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'The Master in Changing Times'

D. Breedveld

A SITUATION as presented in the article by Buzek/Wepster (24, 35) is hard to imagine in the quite different atmosphere of another international shipping operation, such as the Continental European river systems of Rhine and Danube.

Before going into more detail, it is of course realized that the scope of this international river system is smaller and so is the variety in national interests, standards of living and industrialization. Of course this restriction in scope and size has made the solution easier. Nevertheless it is felt that this example of international shipping cooperation can serve as a stimulus in finding a solution for ocean shipping on a world-wide scale.

For both rivers, Rhine and Danube, there exists a legislative and an executive/supervisory committee. These two committees are constituted of representative members of the countries immediately bordering these rivers or economically involved in the inland waterway traffic of these rivers. For the Rhine the member states are Switzerland, France, Germany, the Netherlands as direct Rhine border states and Belgium as an economically involved state.

The river Rhine is presently Europe's inland waterway with the highest traffic density. The type of craft plying this 625 statute mile long river between Basel and Rotterdam range from pleasure craft via towed barges, motor barges of 1000 tons and passenger vessels, to 4000 h.p. push convoys of some 600 ft. in length and 75 ft. in width with a carrying capacity of some 10,000 tons. In 1969 100 million tons of cargo moved on this river in international trade. From these figures it is obvious that without common policy and joint management there would be chaos.

This desirability of a common policy was already recognized in 1816 during the Vienna Congress. During this congress a treaty was concluded by which the affiliated countries were obliged to participate in the joint management of the Rhine river with regard to maintenance and waterworks, transport, customs &c.

The first treaty dealing with these particular river Rhine problems was concluded in 1831 in Mainz and the second one, which is still in force, in 1868 in Mannheim.

This so-called Act of Mannheim records in 48 articles the rights and duties of the participating countries, the skippers and crews of craft as well as of the Central Rhine Committee.

In actual practice it is the Central Rhine Committee which acts as the regulating and administrative and guiding authority. The governments of the participating countries have vested their Act of Mannheim authority in this international body, in order to discharge themselves of the following duties:

1. Continuous supervision of the Rhine Waterway and when circumstances demand it jointly plan and agree to adapt this waterway to new demands with due regard to navigation, traffic and economics.
2. The institution of Rhine shipping courts of justice. These courts do not only deal with pure navigational cases regarding the safe movement of the craft, but also such cargo questions as for example load- and discharge-money, cargo transshipment &c. Each participating Rhine border state has its own Rhine shipping court of justice. There is also a possibility of appeal against judgment rendered to a Higher Rhine Shipping Court and the Central Rhine Committee.
3. By mutual consultation and coordination with other international bodies the Central Rhine Committee can carry out an up-to-date management with regard to economic, social, safety and labour problems.
4. The required standards of professional knowledge of crews are equal for the participating Rhine border countries. Rhine skippers are examined according to demands laid down by the Central Rhine Committee. It is only to be regretted that education and training have not yet been centrally organized.
5. Standards of equipment and manning are the same for each type of craft, independent of nationality.
6. There is of course one Rhine police regulation and the Rhine shipping courts follow one general line of conduct in administering justice.

The Rhine police regulation is an anti-collision and general safety regulation. It has been so designed that it is possible for the Central Rhine Committee to introduce temporary rules and regulations for a maximum period of two years. This has made it possible that the development and introduction of new vessel types and new navigation ideas and systems could almost immediately be legally accepted.

In 1957, soon after the introduction of river radar to Rhine shipping, rules and regulations for the most advantageous use of radar were drafted and implemented under the 2-year temporary rule arrangement. As soon as such temporary rules and regulations have proved their worth and are considered adequate, they are permanently incorporated into the Rhine police rules and regulations.

This whole internationally agreed system with one executive power, the Central Rhine Committee, has created a very satisfactory situation whereby the owners of ship and cargo as well as the skippers of the craft using the river need have no doubts regarding the rules and regulations, their interpretation and the disciplinary measures in case of infringement of these rules. In turn this improves navigational safety.

Beside this Rhine system there is a somewhat similar system in existence for the Danube. Already negotiations are taking place to unify the two systems, in order to be prepared for the opening of the Rhine-Danube canal for large push convoys towards the end of this decade. There will then be a large through-going inland waterway from the North Sea to the Black Sea with some 12 bordering nations of very different social and economic structure, but one inland waterway navigation philosophy.

An admirable accomplishment indeed that could stimulate Imco and others involved in maritime safety.

[Mr. Breedveld served for many years as a skipper in the international Rhine trade and so gained wide experience with the rules and regulations of this important European inland waterway. He is now attached as an instructor for radar training to the Rotterdam inland waterway school that offers educational courses for obtaining a Rhine river skipper certificate. He has introduced many innovations into inland waterway radar training. *Ed.*]

Yaw Angles and Coriolis

P. H. Tanner

ANNEVELD¹ has shown that drift angle due to coriolis may be appreciable in the case of large vessels operating in the middle and higher latitudes. Unfortunately the hydrodynamic information on which he bases his equations is not complete, leading to a false idea of the magnitude of the effect at normal ship operating speeds.

It would be preferable to define the lateral force as

$$Y = Y'(\beta) \frac{1}{2} \rho V^2 LH \quad (1)$$

where

Y = lateral force on the vessel

ρ = water density

V = ship velocity

L = ship length

H = ship draught

β = angle of yaw

$Y'(\beta)$ = a coefficient which is a function of β , and perhaps also of the geometrical properties of the ship hull.

Then we can write the equation for undeflected motion of the vessel relative to the Earth's surface as

$$Y'(\beta) \frac{1}{2} \rho V^2 LH = 2 \rho C_B LBH V \omega \sin \phi \quad (2)$$

or

$$\beta = Y'^{-1} \left(\frac{4 C_B B \omega \sin \phi}{V} \right) \quad (3)$$

where

C_B = ship block coefficient

B = ship beam

ω = Earth angular velocity

ϕ = latitude

Experimental results giving values of $Y'(\beta)$ have been obtained by towing ship models at fixed angles of yaw and these may be found in the published literature on the steering of ships.