BUREAU VERITAS

Move Forward with Confidence

Inland Navigation News Letter

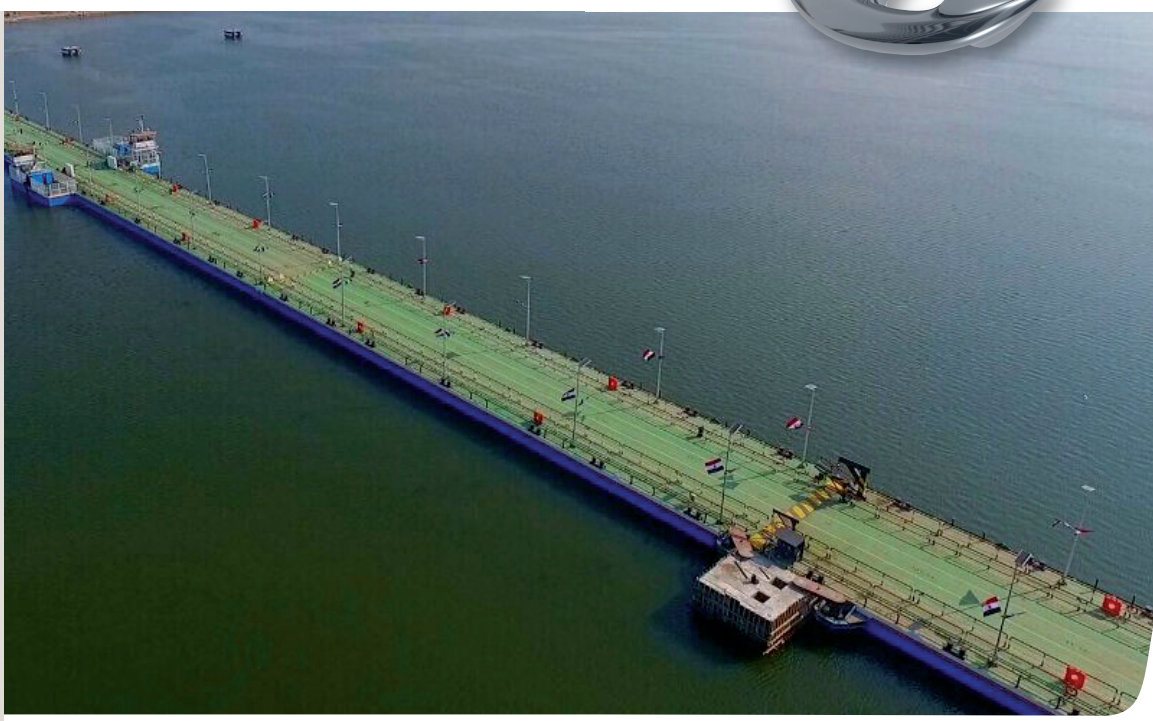
Editorial

Dear readers,

As we approach the second quarter of 2017, it is evident that the prevailing economic prospects for the shipping industry call for still more improvements in design and innovation in order for companies to develop new markets, optimise dedicated levels of service and offer solutions which serve to reduce costs, among other things. DNI is ideally placed to help shipowners, shipyards and designers in the first stages of any new project. Some of these projects may come to fruition, and some may not, but DNI welcomes the challenge which they represent. Furthermore, such projects serve to contribute to the continued evolution and improvement of our rules and guidelines.

DNI is an acknowledged expert in all aspects of the inland navigation industry. It participates in a variety of European R&D projects which bring together various stakeholders in the inland waterways sector, as well as presenting technical papers to international conferences on subjects relating to inland navigation vessels. You can read about some of our recent initiatives in this newsletter.

Truly Yours,
Jean Michel Chatelier / Director



BV classes EL-NASR floating bridge across Suez Canal

In December 2016, the Suez Canal Authority inaugurated Egypt's first floating bridge, in the Raswa region of the country. The Bureau Veritas-classed bridge connects Port-Said City and Port-Fouad City in north-eastern Egypt across the Suez Canal, and is designed to reduce traffic congestion and save on fuel consumption.
The floating bridge, which is 420 m in total length, comprises 6 units of 70 m pontoon and can withstand a maximum load of 24 tons in two-way traffic and up to 70 tons one-way. Pontoons connected to spudded integrating channels by interlocking eyes and ramps are used to hold the bridge in position. The bridge remains flexible in heave motion, and propulsion systems at the centre of the structure facilitate the opening of the bridge when vessels need to pass along.
The structure of the bridge is classed by BV with the notation "Floating bridge / Capacity (70t) / Equipped for Wheeled Vehicles / Modular", signifying that it conforms to the Rule for the Classification of Harbour Equipment (NR612). This is the most impressive floating bridge classed by BV Inland Navigation since the rule note was published in November 2015.
To be validated by BV, the structure of the bridge had to meet a number of challenging requirements, notably heavy deck loads in different vehicle loading scenarios and connection between pontoons and spud sustaining loads in both horizontal and vertical directions caused by current and wind over a length of 420 m. ☞

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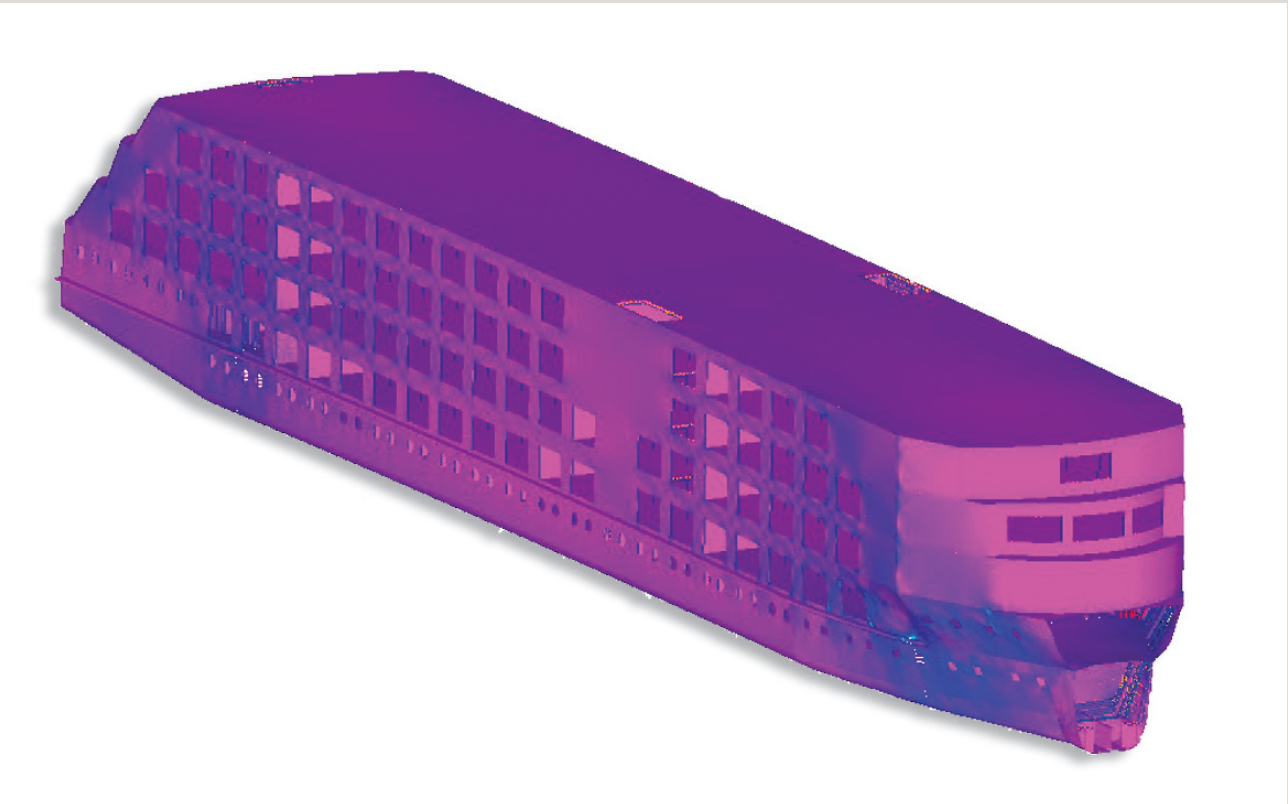
Summary

During validation, a 3D-beam model analysis was used to verify the scantling of the bridge and deck structures, and for simulating loads acting on the securing system. Moreover, detailed structural analyses were performed on the connecting eyes and structures and their integration with the pontoon, as well as structural integration with the hull around the spuds and securing locks. Successful completion of this project confirms that Bureau Veritas can meet new challenges of all varieties ■



Bending efficiency in passenger vessel design

In recent decades, passenger vessel design has been significantly influenced by a growing need for more comfort in passenger cabins as well as for larger public entertainment spaces. Due to design specifications relating to the likes of large glass panes around restaurants and lounges, and openings in side-shells and longitudinal bulkheads, the bending efficiency of each tier of the superstructure may need to be re-evaluated. The bending efficiency of each tier of the superstructure is linked to the global behaviour of the vessel. Hence, it can only be evaluated using a complete finite element model of the vessel. However, the modelling of a complete vessel by means of finite element software is very time-consuming and laborious. Fortunately, there is a rule formula in the Rules for the Classification of Inland Navigation Vessels NR 217 (Pt B, Ch 4, Sec 1, 3.2.2) dedicated to providing a simpler way of predicting the bending efficiency of each tier of the superstructure. As the vessel hull bends in response to applied loads, the superstructure will also bend in response to loads transmitted to it through its connections to the main hull. Transmission of the loads from the hull to the superstructure depends on different geometrical and mechanical factors, most of which are taken into account in the formula in NR 217.

Recently, within the framework of a collaborative project undertaken with Wuhan University of Technology and EMSHIP, DNI's department of research and development has conducted a research programme aimed at improving the current formula so that more structural parameters are taken into consideration in the prediction of bending efficiency. The focus of the research programme is on the magnitude and distribution of normal longitudinal stress occurring in the superstructure, the corresponding longitudinal shear flow at the connection between the hull and the superstructure, their relative vertical deflection and the rate of diffusion of the longitudinal stress into the superstructure. In addition to a thorough overview of the fundamental principles used by Bleich and Schade in the analytical approach, a large number of numerical models have been built by resorting to the Femap finite element software program. This numerical tool can be used to calculate the dependencies of the normal longitudinal stress in the superstructure on parameters which are not yet included in the current formula, such as the ratio of the superstructure's length to the hull length, and the ratio of the lateral openings to the lateral area. Findings from this research will lead to a significant improvement in the current rules formula, which enables a higher degree of accuracy to be achieved when gauging the normal longitudinal stress in the superstructure. As well as helping to upgrade the rules formula, the application of this bending efficiency formula will soon be made easier via the use of our structure scantling software, MarsInland. If you need help in predicting the degree of contribution of the superstructure to the hull girder longitudinal strength of your passenger vessel using Bureau Veritas Rules NR 217, do not hesitate to contact us at:
dni.rdt@bureauveritas.com ●

DNI participates in 7th EMSHIP SAB meeting in Rostock

Bureau Veritas attended the 7th meeting of the Strategic Advisory Board (SAB) of the European Erasmus Mundus Master in integrated advanced ship design (EMSHIP) in Rostock, Germany, from 14th to 16th February 2017.
The following items were on the agenda:
– Assessment by SAB members of the EMSHIP programme and activities
– Presentations of SAB companies and their industrial objectives
– Internships and topics for master theses
– Job opportunities.

BV is a member of the SAB, and the head of the DNI/RDT department delivered a presentation on the Bureau Veritas group, with a focus on research and development activities. Job opportunities, internship possibilities and topics for master theses were also outlined to all participants and explained in further detail during individual contact with students.
The Bureau Veritas award for the best masters thesis was presented to Ye Pyae Sone Oo for his treatise on "Numerical and analytical simulations of in-shore ship collisions within the scope of the A.D.N. Regulations" ■


BUREAU VERITAS

LIST OF DANGEROUS PRODUCTS ALLOWED FOR CARRIAGE
According to ADN 2017

VESSEL NAME : VERITAS
B.V. REG. N° : 00000A

*Considering the Multilateral Agreement M018, see Remark Nr. 167

SAMPLE

Updating the list of substances for tanker vessels as per ADN 2017

Following the two-yearly updating of the annexed regulations of the European Agreement concerning the international transportation of dangerous goods by inland waterways (ADN) on 1 January, 2017, the ADN dangerous substances list for tankers has been revised. The ADN 2015 list of dangerous substances allowable for carriage, however, can still be used on board tanker vessels until the 30th June, 2017, or upon renewal of the class and ADN certificates, whichever first occurs.
Thereafter, vessels must carry the new ADN 2017 list, which is the only valid dangerous substance list supplementing vessel class and ADN certificates. It is the classification society's responsibility to issue the vessel's substance list, when the vessel is classed. When the vessel is classed by BV, the request form will first be authenticated on board by our surveyors to ensure that the vessel's equipment and design are in line with the request form, which will then be sent to BV DNI for preparation.

In addition, the vessel's list must be revised at the renewal of the class and ADN certificates must conform to ADN requirements.
There are a number of changes to the new ADN 2017 tank vessel dangerous goods table, including some new and some deleted entries of certain products. There are also amendments to the additional remarks in Column (20) and, most significantly, to the assignment of explicit sub-groups of IIB explosion group (IIB1, IIB2 and IIB3). Consequently, a vessel's self-contained protection devices (flame arresters, pressure/vacuum relief valves with integrated backfire-prevention device, and high-velocity vent valves) must be specified clearly on the list request form.
In the case of tank vessels built at the time when ADN or ADNR did not explicitly stipulate requirements relating to the self-contained protection device explosion groups, it was not foreseen that the vessels would have to be equipped with the highest level of protection in the IIB group - for example, IIB instead of IIB3. Moreover, certain unmarked flame arresters which did not comply with ADN requirements were sometimes found on board. ADN multilateral agreements covering these issues have been prepared and signed by the Netherlands, Germany, Switzerland, France, Austria and Luxembourg. Under these agreements, the use of unmarked flame arresters was allowed until 31st December 2016, apart from those installed on the vent piping, which can still be used until 31st December 2017 or when the multilateral agreement is revoked. Meanwhile, vessels fitted with flame arresters can still carry products which require explosion group IIB rating until 31st December 2021, or when the agreement is revoked.
Stakeholders, owners, and others who need to know the minimum requirements for carrying specific products can contact BV DNI for advice at: dni.mo@bureauveritas.com ●

Bureau Veritas at Euromaritime & Eurowaterways in Paris

Earlier this year, BV had a stand and a strong presence at Euromaritime and Eurowaterways, a three-day joint exhibition bringing together participants in the maritime and inland waterway sectors. The conference programme highlighted emerging technology in both the maritime and waterways industries and BV, which is active in both sectors, took the opportunity to outline to delegates the ways in which it is helping develop flexible vessels which can break down traditional barriers and connect the sea and waterways while meeting the requirements of those BV Rules applicable to upgraded inland navigation vessels. ■

Revised version of NR 597 thickness measurements

The 2017 edition of Rule note NR 597 "Requirements for thickness measurements applicable to inland navigation vessels" was published in January.

The revision of the Rule note is designed to:

- update and harmonize with NR 217 Rules for the classification of inland navigation vessels
- extend the scope to include more structural configurations
- better adapt to inland navigation conditions.

In particular, the following main changes have been made:

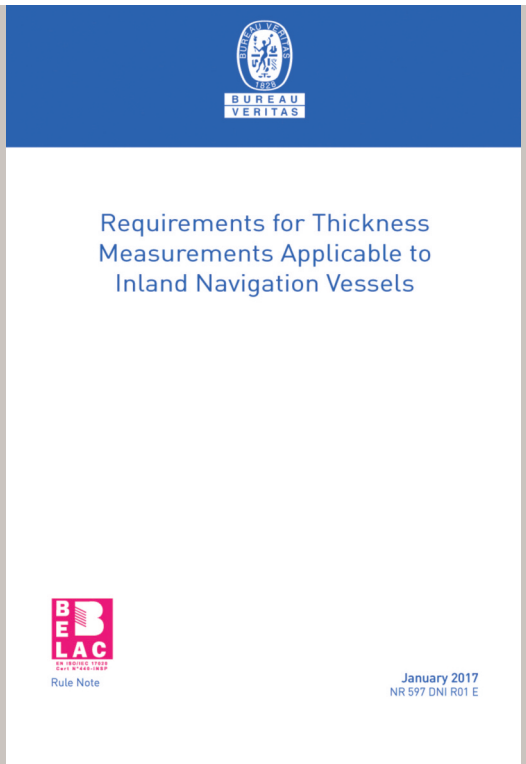
> Detailed requirements relating to close-up survey have been deleted. Close-up survey may still possibly be required, at BV discretion, depending on vessel age and/or condition.

> Requirements concerning the extent, number and location of measurements during overall survey have been improved, specifically by:

- implementing interpretations of the requirements for locations and number of points to be measured
- improving minimum requirements for thickness measurements applicable to tank vessels and cargo vessels
- implementing explicit requirements for thickness measurements applicable to other vessels.

> Measurements of internals have been limited to 20% of stiffening members of the compartment surveyed.

Clients who want to order the rule note document can access the dedicated order forms which can be found on the marine website



www.veristar.com/Publications

The order form may be emailed to edipostbv@edipost.fr, with a copy sent to veristarinfo@bureauveritas.com ●

NEWCOMERS

• **Mr. Marc Alcover has** joined the Plan Approval Office for machinery matters. He graduated in industrial engineering, specializing in electronics and automation, and holds a Masters in Marine Engineering from Polytechnic University of Catalonia (Spain). He replaces Sanae Kariouhi, who has left DNI.

• **Ms. Tsai Ssu Chieh** has joined the Plan Approval Office for stability matters, replacing Tania Sanchez, who has transferred to Bureau Veritas in Valencia, Spain. She holds a Bachelor's Degree in Naval Mechatronic engineering and a Master Degree in ocean engineering as well as an Advanced Masters in Naval Architecture from the EMSHIP programme in Liege and Nantes. She previously worked for CSBC Shipbuilding in Taiwan ●