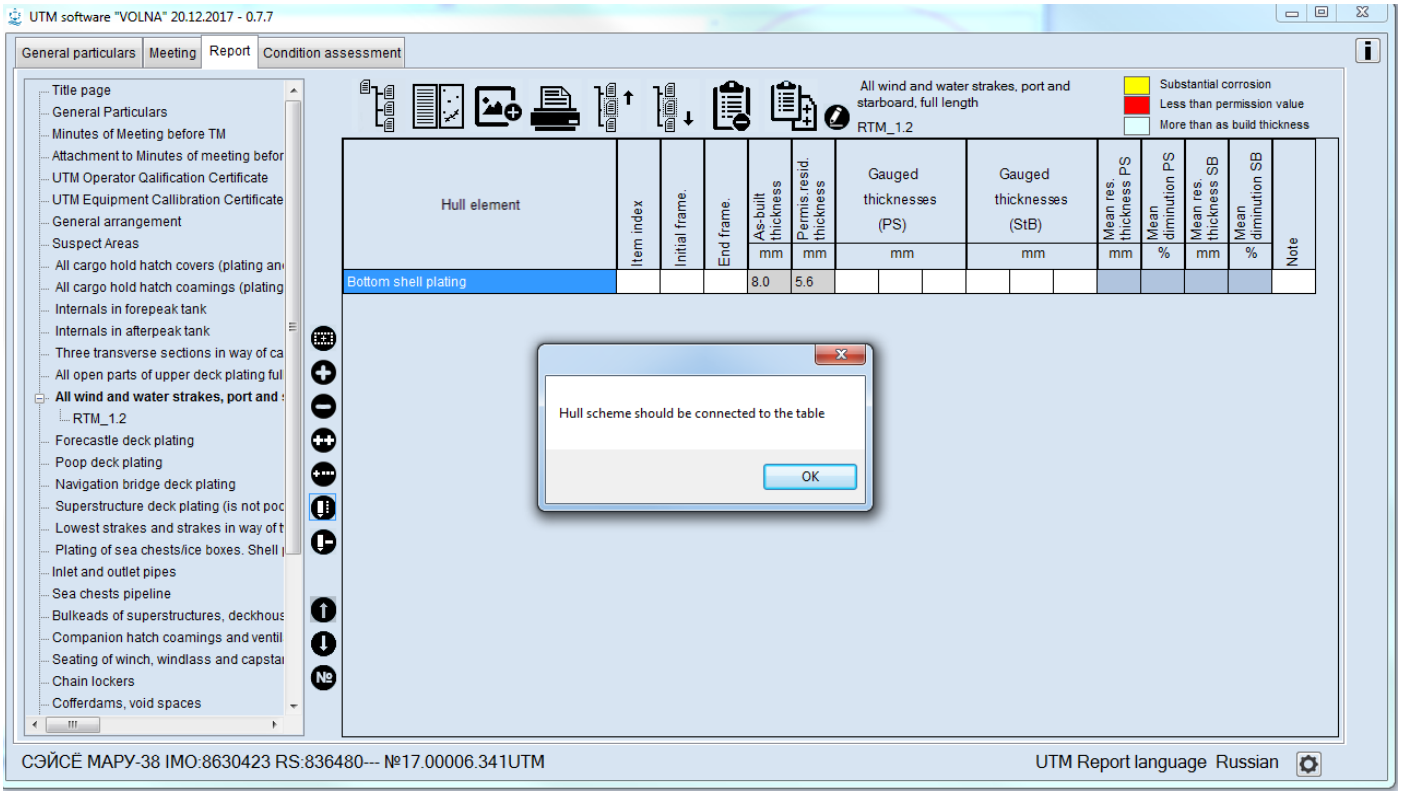
3 Instruction for drawing up of residual deformations/cracks/fractures/raptures, etc.

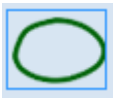
For more information about types and methods of assessment of residual deformations, crack/fractures/raptures – refer to Annex 2 to the RS Rules for classification surveys of ships in service.

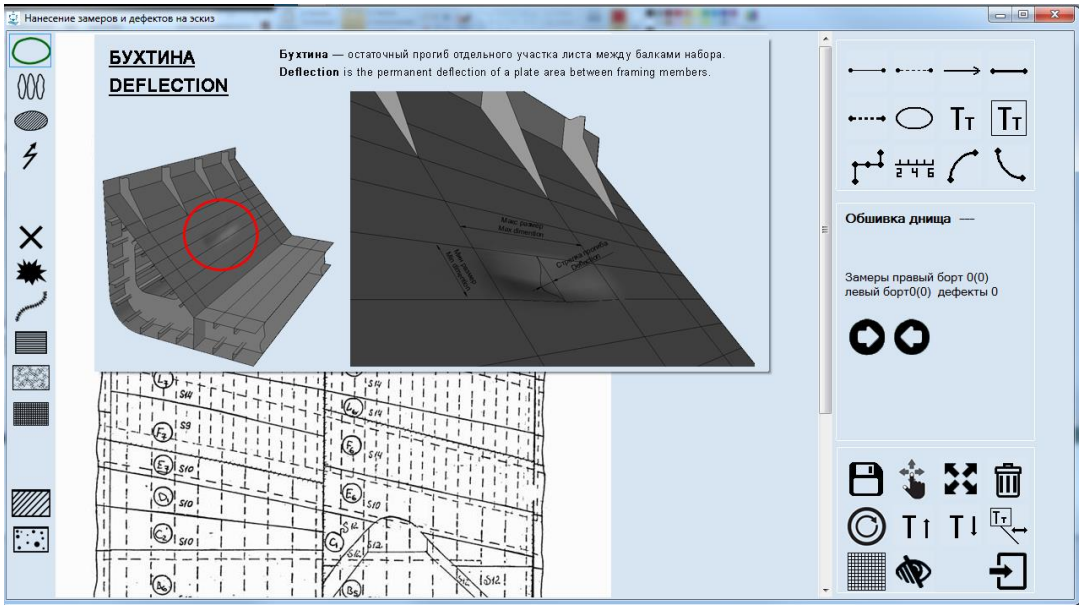
3.1Deflection / Rib

To show deflection or rib on the sketch it is necessary

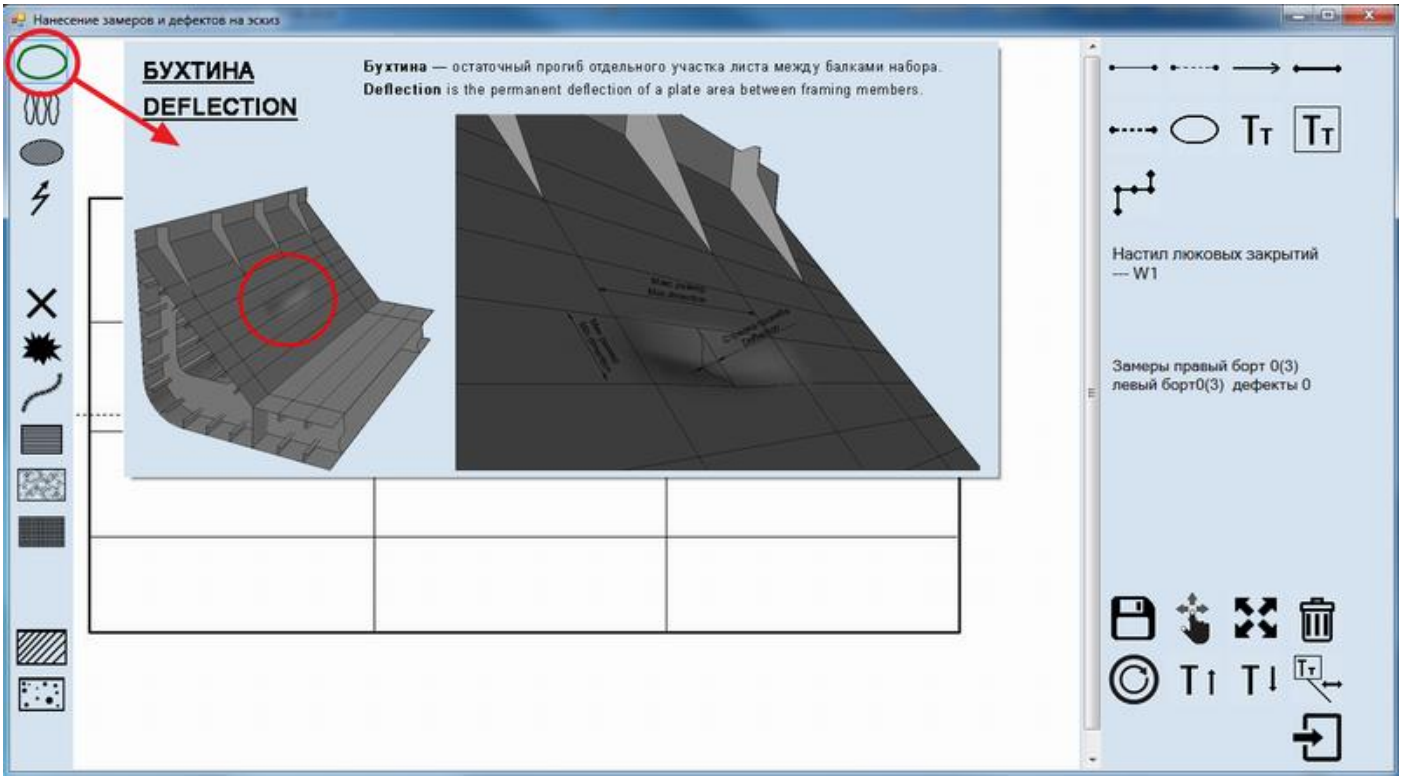
1.1 to create sketch according to the instructions above;
1.2 to move to the relevant record in the tabular form (structure on which mentioned defects were found) and click icon ; for instance as follows:



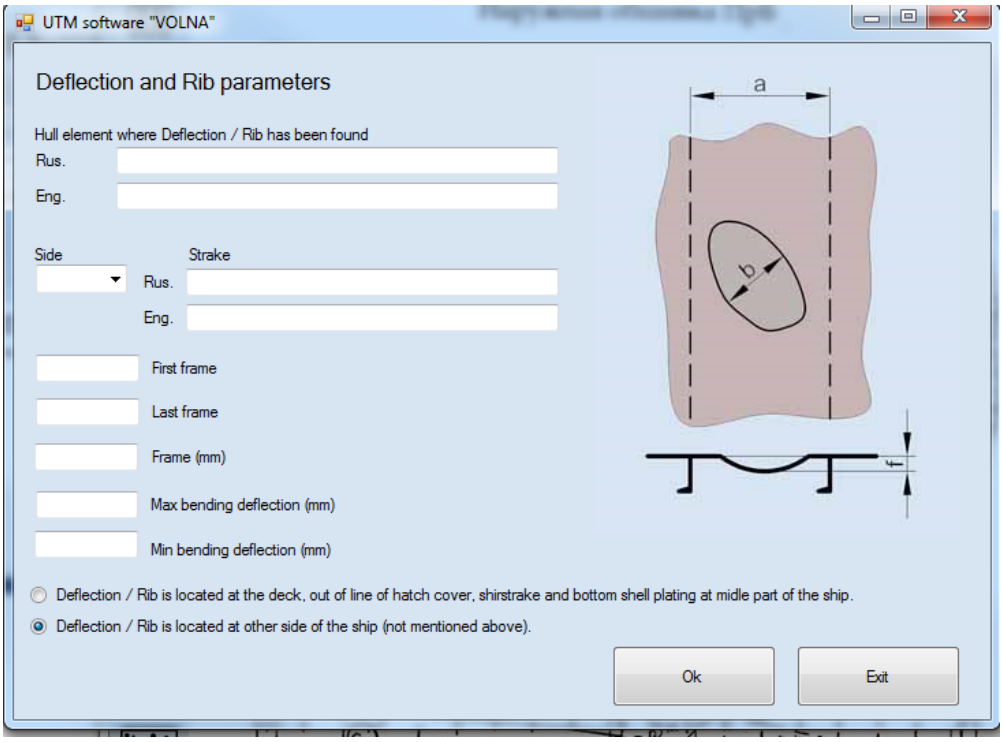
1.3 Then in the appeared window to choose an appropriate defect from the left menu (for deflection– icon ):



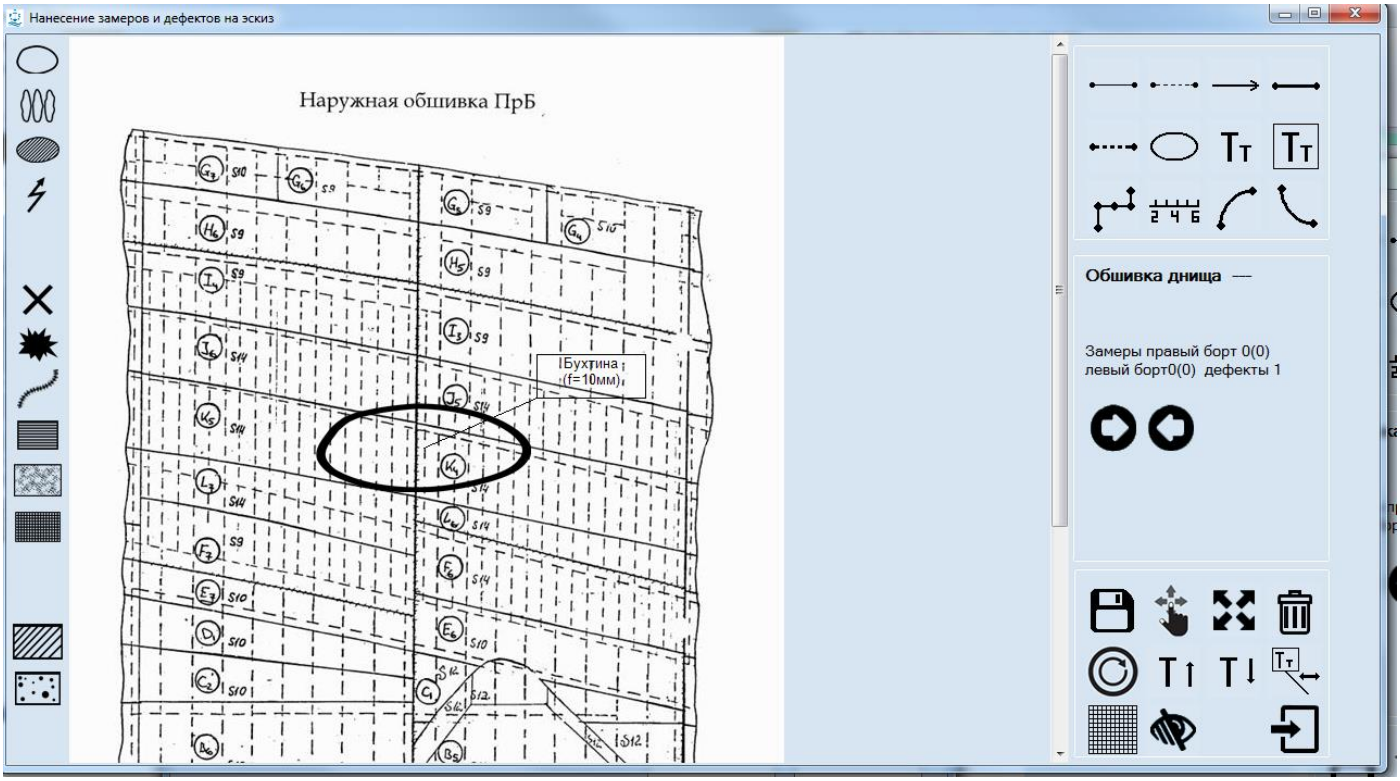
1.4) then to indicate the location of the defect (it is necessary to identify upper left and lower right corners of defect).



1.5) to enter defects parameters in the following window:



1.6) Upon registration of defects parameters – scheme of defect will appear on the sketch.



1.7) In the tabular form 2.2 (intended for registration of parameters of deflections/ribs) information on defect and the results of its assessment will appear automatically.

Таблица 2.2 / Table 2.2

РЕГИСТРАЦИЯ БУХТИН И ГОФРИРОВКИ В КОНСТРУКТИВНЫХ ЭЛЕМЕНТАХ КОРПУСА СУДНА
DEFLECTION AND RIB REGISTRATION AT THE SHIP'S HULL ELEMENTS

Название судна / Ships name: ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV
PC № / RS No.: 932847
ОТЧЕТ № / Report No.: 16.00001.180UTM

Элемент корпуса Hull element	Бухтина гофировка Deflection Rib	Расположение бухтины / гофировки Location of deflection / rib	Шпация Frame	Макс. стрелка прогиба Max. bending deflection	Минимальн. размер бухтины Min. deflection dimention	Фактическое отношение Actual ratio	Допускаемое отношение Allow. ratio	Фактическое отношение Actual ratio	Допускаемое отношение Allow. ratio	Примечание Note
			a	f '	b	f '/a	f/a	f '/b	f/b	
Настил люковых закрытий Hatch cover plating	Бухтина Deflaction	Шп.55-56, L, Второй пояс от ДП Fr.55-56, L, Second strake from CL	600	54	500			0,09	0,06	требуется ремонт repair is required

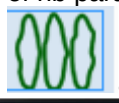
In the table 3.3 (summary table of hull defects) information of defect and the results of its assessment will be introduced thereto.

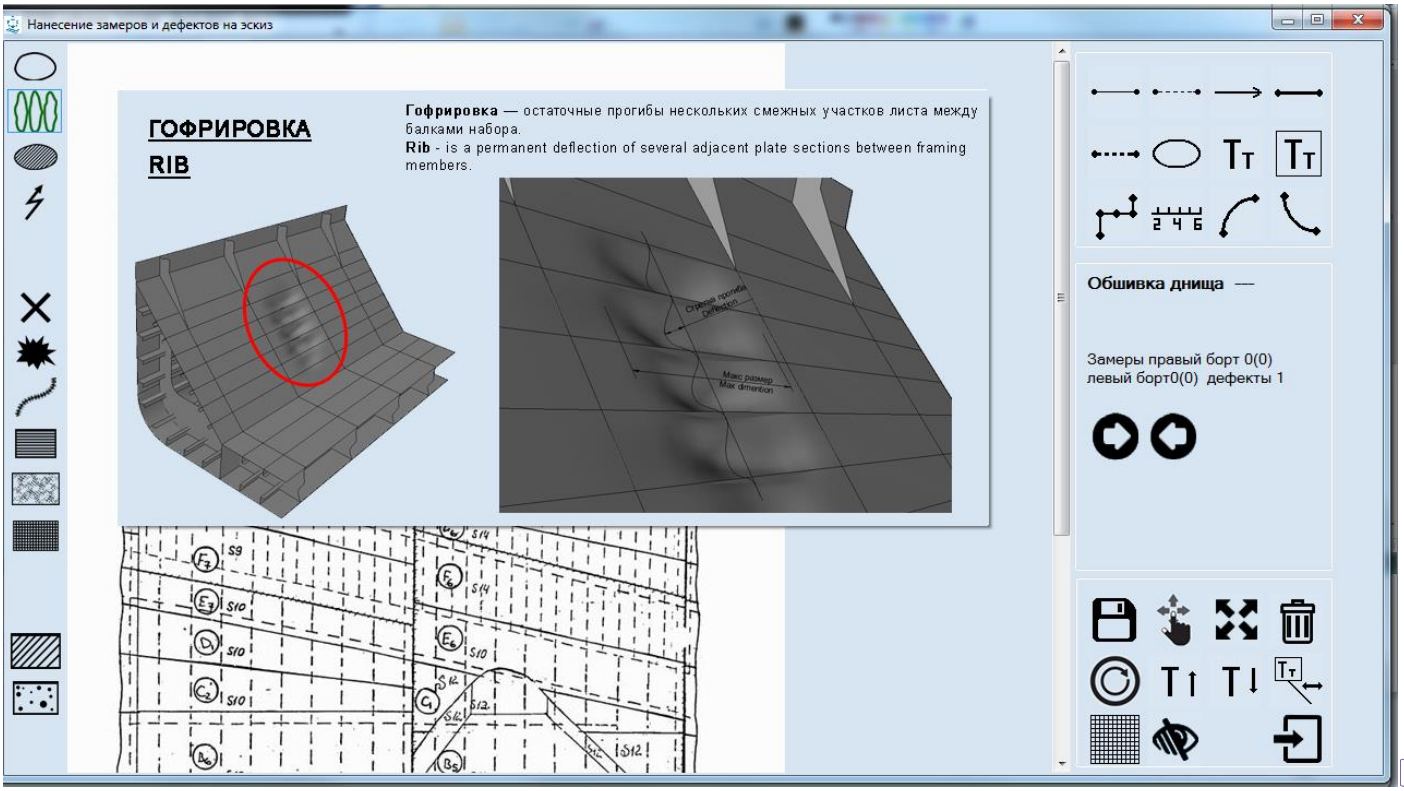
Таблица 3.3 / Table 3.3

СВОДНАЯ ТАБЛИЦА ДЕФЕКТОВ КОРПУСНЫХ КОНСТРУКЦИЙ
TABLE OF HULL DEFECTS

Название судна / Ships name: ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV
PC № / RS No.: 932847
ОТЧЕТ № / Report No.: 16.00001.180UTM

Вид дефекта Type of defect	Расположение дефекта Location of defect	Параметры дефекта Defect parameters	Примечание Note
бухтина deflaction	Настил люковых закрытий55-56, L, Второй пояс от ДП Hatch cover plating55-56, L, Second strake from CL	Шпация (мм) = 600 Максимальная стрелка прогиба (мм) = 54 Минимальный размер бухтины (гофировки) в плане (мм) = 500 расположена в других районах корпуса судна (не указанных выше). Frame (mm) = 600 Maximum deflaction (mm) = 54 Minimum size of deflaction(rib) (mm) = 500 located in other parts of the hull (not listed above).	требуется ремонт repair is required

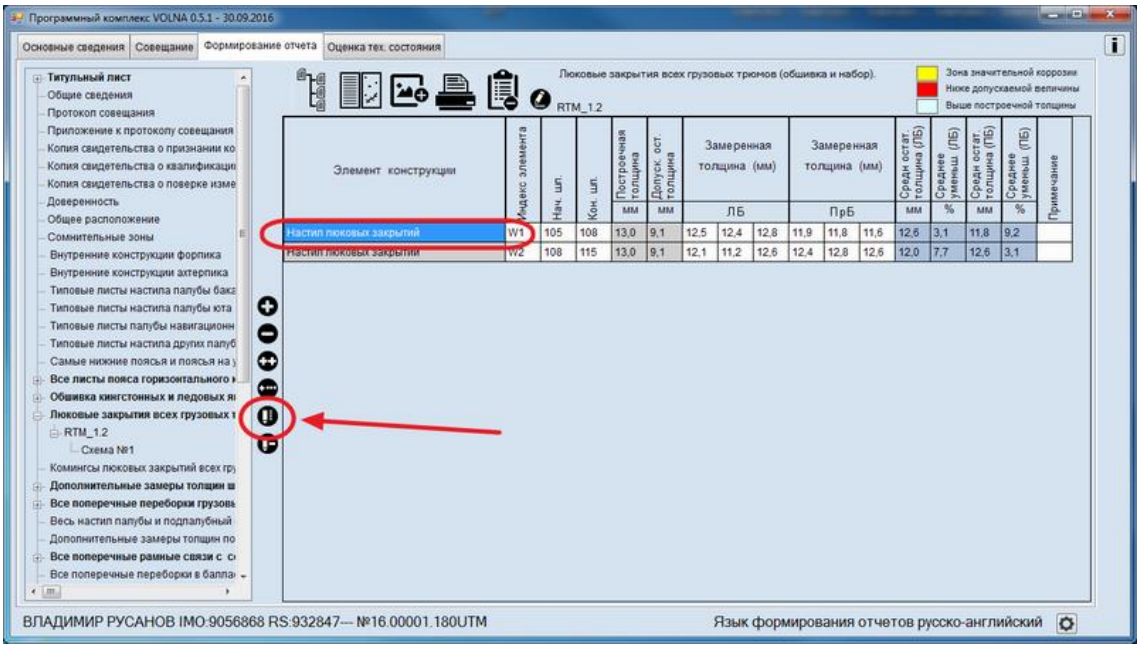
Registration of rib parameters is similar to the describe above for deflections. In the editor mode it is necessary to choose icon  as follows:



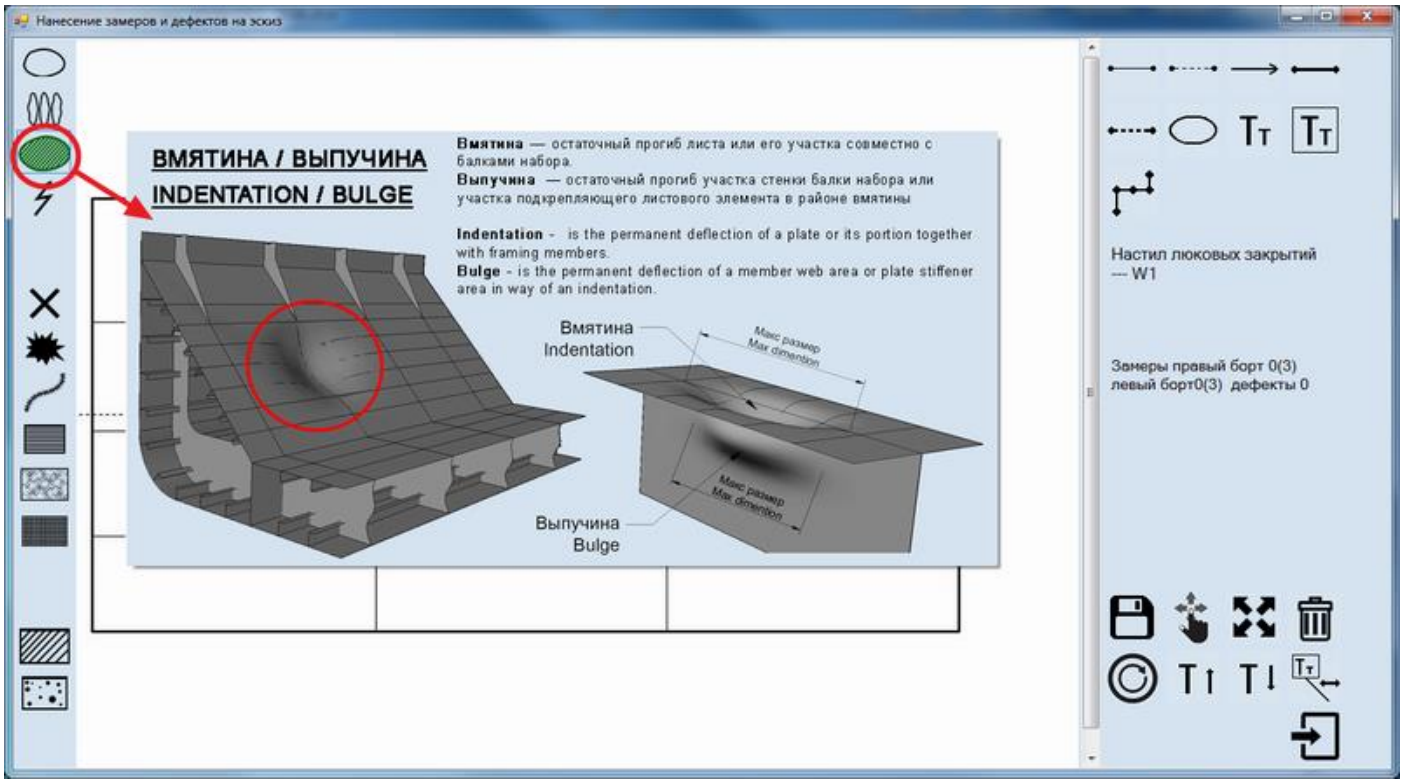
3.2 Indentation / bulge

To enter a defect to a sketch it is necessary:

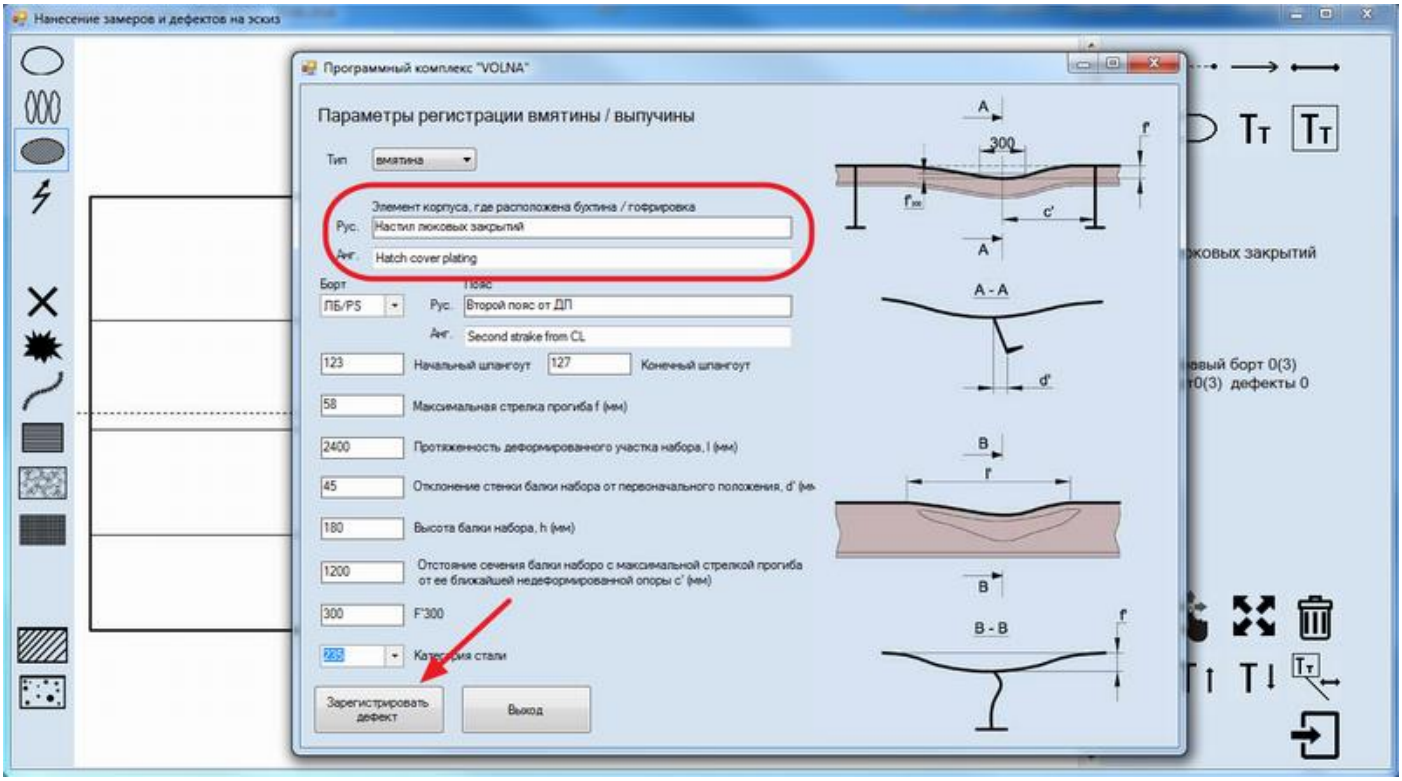
1) to move to the relevant record in the tabular form (for item on which mentioned defect is found) and
2) to click icon ;



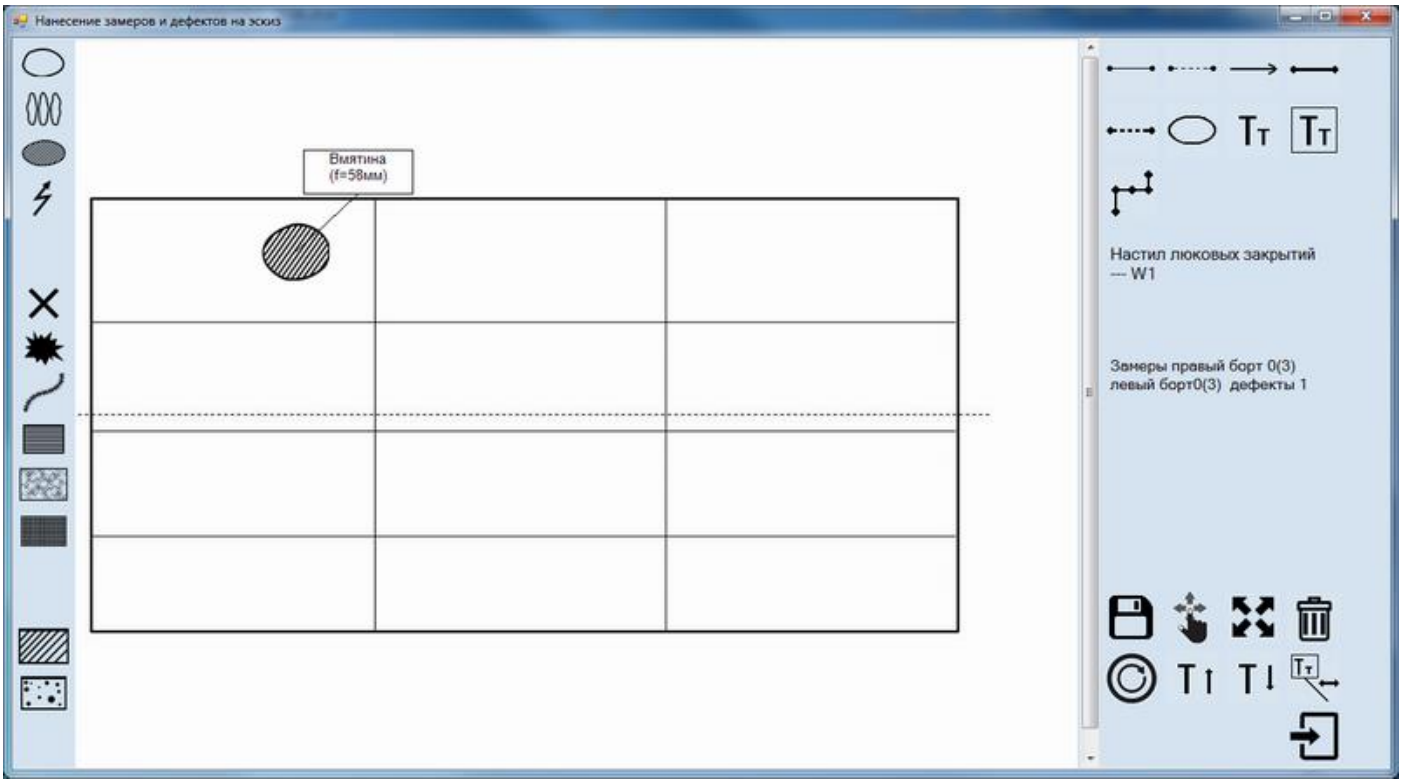
3) to choose appropriate defects (for indentation/bulge – icon and indicate the upper left and lower right of defect.



4) to enter defects parameters



5) upon registration the following sketch will appear.



6) in addition information on defect with the results of its assessment will be introduced in the table 2.1 (tabular form for registration of indentations/bulge parameters) automatically.

Таблица 2.1 / Table 2.1

РЕГИСТРАЦИЯ ВМЯТИН И ВЫПУЧИН В КОНСТРУКТИВНЫХ ЭЛЕМЕНТАХ КОРПУСА СУДНА
INDENTATION AND BULGE REGISTRATION AT SHIP'S HULL ELEMENTS

Название судна / Ships name: ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV
PC № / RS No.: 932847
ОТЧЕТ № / Report No.: 16.00001.180UTM

Наименование отсека / конструкции: Identification of space / structure:	Вмятина Выпучина Indentation Bulge	Расположение вмятины / выпучины Location of indention / bulge	Высота балки Frame height h, мм mm	Замеренные параметры Measured parameters f', мм mm	l', мм mm	c', мм mm	d', мм mm	f'300, мм mm	Фактич. отношен. Actual ratio f'/l'	Допуск. отношен. Allow. ratio f'/l'	Фактич. отношен. Actual ratio f'/c'	Допуск. отношен. Allow. ratio f'/c'	Фактич. отношен. Actual ratio d'/h	Допуск. отношен. Allow. ratio d'/h	Примечание note
Настил люковых закрытий Hatch cover plating	вмятина indention	Шп:123-127, L, Второй пояс от ДП Fr:123-127, L, Second strake from CL	180	58	2400	1200	45	300	0,024	0,05	0,048	0,1	0,25	0,15	требуется ремонт repair is required

7) mentioned defect with the results of its assessment will be introduced in the summary table of defects of form 3.3 automatically thereto.

Таблица 3.3 / Table 3.3

СВОДНАЯ ТАБЛИЦА ДЕФЕКТОВ КОРПУСНЫХ КОНСТРУКЦИЙ
TABLE OF HULL DEFECTS

Название судна / Ships name: ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV
PC № / RS No.: 932847
ОТЧЕТ № / Report No.: 16.00001.180UTM

Вид дефекта Type of defect	Расположение дефекта Location of defect	Параметры дефекта Defect parameters	Примечание Note
вмятина indentation	Настил люковых закрытий 123-127, L, Второй пояс от ДП Hatch cover plating 123-127, L, Second strake from CL	Максимальная стрелка прогиба f (мм) = 58 Отклонение стенки балки набора от первоначального положения (мм) = 45 Отстояние сечения балки наборо с максимальной стрелкой прогиба = 1200 Категория стали = 235 Maximum deflaction f (mm) = 58 Deviation wall beams set from the initial position (mm) = 45 Deviation section of the beam set with a maximum deflection = 1200 Steel grade = 235	требуется ремонт repair is required

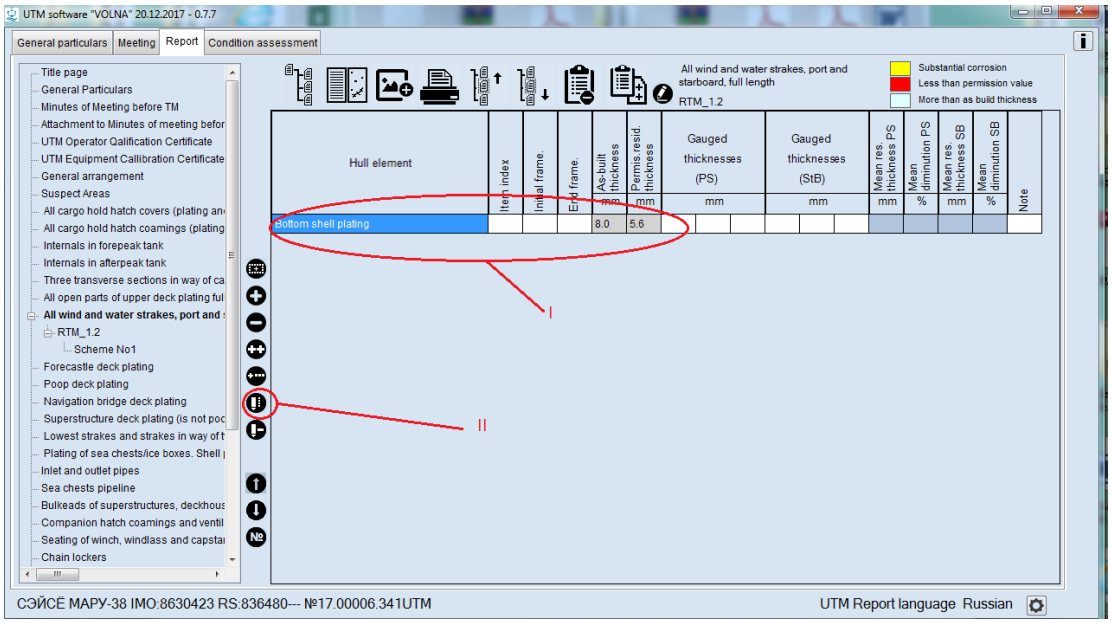
Registration of bulge parameters is carried out in the same way as for indentations.

3.3Holes due to wear, holes, cracks/fractures/raptures

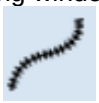
To describe wear hole, hole, crack, fractures, raptures it is necessary:

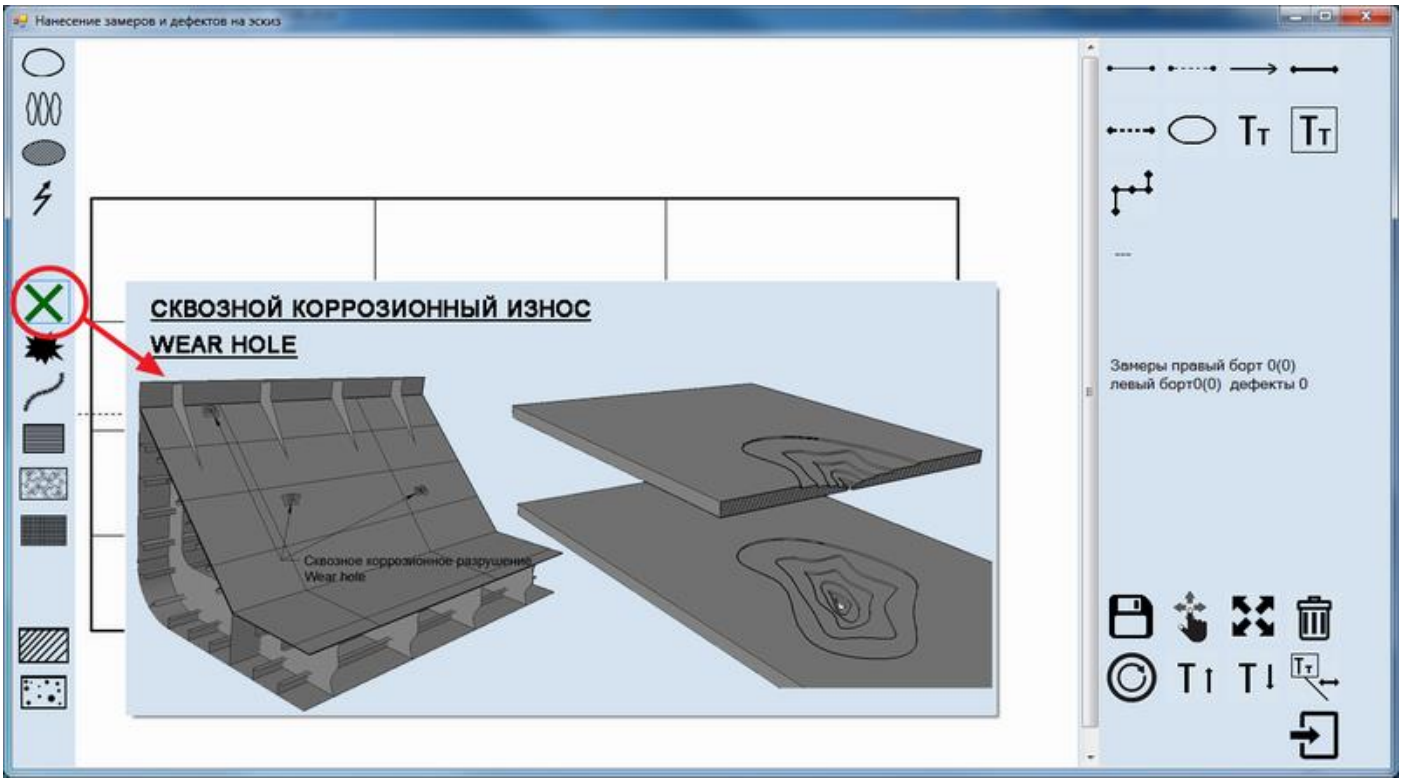
1 to move to the relevant record with item on which mentioned defect was found and

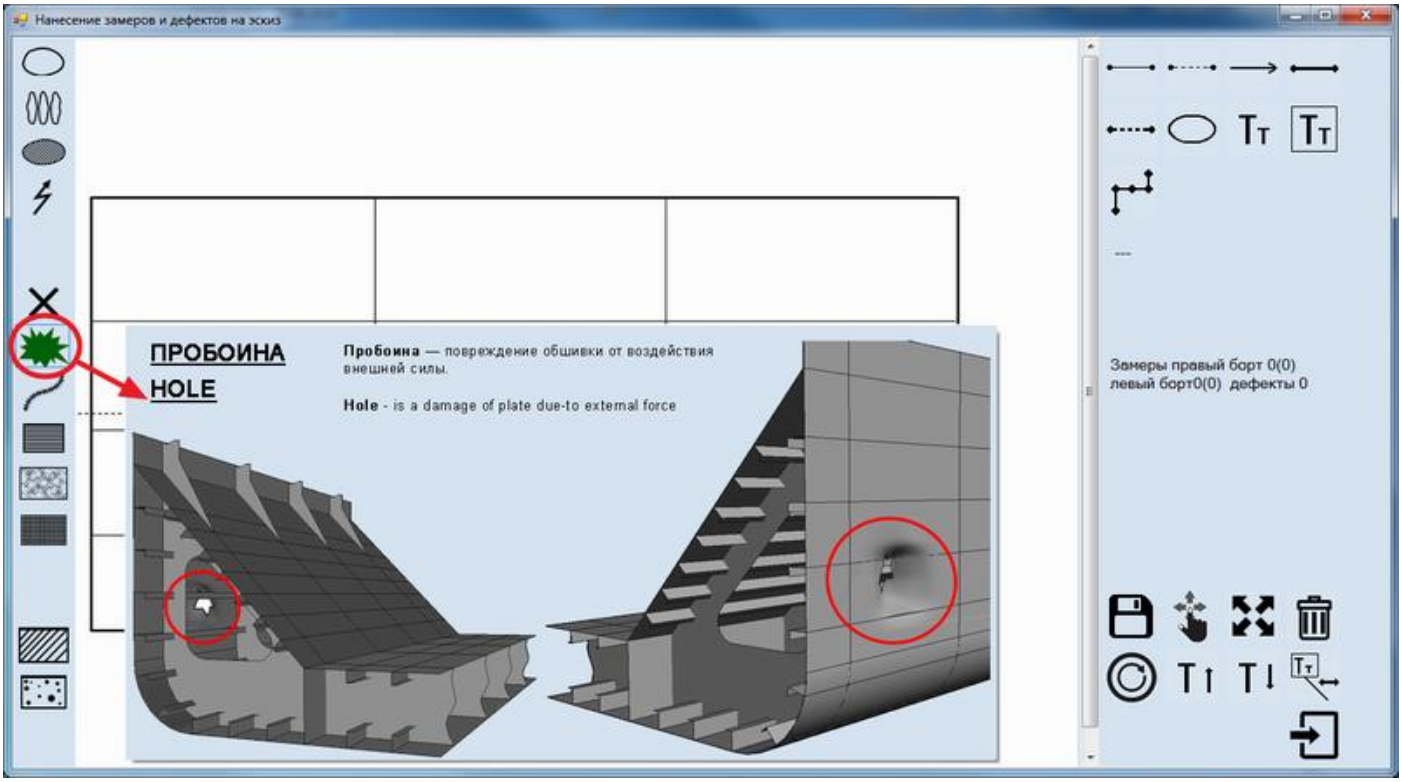
2 to click icon ;

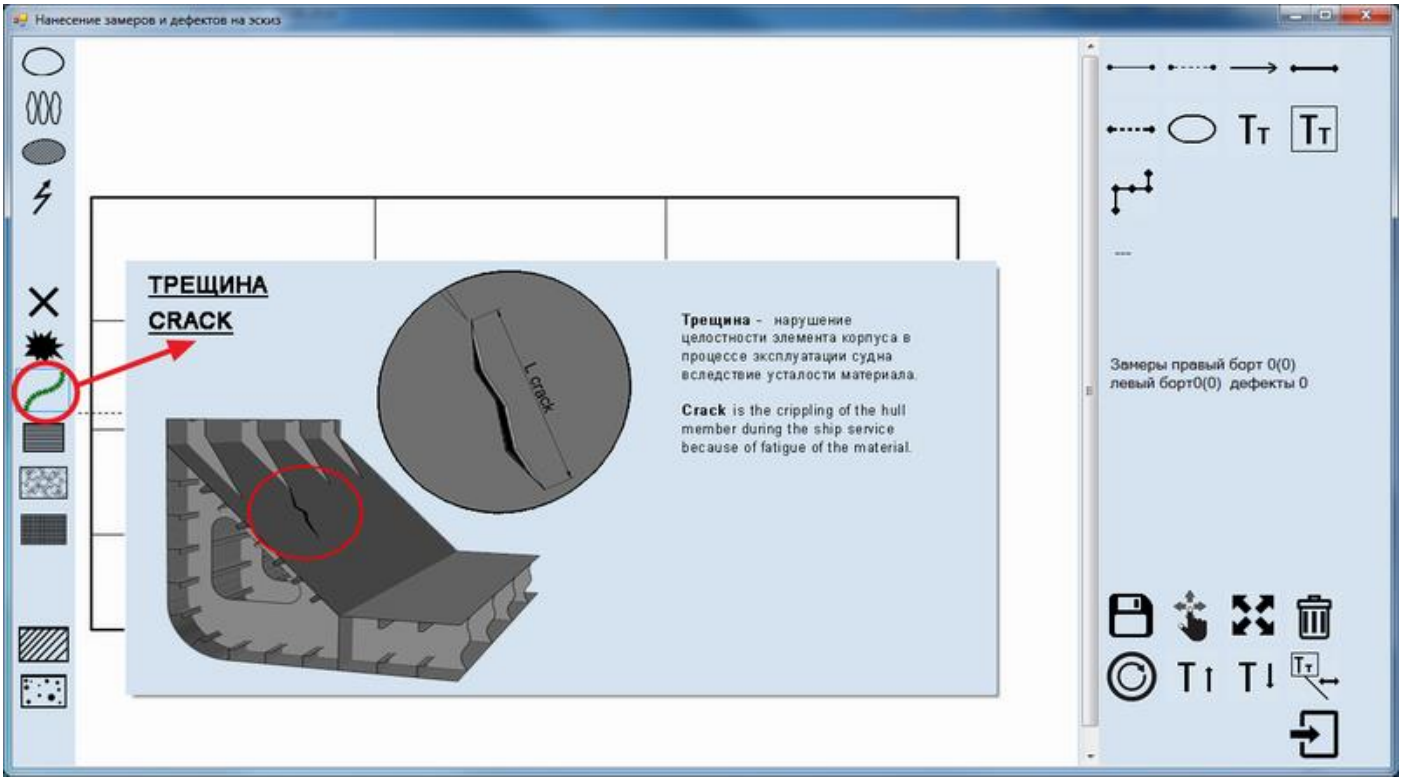


3)to choose an appropriate defect from the left menu of the following window

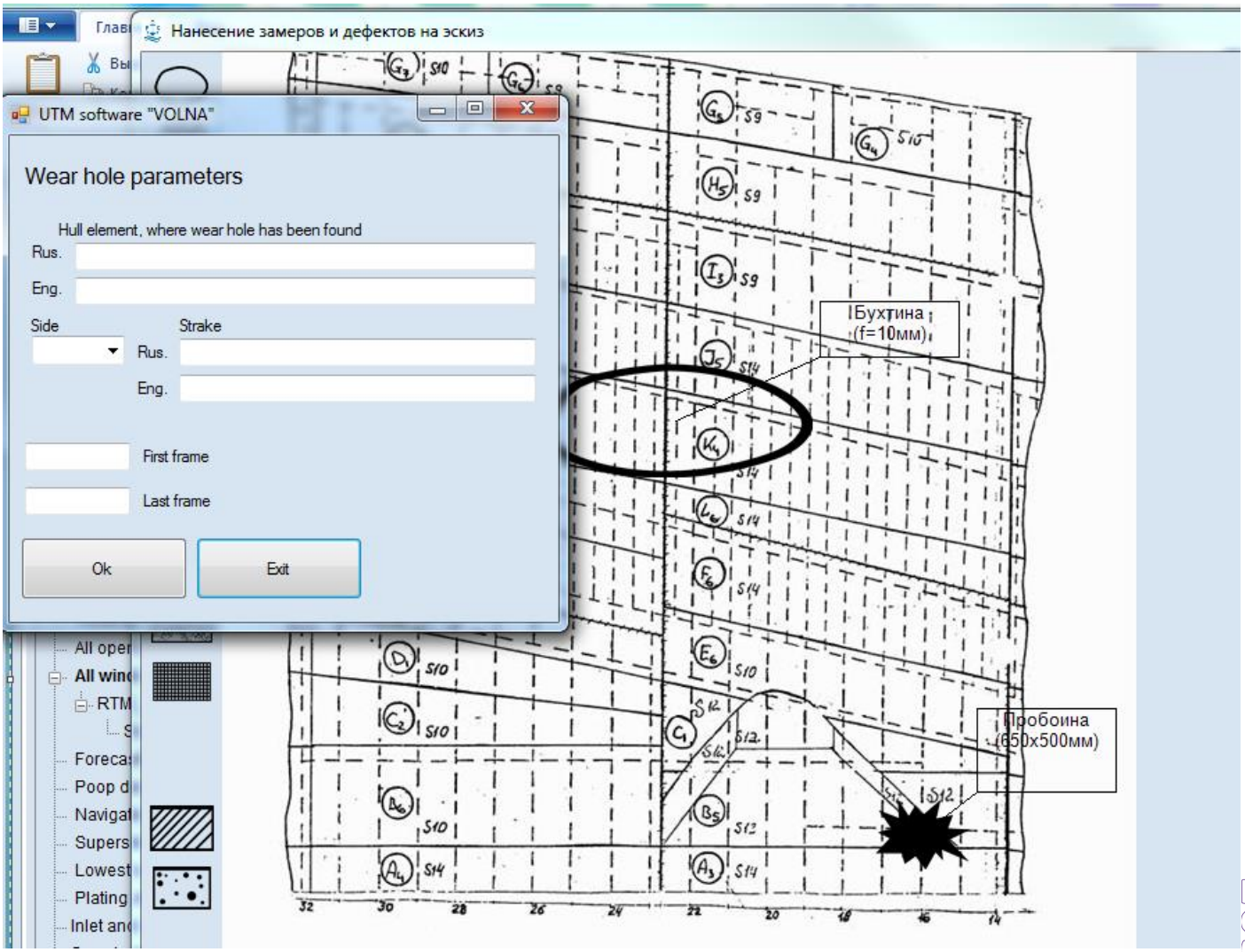
(- for wear holes; - for holes due to damage;  - cracks/fractures/raptures) :



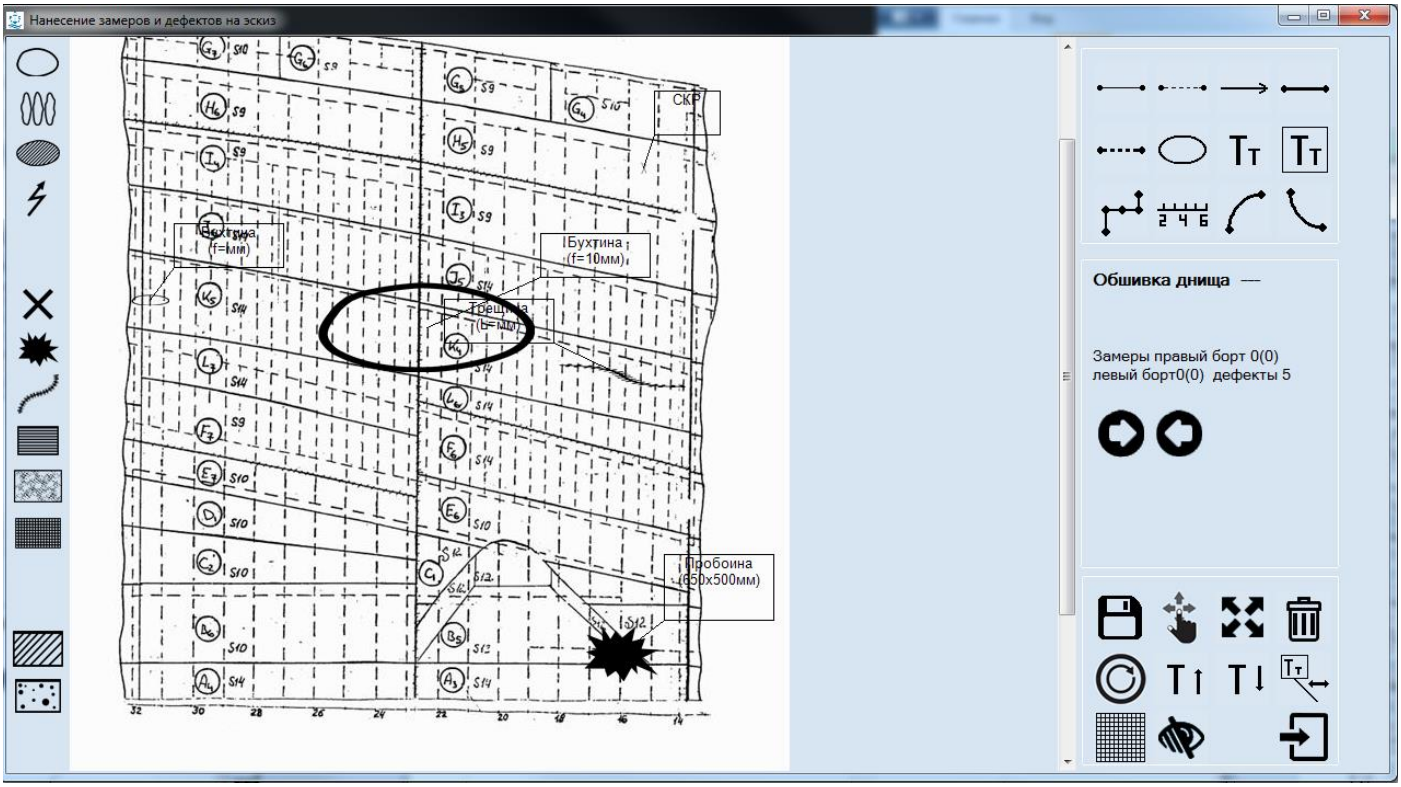




4) Upon selection to indicate upper left and lower tight corners of defect on the sketch.
5) Then to enter information on defects parameters.



3.6) upon registration the defects will be shown on the sketch:



6) Information on defect will be introduced in the tabular form 3.3 (summary table of defects) thereto.

Таблица 3.3 / Table 3.3

СВОДНАЯ ТАБЛИЦА ДЕФЕКТОВ КОРПУСНЫХ КОНСТРУКЦИЙ
TABLE OF HULL DEFECTS

Название судна / Ships name	ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV		PC № / RS No.	932847	ОТЧЕТ № / Report No. 16.00001.180UTM

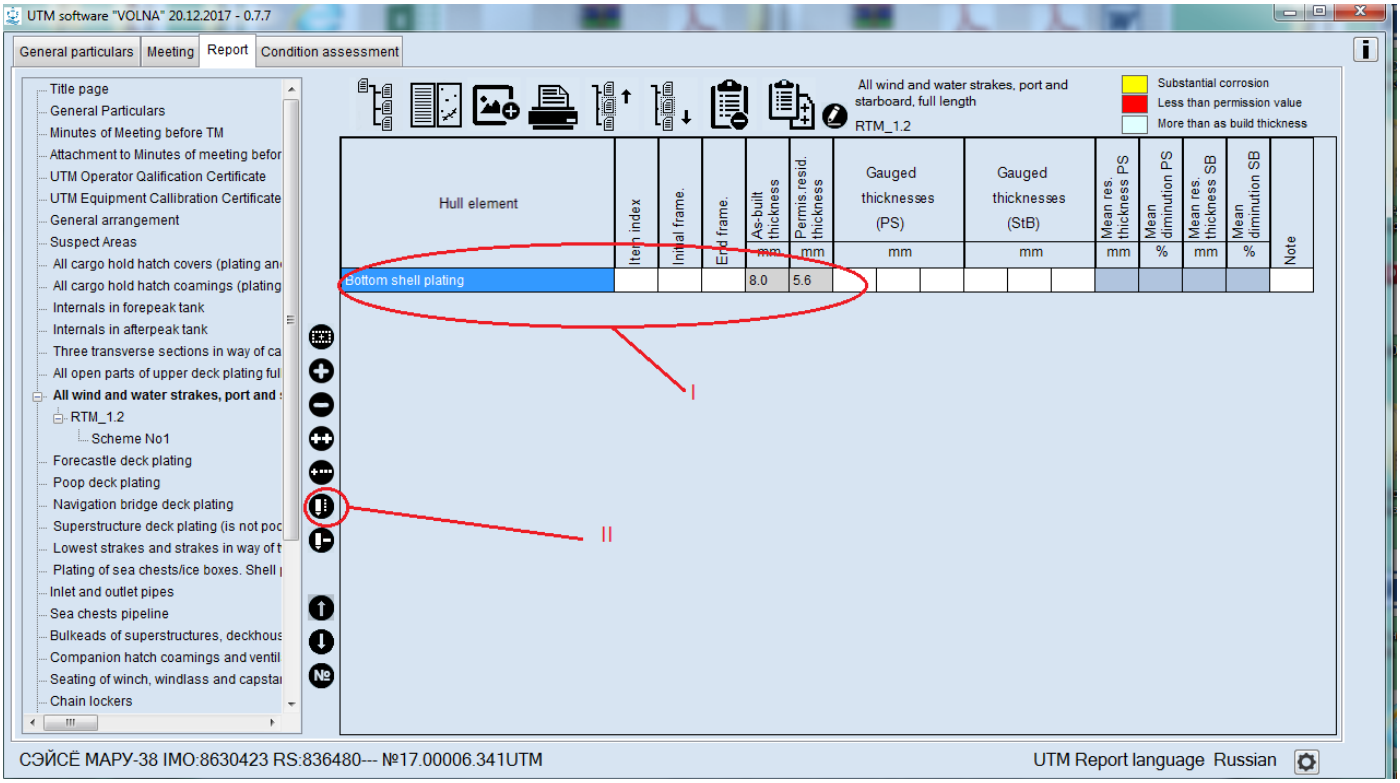
Вид дефекта / Type of defect	Расположение дефекта / Location of defect	Параметры дефекта / Defect parameters	Примечание / Note
пробоина / hole	Настил люковых закрытий125-126, L, Первый пояс от ДП / Hatch cover plating125-126, L, First strake from CL	Минимальный размер пробоины (a) в мм = 500 Максимальный размер пробоины (b) в мм = 620 Hole minimum size (a) mm = 500 Hole maximum size (b) mm = 620	требуется ремонт / repair is required
сквозное проржавление / wear hole	Настил люковых закрытий124-125, R, Второй пояс от ДП / Hatch cover plating124-125, R, Second strake from CL		требуется ремонт / repair is required
трещина / crack	Настил люковых закрытий125-126, R, Первый пояс от киля / Hatch cover plating125-126, R, First strake from keel	Длина трещины L (crack) в мм = 540 Crack length L (crack) mm = 540	требуется ремонт / repair is required

3.4Cement box, steel doubler, composite or polymer doubler.

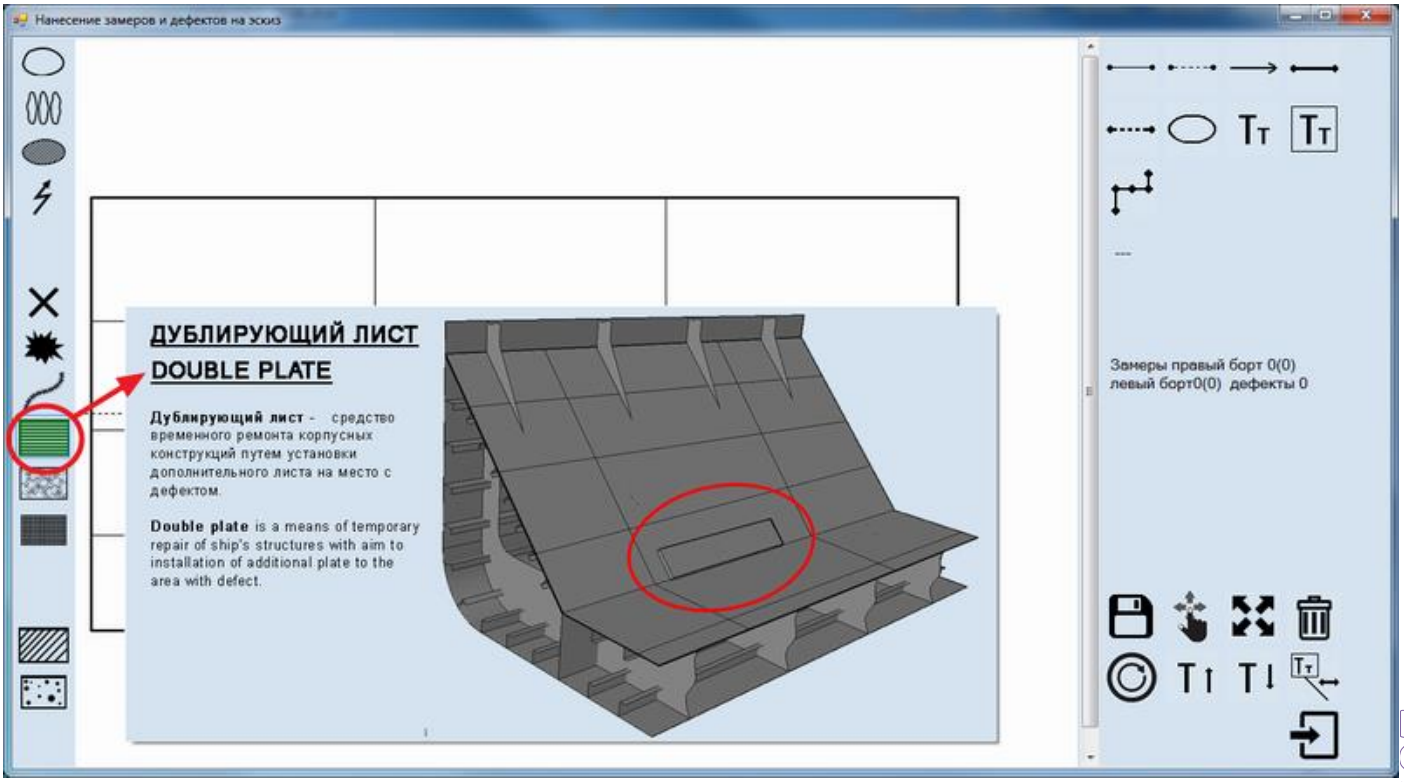
To describe cement box, doublers it is necessary:

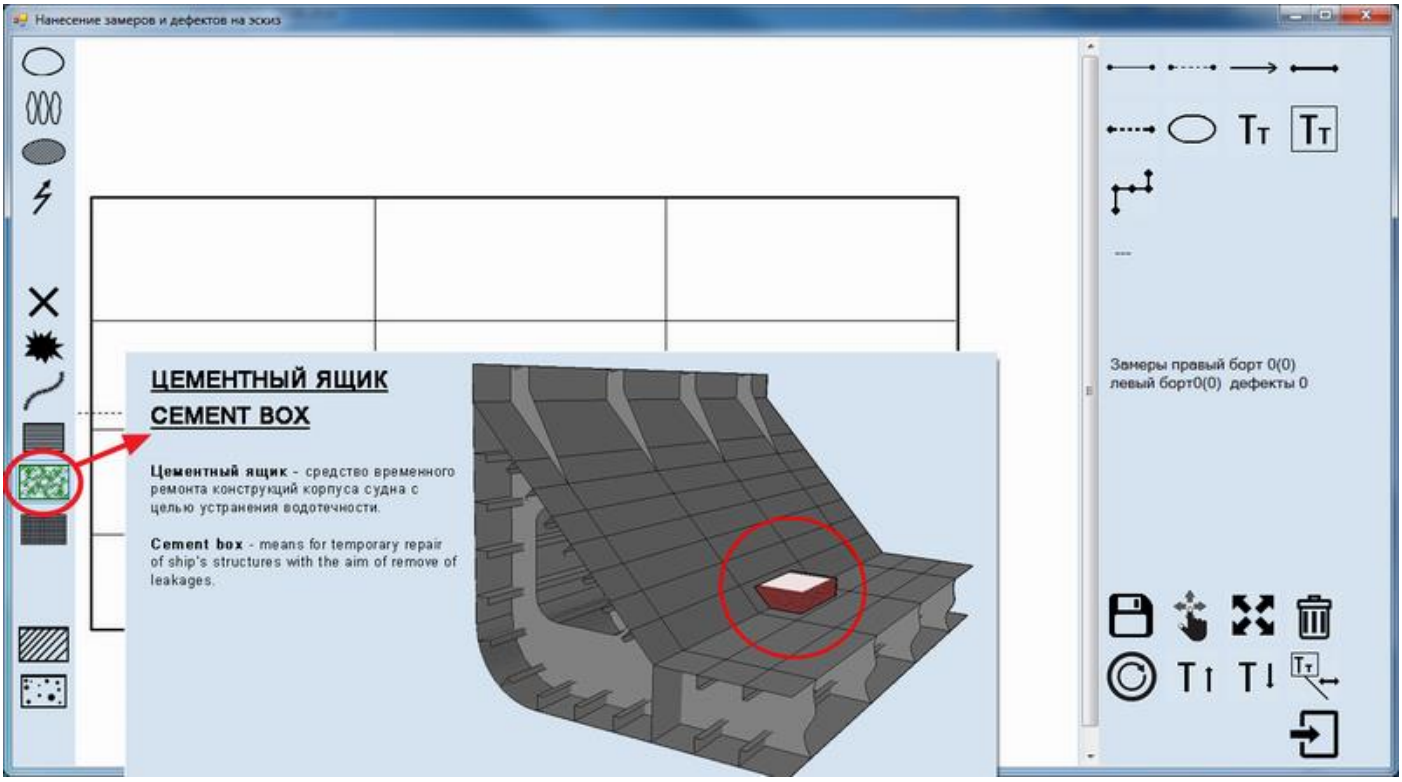
1) to move to the record with relevant item where defect is found and

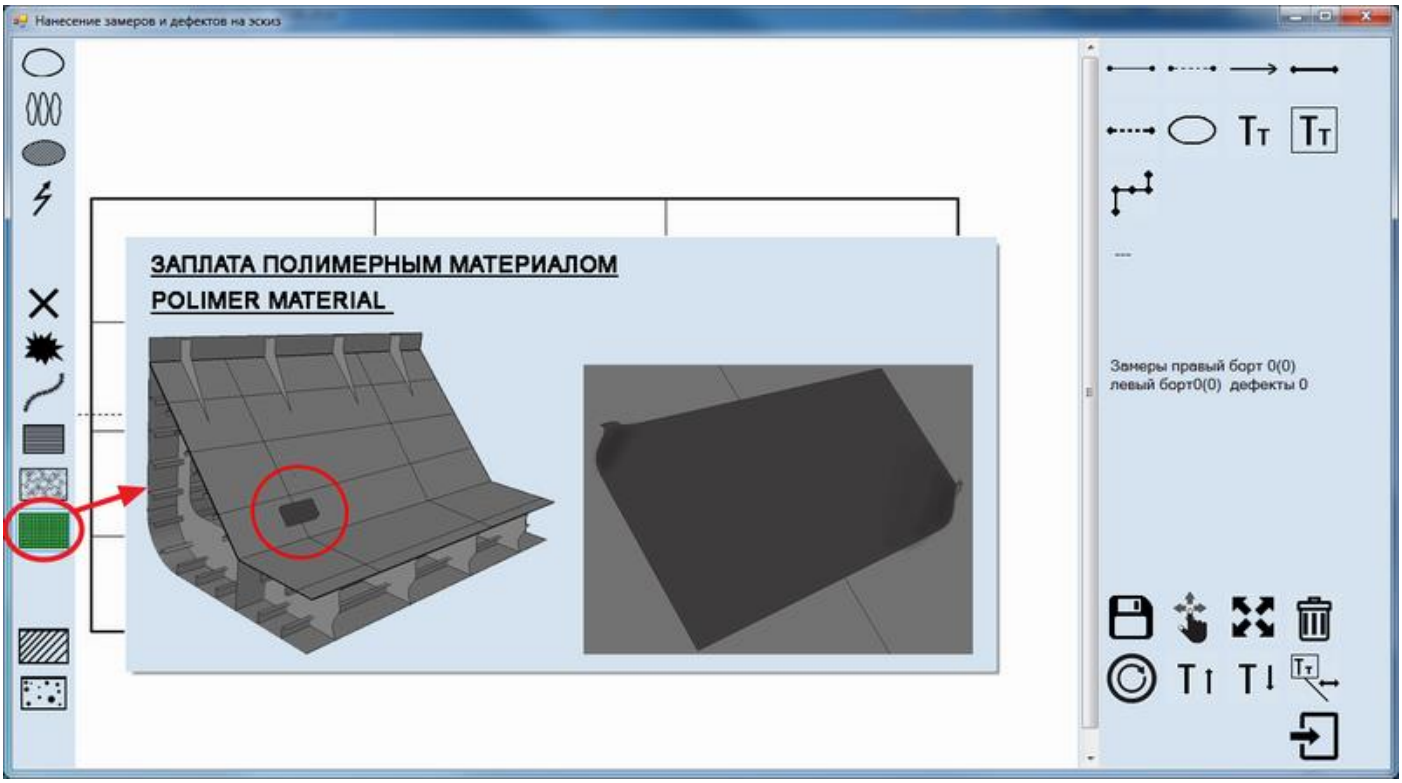
2) to click icon ;



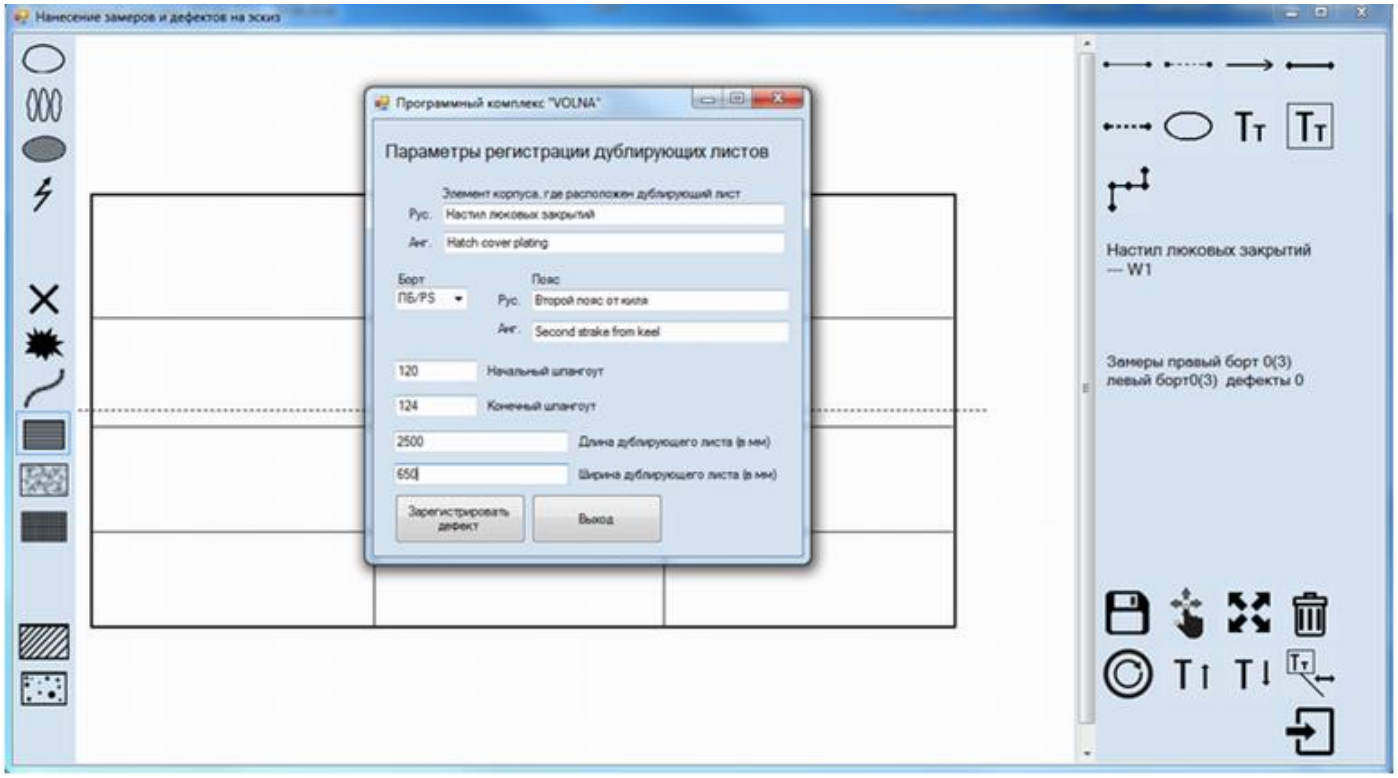
3) to choose required an appropriate defect from the left menu of the following window:



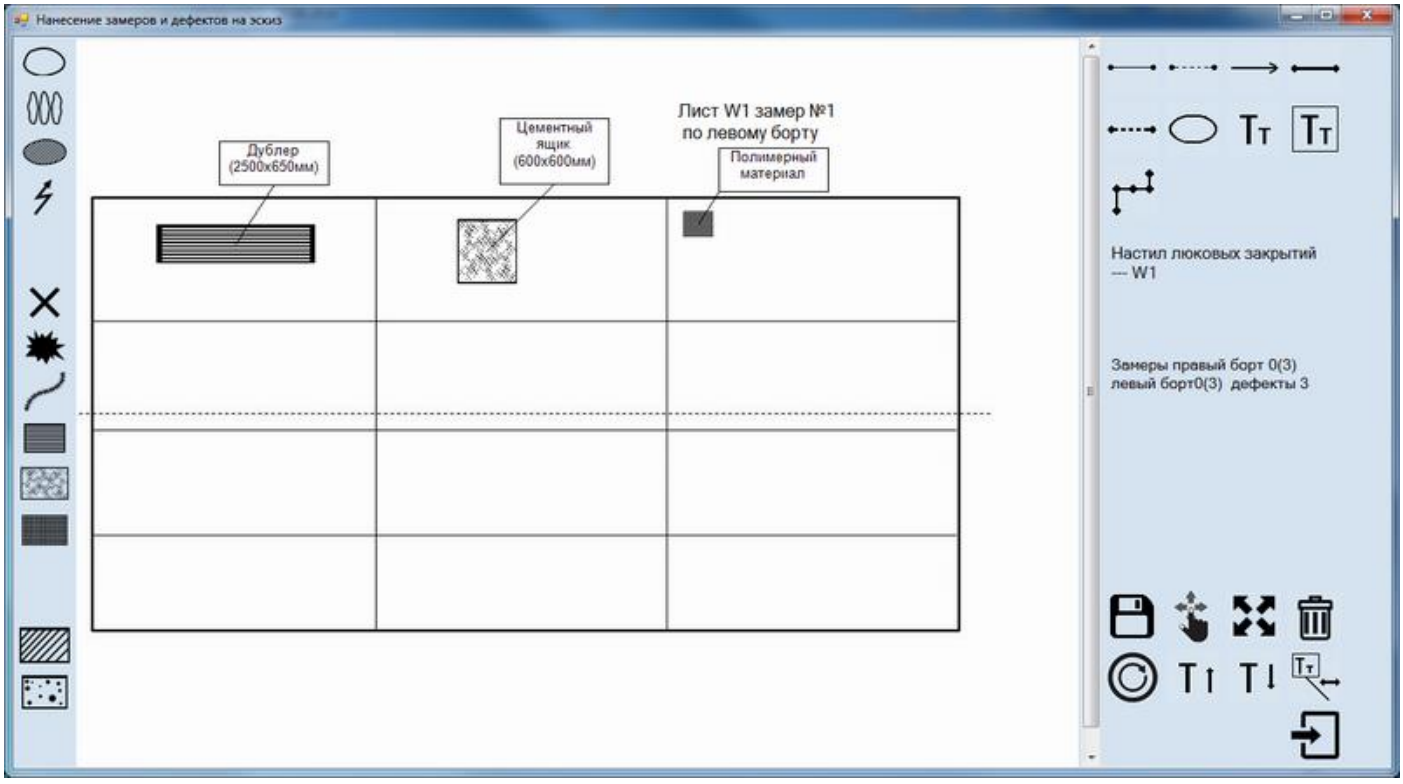




4) Then to indicate upper left and lower right corners of the defect on the sketch;
5) To enter parameters of defect in the appeared window:



6) Upon completion of drawing up of the fields of window the defect will appear on the sketch as follows:



7) Information on defect with the results of its assessment will appear in the summary table of form 3.3.

Таблица 3.3 / Table 3.3

СВОДНАЯ ТАБЛИЦА ДЕФЕКТОВ КОРПУСНЫХ КОНСТРУКЦИЙ
TABLE OF HULL DEFECTS

Название судна / Ships name: ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV
PC № / RS No.: 932847
ОТЧЕТ № / Report No.: 16.00001.180UTM

Вид дефекта Type of defect	Расположение дефекта Location of defect	Параметры дефекта Defect parameters	Примечание Note
дублирующий лист double plate	Настил люковых закрытий 120-124, L, Второй пояс от киля Hatch cover plating 120-124, L, Second strake from keel	Длина дублирующего листа (в мм) = 2500 Ширина дублирующего листа (в мм) = 650 Double plate length (mm) = 2500 Double plate width (mm) = 650	требуется ремонт repair is required
цементный ящик cement box	Настил люковых закрытий 126-127, L, Первый пояс от киля Hatch cover plating 126-127, L, First strake from keel	Длина цементного ящика (в мм) = 600 Ширина цементного ящика (в мм) = 600 Cement box length (mm) = 600 Cement box width (mm) = 600	требуется ремонт repair is required
заплата полимерным материалом polimer material	Настил люковых закрытий 162-163, R, Третий пояс от киля Hatch cover plating 162-163, R, Third strake from keel	Длина заплаты полимерным материалом (в мм) = 400 Ширина заплаты полимерным материалом (в мм) = 300 Polimer material length (mm) = 400 Polimer material width (mm) = 300	требуется ремонт repair is required

3.5 Local wear, pitting

Local wear is a local reduction in the thickness of hull members (plate sections) in the form of groove, linear and spot wear.
Pitting is a local hull member thickness reduction in the form of separate recesses, rustings, pits, cavities, etc.

The permissible thicknesses for the assessment of local wear and pitting are less than for total wear. So the approach for registration of such areas is as follows (refer also to Annex 2 of RCSSS).

In cases when gauging in any part of a plate is significantly differ from measurements in other parts of plate, TM operator shall assess this area subject to local/pitting wear and perform additional measurements according to the RCSSS. The average magnitude of the extensive scope of measurements in this part of plate shall be registered in the table on total wear.

Basic forms of UTM report where the results on general wear are registered, the single measurements which are identified as subject to repair (highlighted by relevant color) may be revealed. Such measurements are required mandatorily to be additionally assessed. For convenience, the software generates summary table of hull elements with general wear exceeding allowable limits (form 3.4). RS surveyor and TM operator shall analyze information provided in this summary table (form 3.4) with regard to presence of single measurements identified as subject to repair for the purpose to carry out additional measurements (if required by the Rules), their registration in the basic relevant forms of UTM report for general wear, as well as for assessment of such single measurements for local and pitting wear as shown below.

Таблица 3.4 / Table 3.4

СВОДНАЯ ТАБЛИЦА КОРПУСНЫХ КОНСТРУКЦИЙ, ОБЩИЙ ИЗНОС КОТОРЫХ ПРЕВЫШАЕТ ДОПУСТИМЫЕ ПРЕДЕЛЫ
SUMMARY TABLE OF HULL ELEMENTS WITH GENERAL WEAR WHICH EXCEEDS ALLOWABLE LIMITS

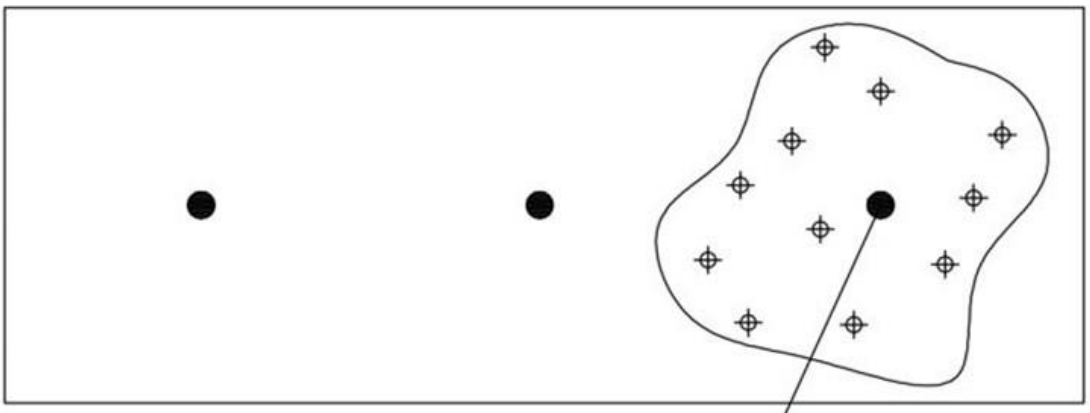
Название судна / Ships name:
PC № / RS No.:
Отчет № / Report No.:

№ No.	Элемент корпуса Hull element	Индекс элемента Element index	Борт Side	Построечная толщина Build thickness	Допускаемая ост. толщина Permissible thickness	Замеренная толщина Measured thickness	Износ Wear	Средняя остаточная толщина Average residual thickness	Примечание Note
				мм mm	мм mm	мм mm	%	мм mm	

Hull element	Item index	Initial frame.	End frame.	As-built thickness	Permis.resid. thickness	Gauged thicknesses (PS)			Gauged thicknesses (StB)			Mean res. thickness PS	Mean diminution PS	Mean res. thickness SB	Mean diminution SB
				mm	mm	mm			mm			mm	%	mm	%
Shearstrake	F14	134...	152...	13,0	9,1	12,9	12,5	12,8				12,7	2,3		
Bottom shell plating	Fk11	152...	159...	15,0	10,5	14,6	14,7	11,3				13,5	10,0		
Bottom shell plating	A12	152...	159...	15,0	10,5	14,6	14,5	14,8				14,6	2,7		
Bottom shell plating	C12	152...	159...	20,0	14,0	21,1	20,5	19,7				20,4	0,0		
Side shell plating	D16	152...	159...	20,0	14,0	19,6	19,7	19,7				19,7	1,5		

Замеры по общему износу
General wear points
Данные замеров заносятся в основные таблицы
TM points inserted to main tables

Замеры по местному/язвенному износам
Local / Pitting wear points

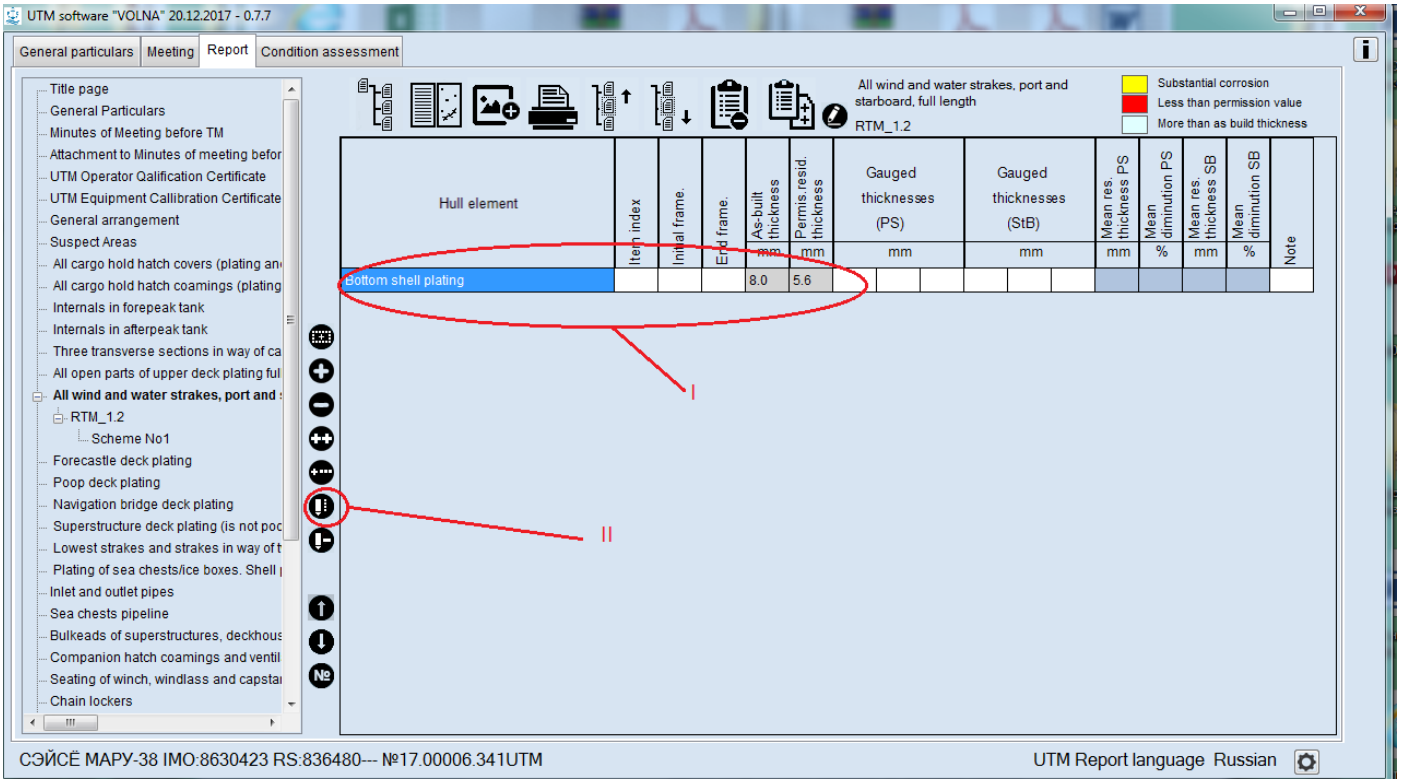


Усредненное значение всех дополнительных замеров
Average valueof all additional points

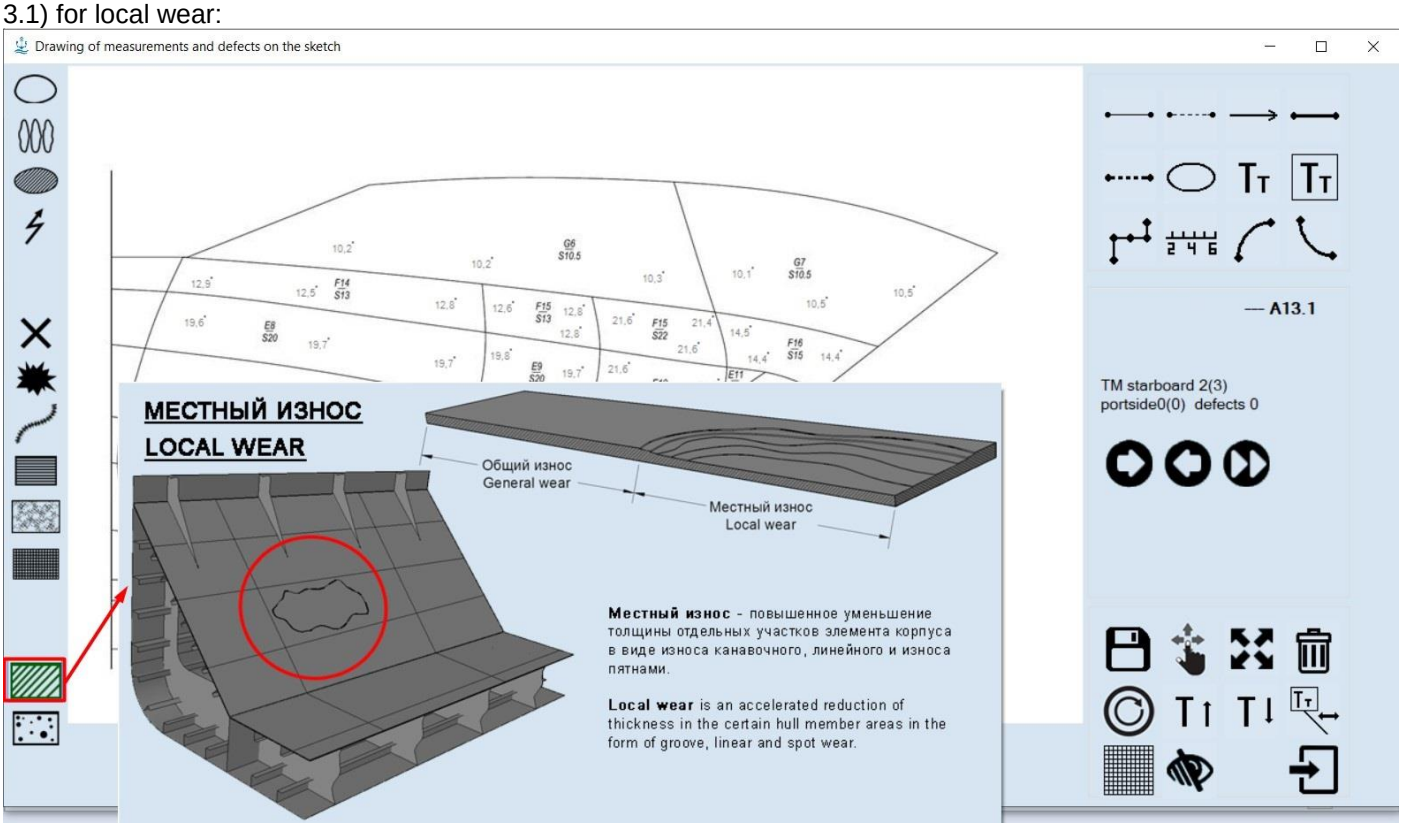
To describe defect on the sketch it is necessary:

1) in the tab "Report" to move to the relevant table,

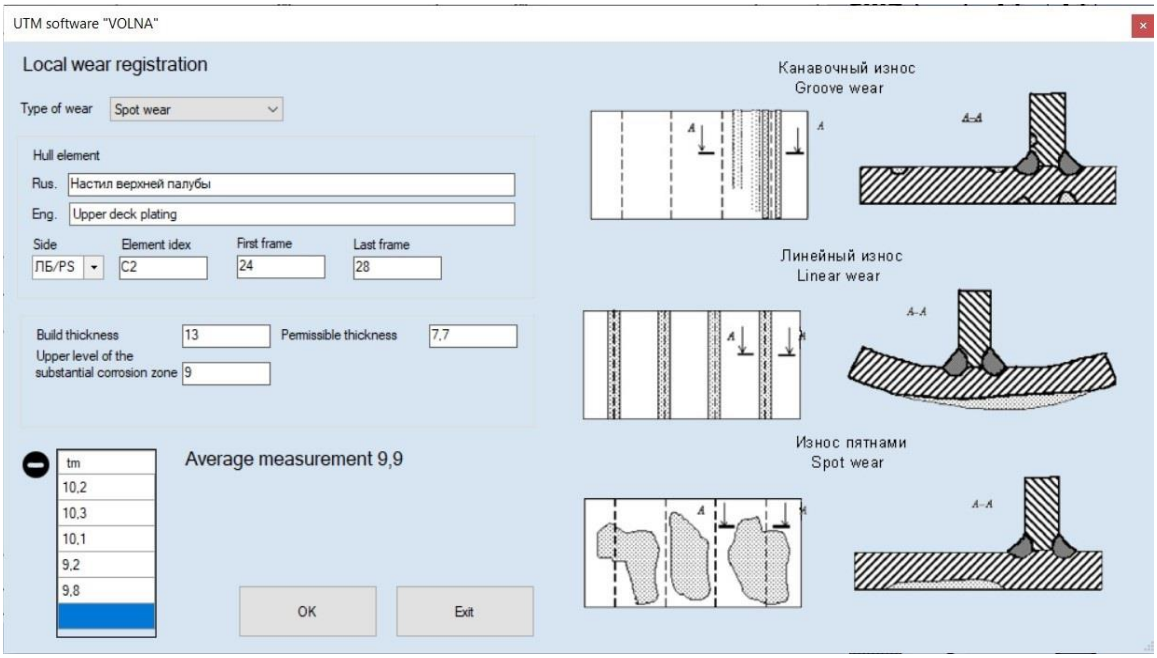
2) to click on the record with item on which mentioned defect is found and click on icon ;



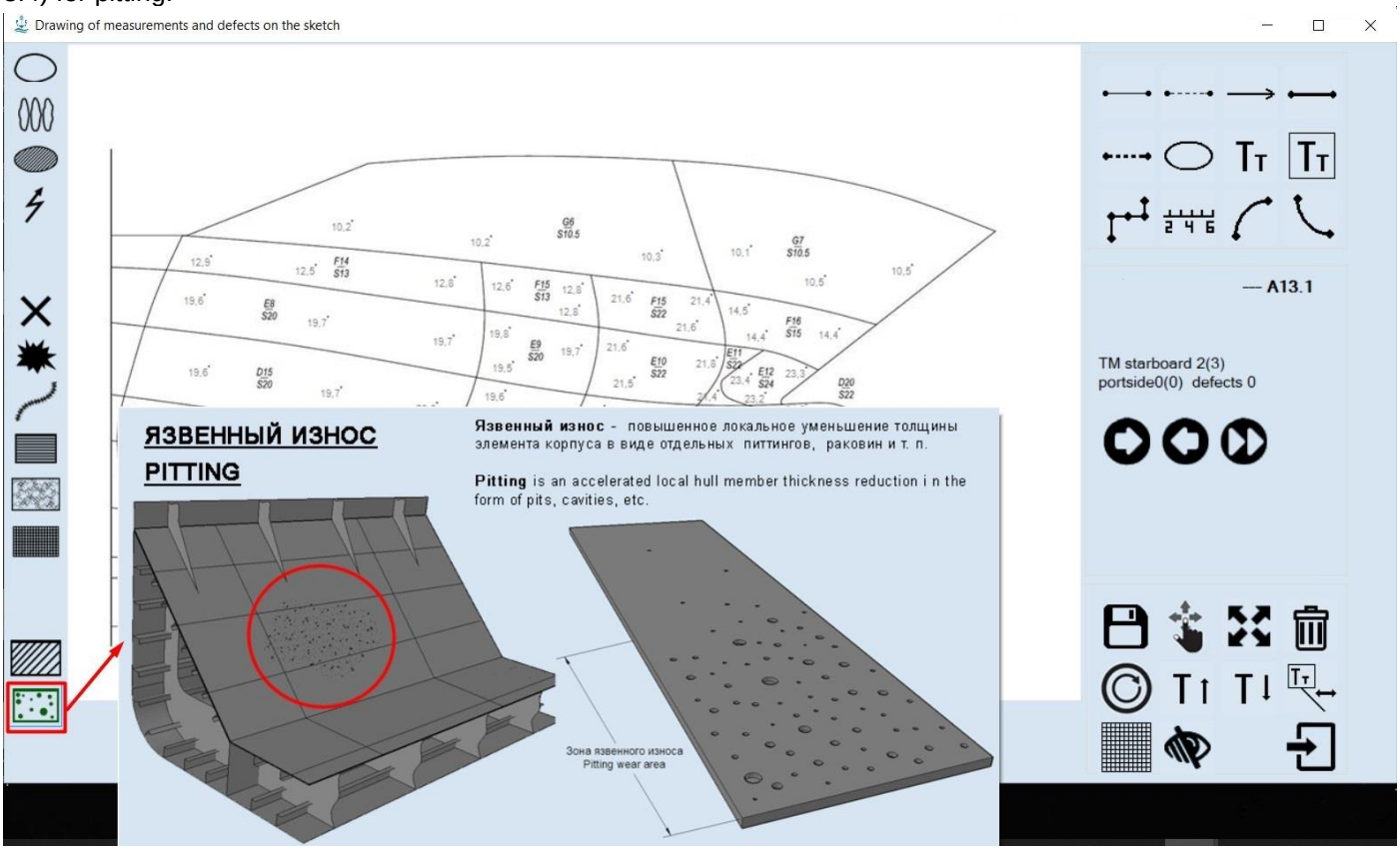
3) To choose an appropriate defect from the left menu of the appeared window:
3.1) for local wear:



3.2) Then to indicate location of the defect on the sketch.
3.3) To enter parameters of defect in the appeared window as follows:

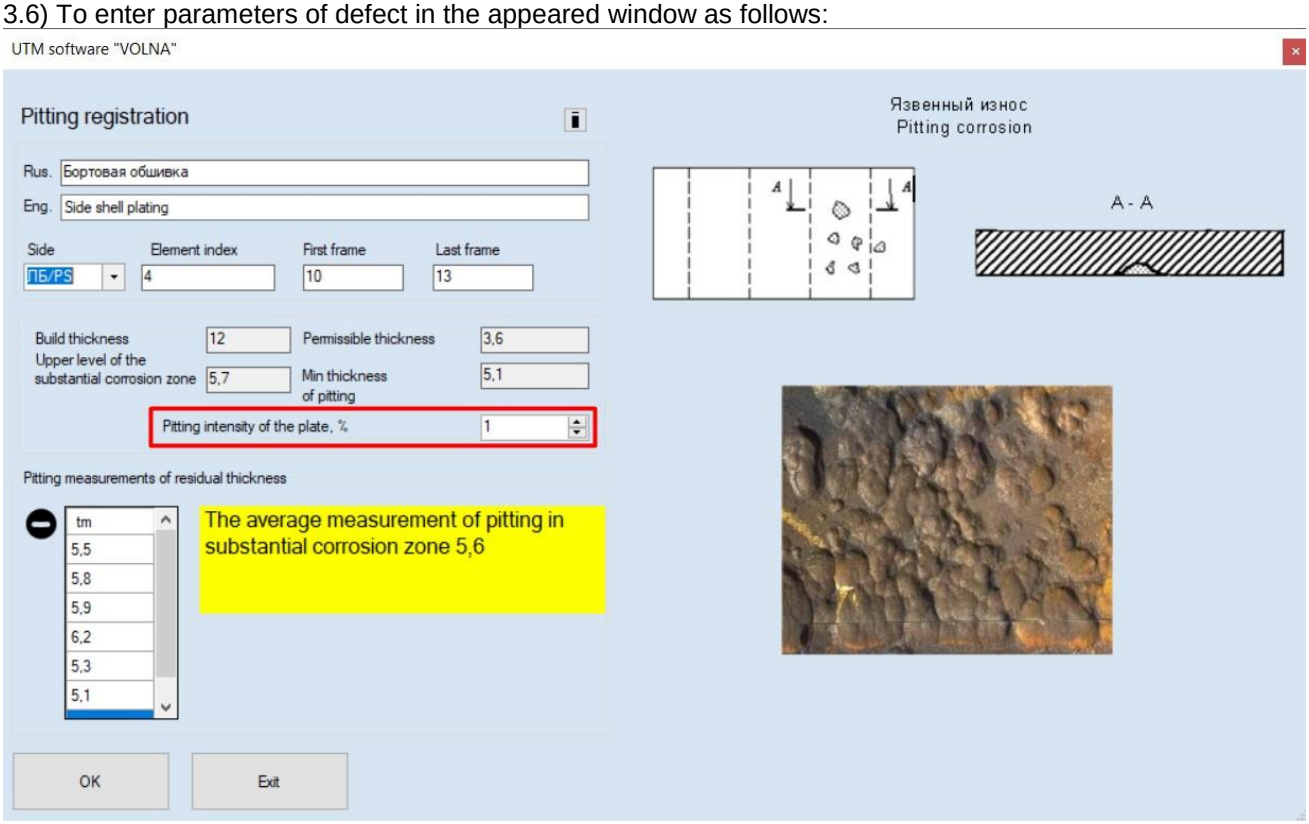


3.4) for pitting:

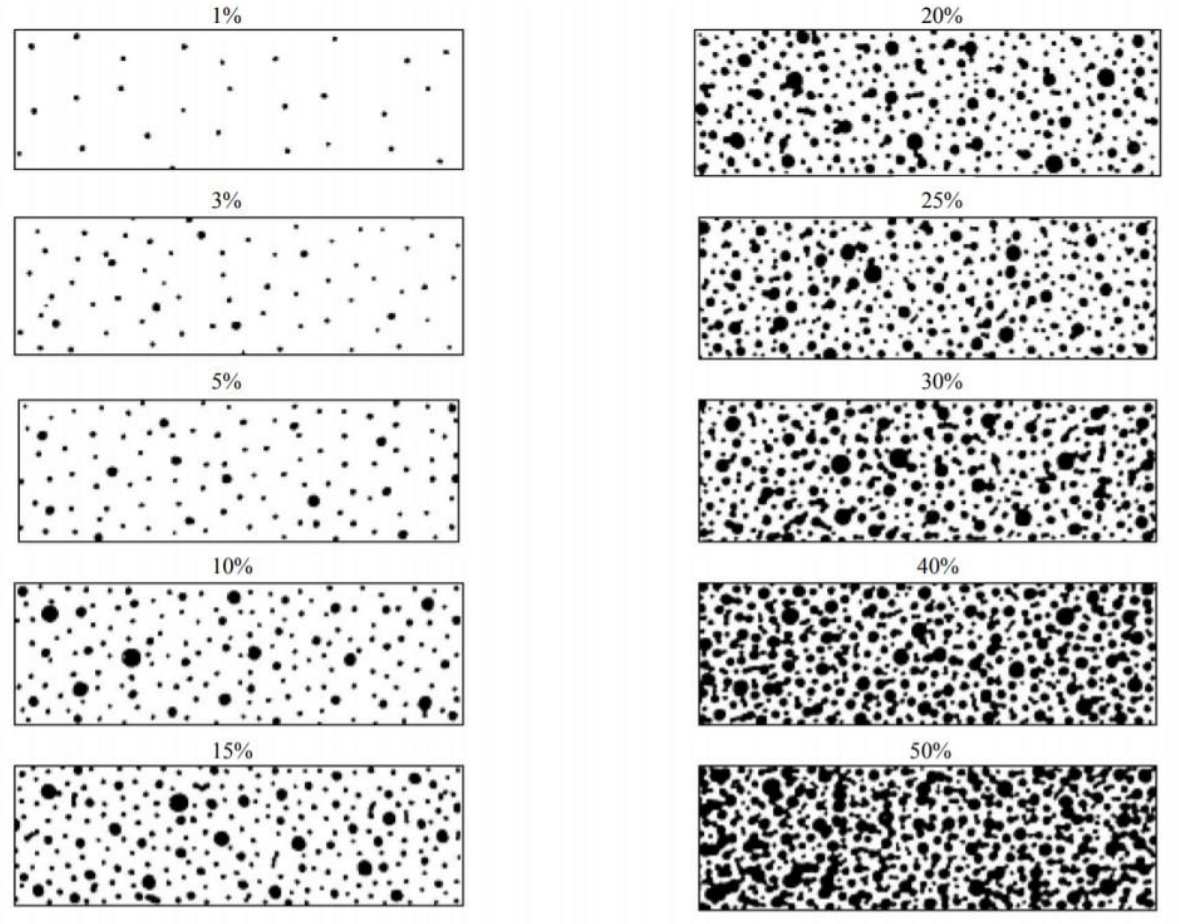


3.5) Then to indicate location of the defect on the sketch.

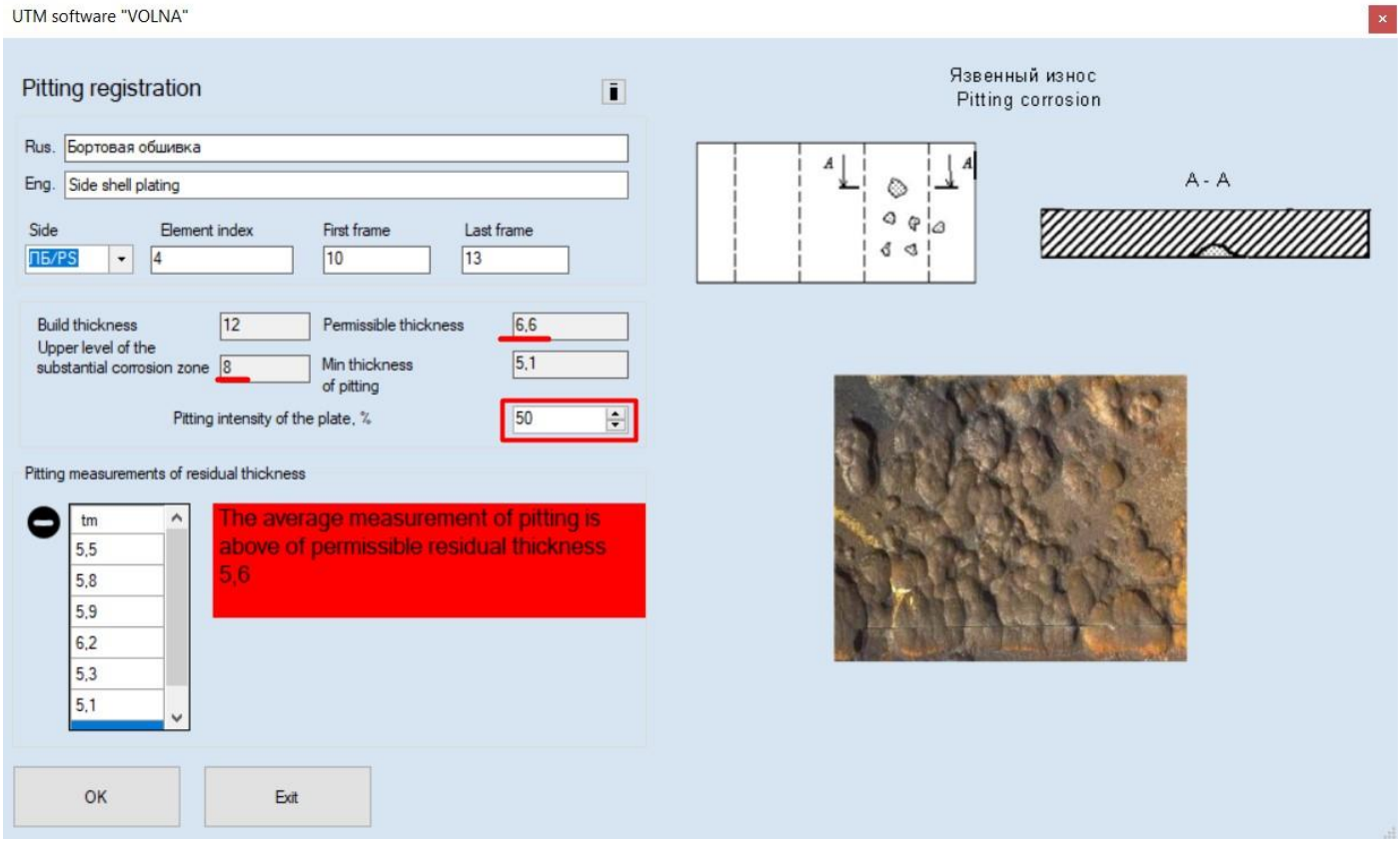
3.6) To enter parameters of defect in the appeared window as follows:



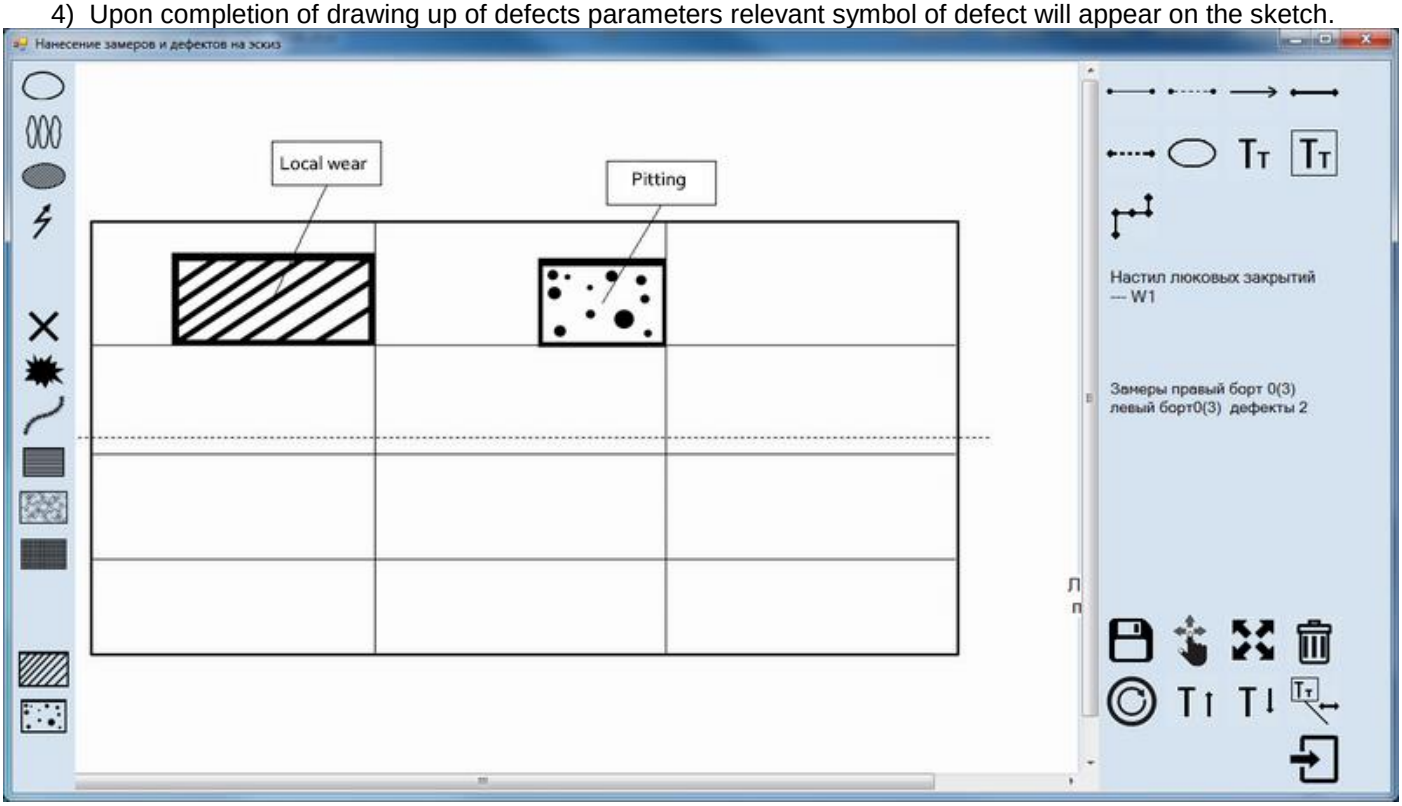
3.7) For pitting, there is a field "Pitting Intensity of the plate,%". In the case of the presence of single pits, it is necessary to leave the default value of 1%, and with a pitting Intensity, set the value using the keyboard or using the buttons:



According to the value of the pitting Intensity, the permissible thickness and the upper limit of a substantial corrosion zone automatically change.



4) Upon completion of drawing up of defects parameters relevant symbol of defect will appear on the sketch.



5) Information on defect together with the results of its assessment will be introduced automatically:
5.1) for local wear - in the tabular form 2.3 (intended for registration of local wear).

Таблица 2.3 / Table 2.3

РЕГИСТРАЦИЯ МЕСТНОГО ИЗНОСА
LOCAL WEAR REGISTRATION

Зона значительной коррозии
Area with substantial corrosion
Превышение доп. уменьшения
Exceed of allolowable diminution

Название судна / Ships name: ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV
РС № / RS No.: 932847
Отчет № / Report No.: 16.00001.180UTM

Тип местного износа Type of local wear	Элемент корпуса Hull element	Индекс элемента Index of element	Борт Side	Начальный шпангоут Initial frame	Конечный шпангоут Last frame	Построечная толщина Build thickness	Допускаемая толщина Allowable thickness	Замеры толщин в районе местного износа Thickness measurement at the area of substantial corrosion				Средняя остаточная толщина Average thickness	Глубина канавок Deep groove		Примечание Note
													h1	h2	
						мм mm	мм mm	мм mm	мм mm	мм mm	мм mm	мм mm	мм mm	мм mm	
Износ пятнами	Настил люковых закрытий Hatch cover plating	W1	L	125	129	13,0		12,4	12,8	11,6	11,7	11,9			
						13,0		11,8	11,8	11,4	11,0				
						13,0		11,2	11,8	11,7	11,8				
						13,0		11,6	12,9	12,6	12,8				
						13,0		11,8	11,6	11,9	11,6				

5.2) for pitting - in the tabular form 2.4 (intended for registration of pitting).

Таблица 2.4 / Table 2.4

РЕГИСТРАЦИЯ ЯЗВЕННОГО ИЗНОСА
PITTING CORROSION REGISTRATION

Зона значительной коррозии
Area with substantial corrosion
Превышение доп. уменьшения
Exceed of allolowable diminution

Название судна / Ships name: ВЛАДИМИР РУСАНОВ / VLADIMIR RUSANOV
РС № / RS No.: 932847
Отчет № / Report No.: 16.00001.180UTM

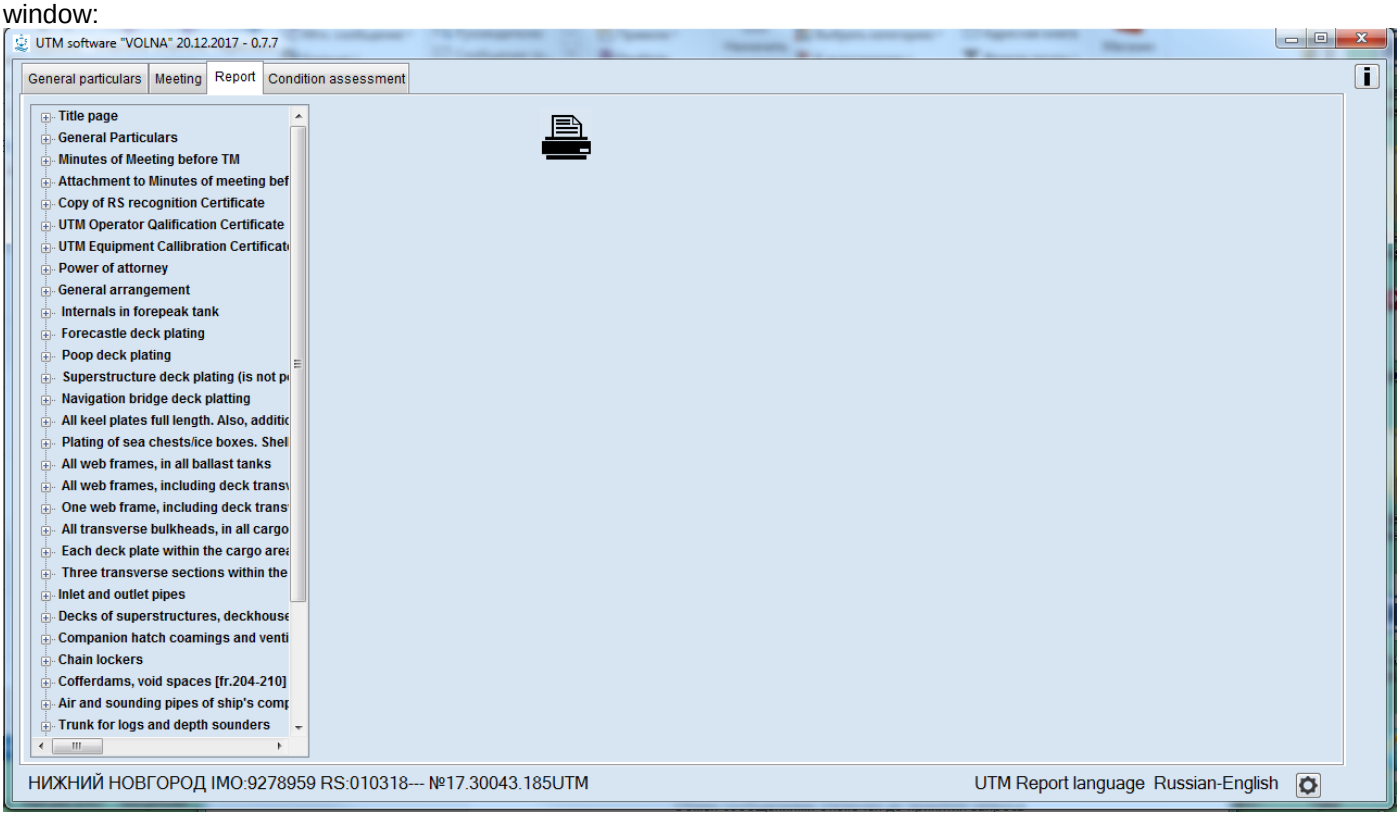
Элемент корпуса Hull element	Индекс элемента Index of element	Борт Side	Начальный шпангоут Initial frame	Конечный шпангоут Last frame	Построечная толщина Build thickness	Допускаемая толщина Allowable thickness	Замеры в язвах Pitting measurement				Средняя остаточная толщина Average thickness	Максимальная глубина язвины Max. pitting deep	Примечание Note
					мм mm	мм mm	мм mm				мм mm	мм mm	
Настил люковых закрытий Hatch cover plating	W1	R	0	0	13,0		6,8	6,5	6,4	6,8	6,1		
					13,0		5,5	5,8	5,9	6,2			
					13,0		6,4	6,8	6,7	6,8			
					13,0		6,5	6,4	6,8	5,5			
					13,0		5,3	5,1	5,3	5,8			
					13,0		5,9	5,5	5,9	5,6			

4 Generation of the Report

To generate a Report in a complete full document it is necessary:

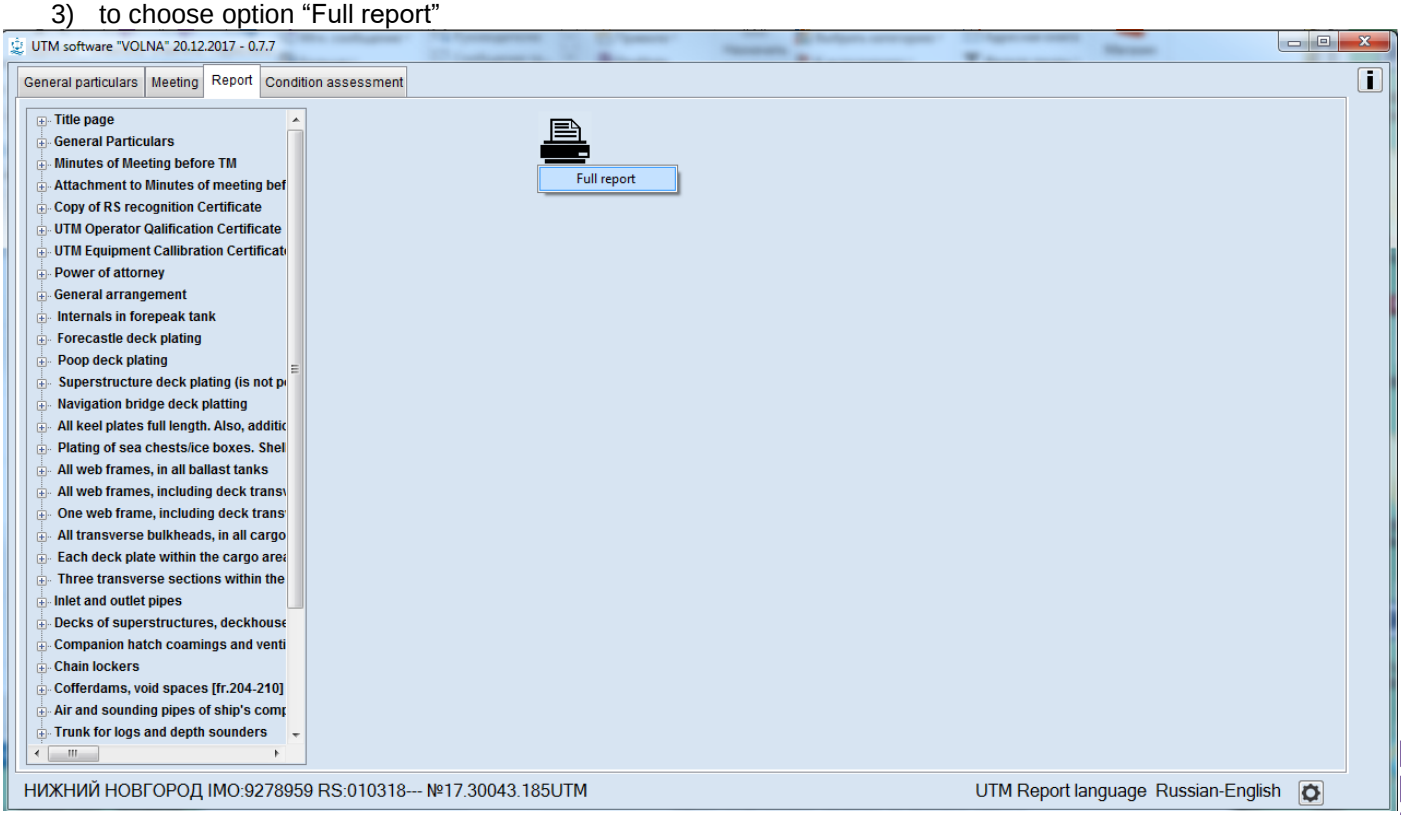
1) to draw up all relevant forms, sketches, attachments).

2) To print out of the report it is necessary to move to the tab “Report” and click on icon in the following window:

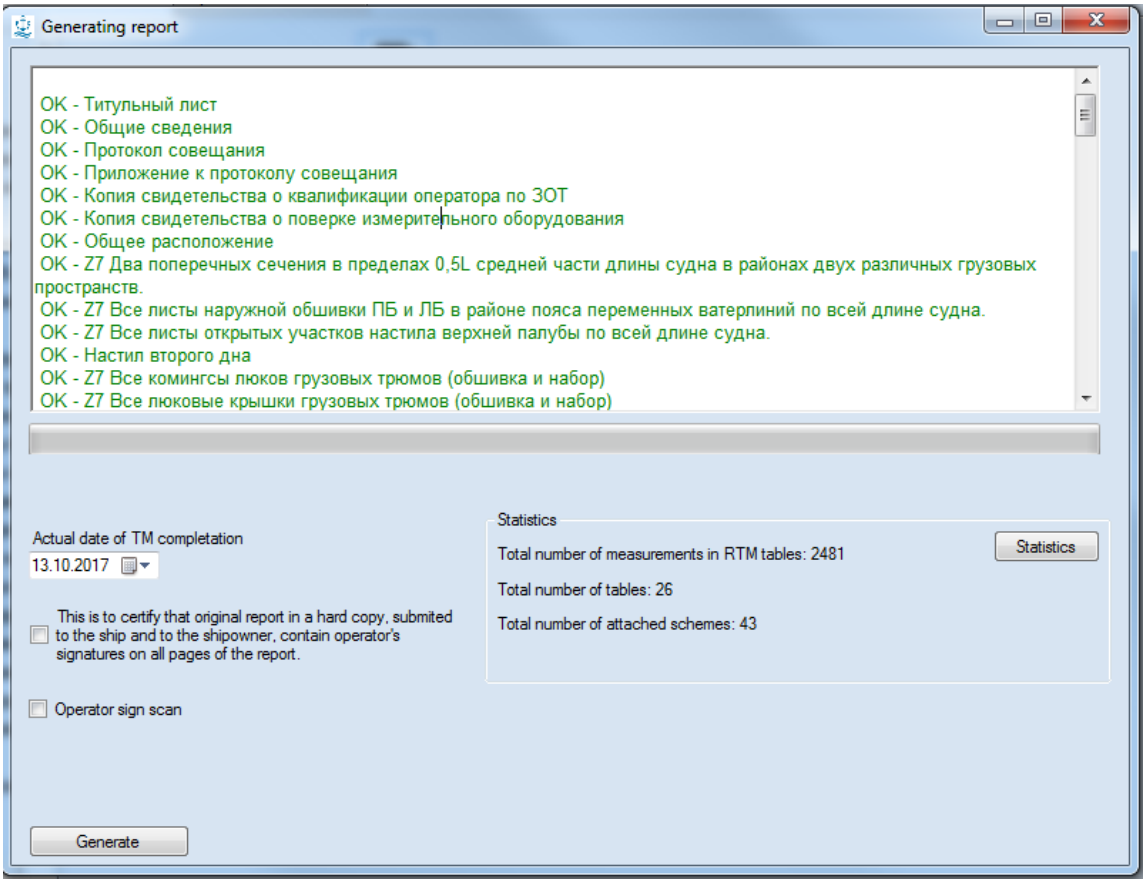


and

3) to choose option “Full report”



4) In the beginning of Report generation verification of possible data mistakes will be carried out by the software “VOLNA”.

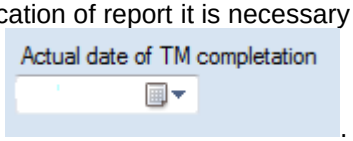


In this popup window a statistic information for a ship will be introduced thereto (overall number of measurements, including in the report, number of tables, sketches).

5) Then by clicking on button “Statistic” information on measurements for each item from the tree will be generated in file “statTM.pdf”, for instance:

Статистика по отчету
Statistic on report

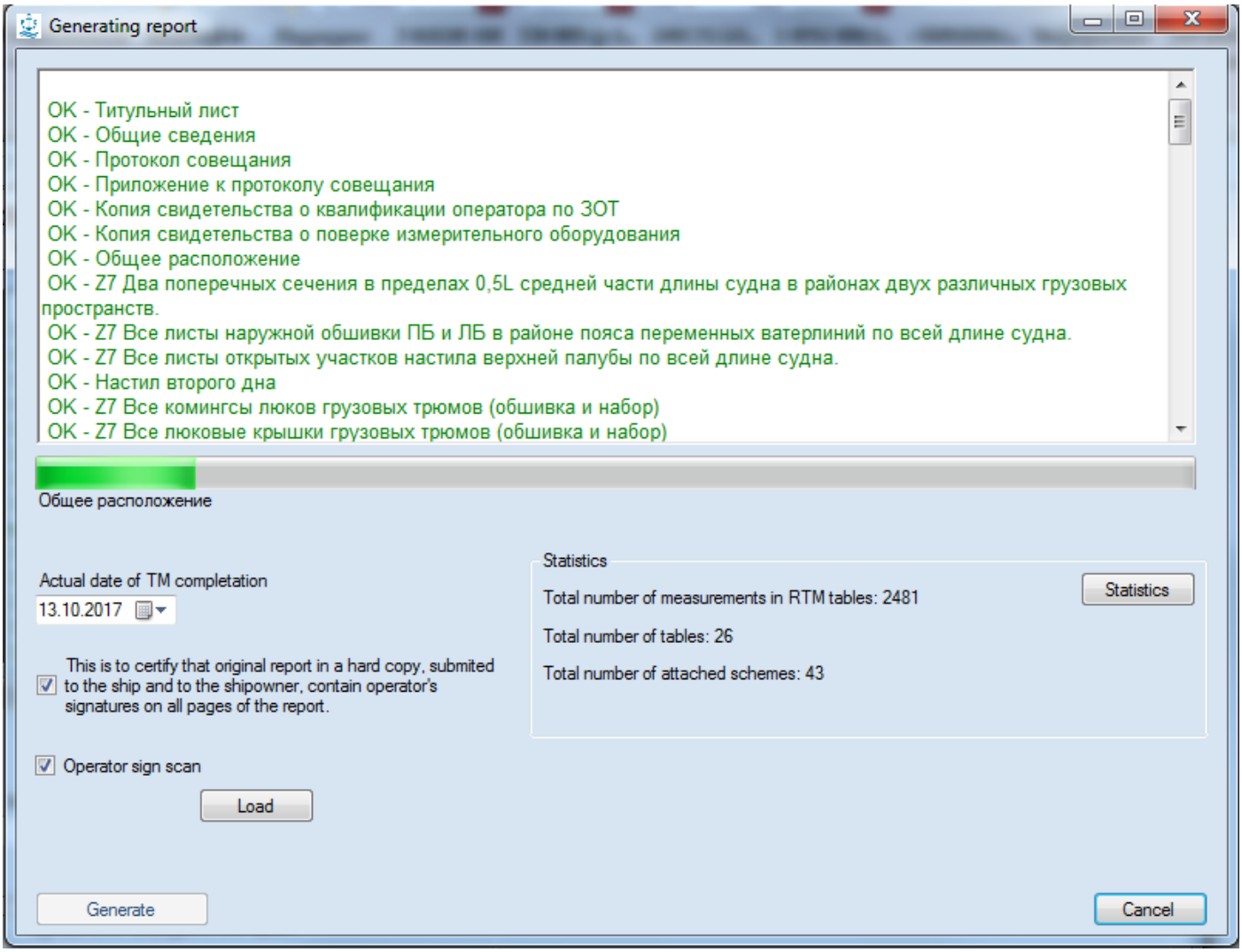
Название конструкции Structure name	Количество замеров Number of meaurements
Сомнительные зоны Suspect areas	66
Z7 Два поперечных сечения в пределах 0,5L средней части длины судна в районах двух различных грузовых пространств. Two transverse sections within 0,5L of mid part of the ship within two different cargo spaces	384
Z7 Все люковые крышки грузовых трюмов (обшивка и набор) All cargo hold hatch covers (plating and framing)	24
Z7 Внутренние конструкции форпика Forepeak internals	435
Z7 Внутренние конструкции ахтерпика Afterpeak internals	408
Z7 Все листы открытых участков настила верхней палубы по всей длине судна. All exposed upper deck plating parts along ship's length	279
Z7 Все листы наружной обшивки ПБ и ЛБ в районе пояса переменных ватерлиний по всей длине судна. All wind and water strake plates along ship's length both sides (PS and STBD)	570
Z7 Типовые листы настила палубы бака Representative plates of forecastle deck plating	95
Z7 Типовые листы палубы навигационного мостика Representative bridge deck plating	27

6) In the lower right part of the screen of the window of verification of report it is necessary to enter the actual date of completion of thickness measurements in the field 

.

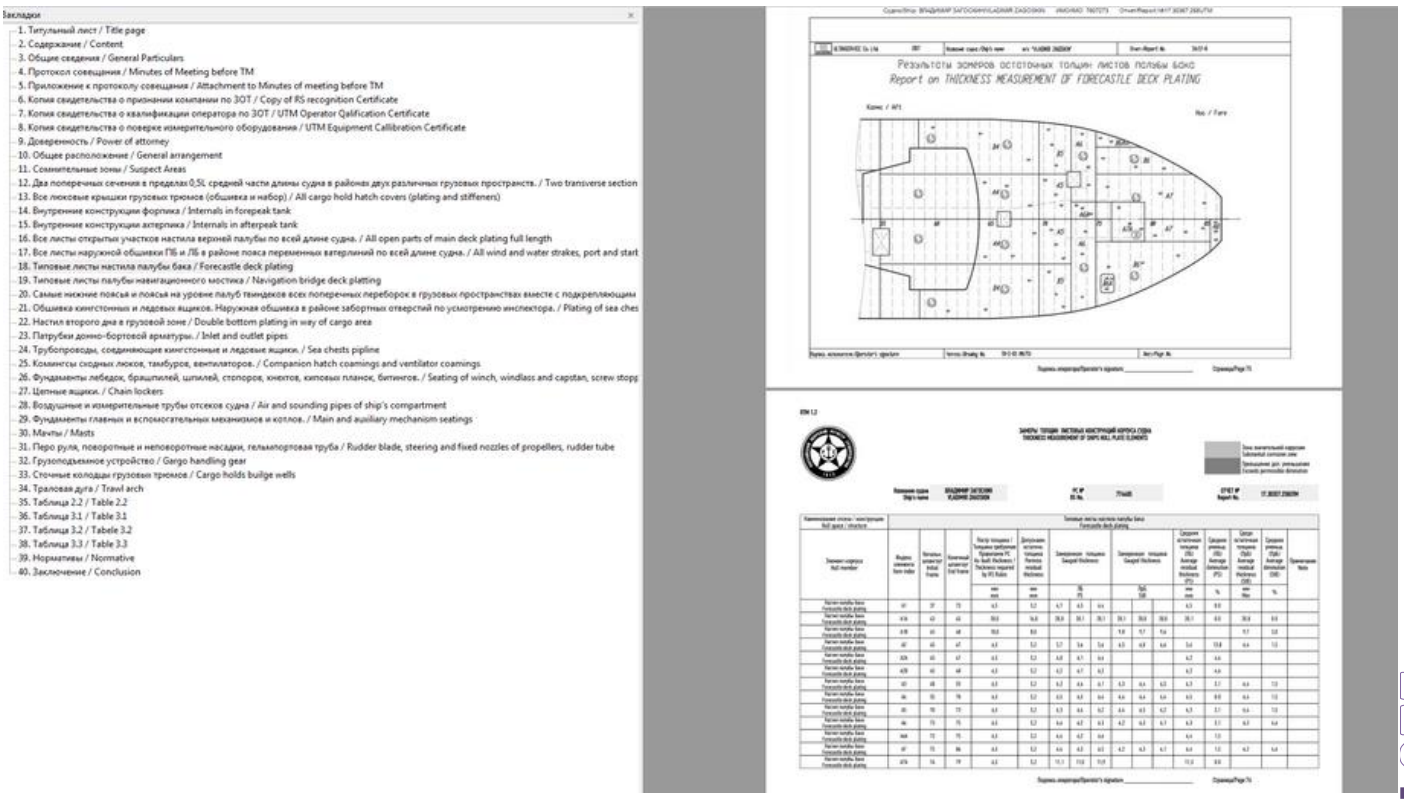
Then this date will be automatically introduced in the section “General particulars” of the Report.

7) Then click “Generate”.



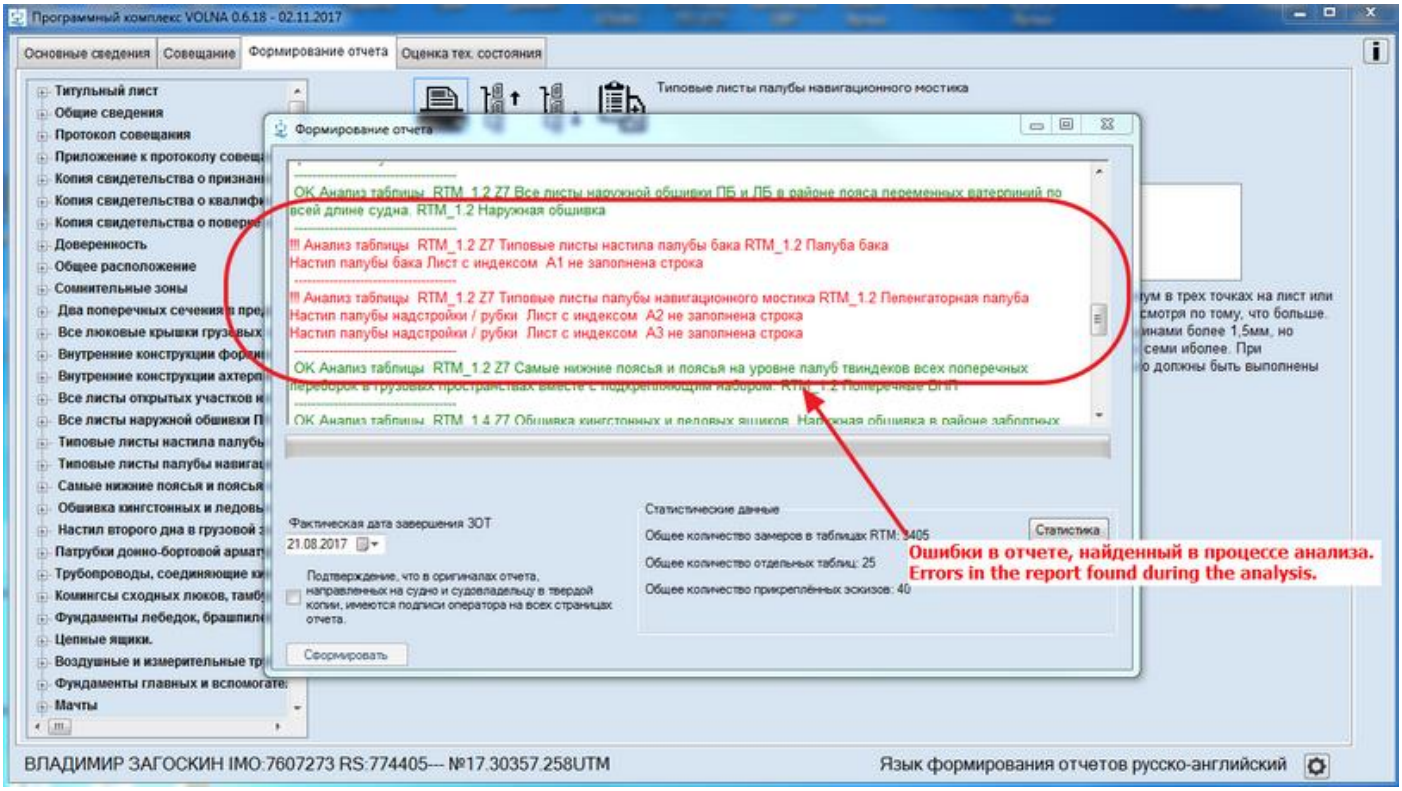
Report generating takes approx.. from to 5 minutes depending on the scope of report and unit performance.

Report is created in PDF format in file “result.pdf”.



In case mistakes will be found in the report, they will be shown in red color in the window of verification of report.

Until all mistakes are eliminated it will be impossible to generate report and button “generated” will be inactive.



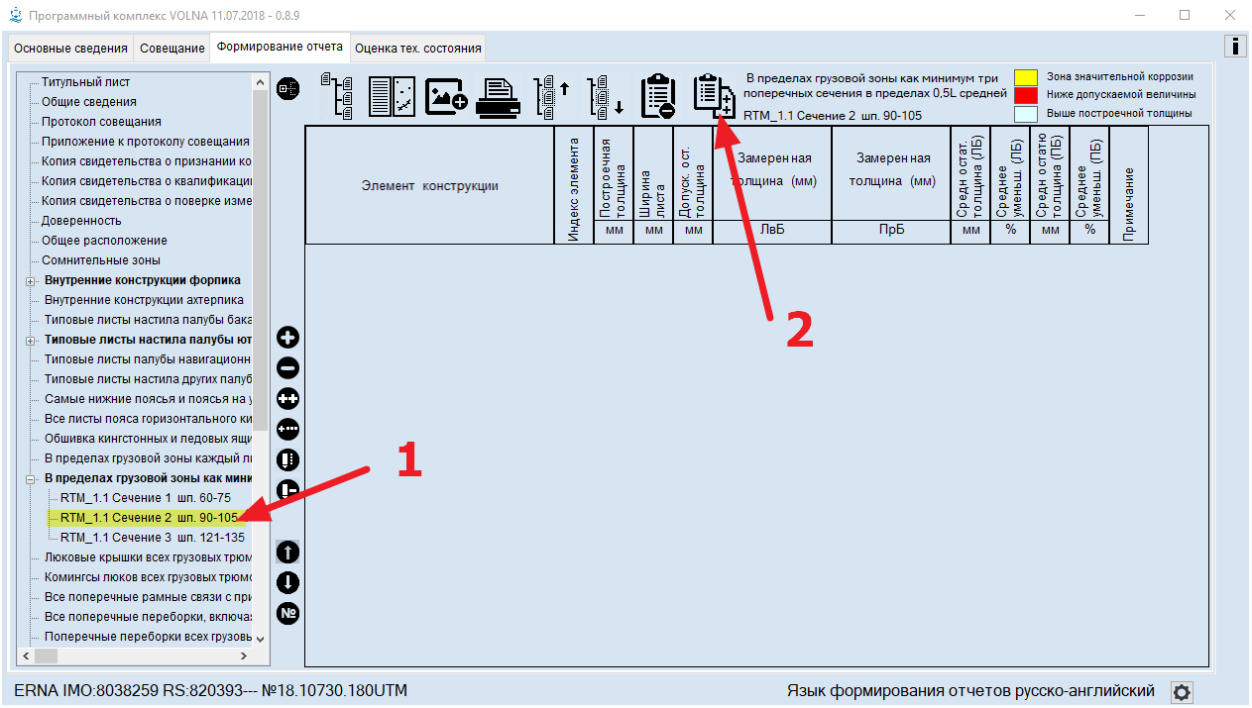
5 Processes of work of the VOLNA software

There are the following processes of work of the software for the sake of convenience for development of reports.

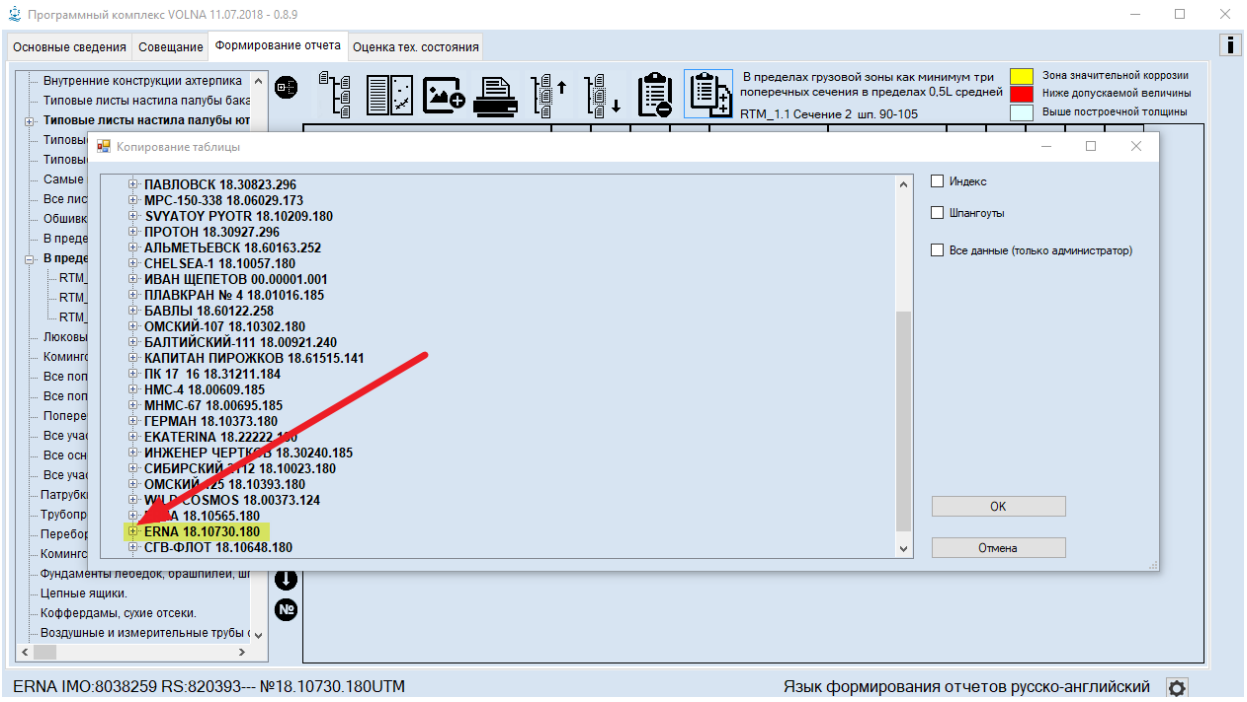
5.1 Processes of data copying:

Software VOLNA gives possibility for user’s to copy branches of a report from report of another ship (without copying of measurements of other ship).
For this possibility it is necessary:

1. To create table to which data will be copied.
2. To go to the report tree and to pick tracking symbol on the branch in which the data from a ship of the same type will be entered and click the button “Copy” (2).

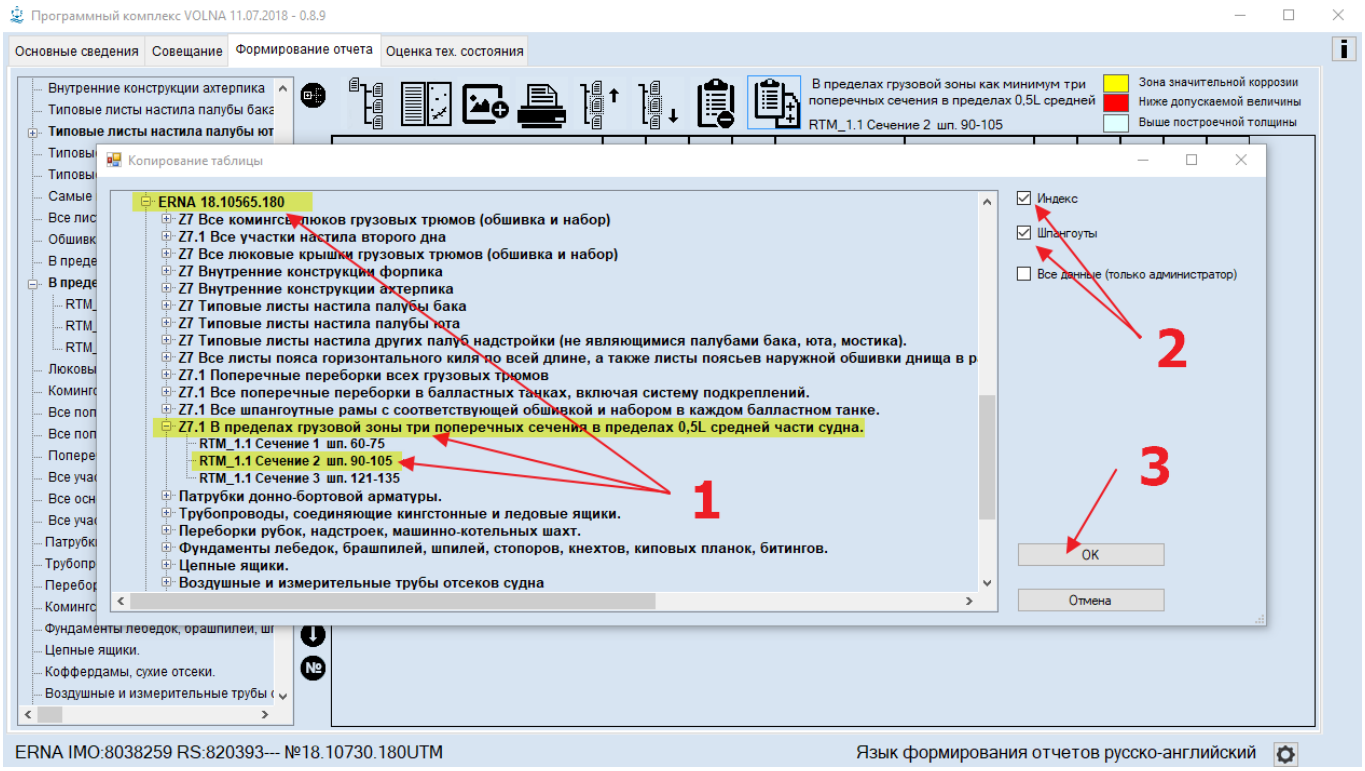
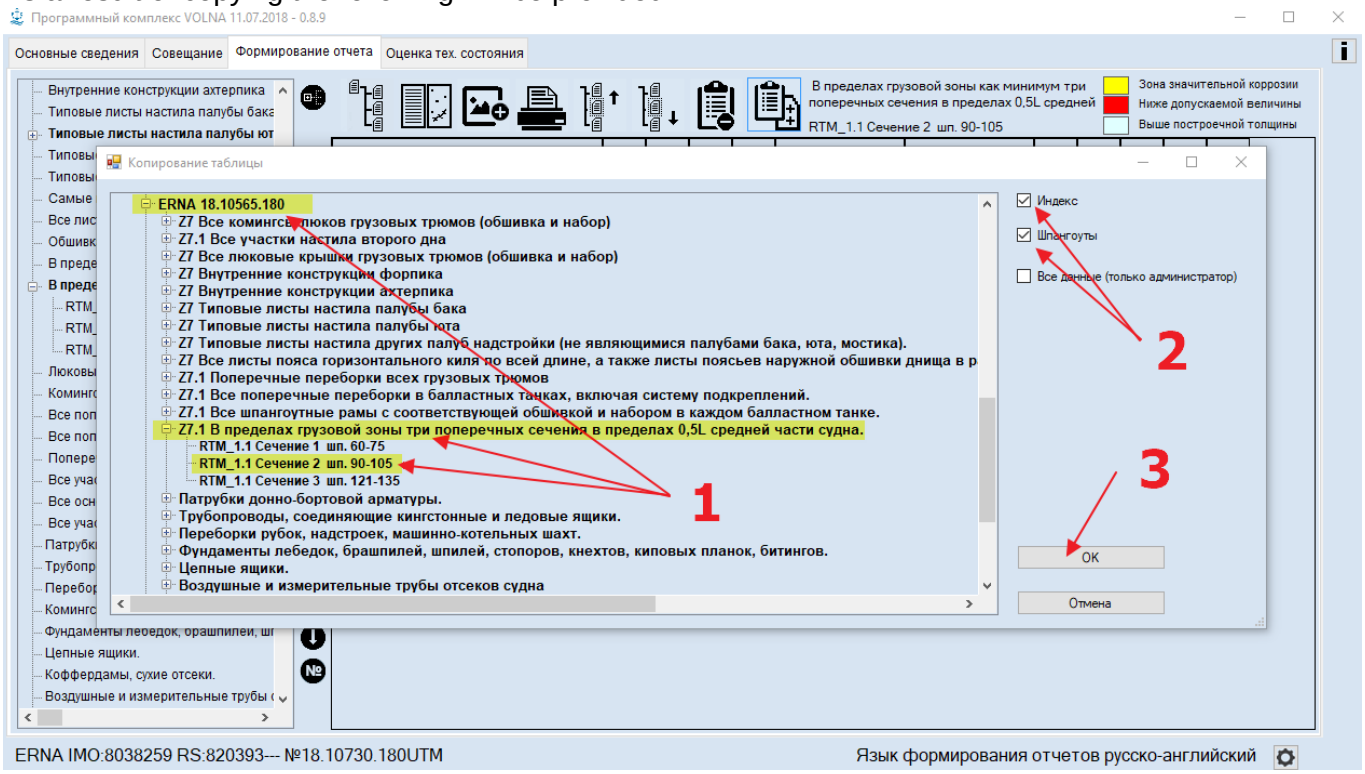


3. in the appeared window all of the reports available on the user’s computer will be listed, the information from which may be copied.



4. To choose the report table forms, from which data will be down loaded.

In the right part of the screen to choose the lines which will be additionally copied.



As a result of copying the following will be provided: