THE LAYOUT MODULE OF PIAS

March 15, 2004

1. BACKGROUND

Within PIAS much information is available, such as the shape of the hull and of the compartments, which is significant for the assessment of the layout, and for drawing a general arrangement plan. Furthermore LOCOPIAS, SARC's on-board loading software, already has for years a container module, which is a tool to place containers on pre-defined locations. Recently, SARC has developed a module where these bits of information can be utilized centrally for visualizing all primary components, generating a schematic general arrangement plan en generating DXF files which contains those components. Before this new module will be discussed into detail, first some relevant matters of allied PIAS modules will be discussed.

2. EXISTING PIAS MODULES

2.1 Hull form representation / Fairway

Only a Fairway model is sufficiently coherent to apply the desired operations correctly. So, the Fairway model serves as basis for the layout module.

2.2 Loading conditions

With the container module of the LOCOPIAS on-board loading software it is possible to assign graphically containers to pre-defined container slots, see fig. 1 for an example of the graphical input menu of this module. This module has no restrictions in container dimensions, so all current sizes are possible (20', 30', 40', 52', extra wide, extra high etc.) as long as the container is rectangular. Lately, this module was also made available as extension for PIAS (option 2.b.5, € 1.160). An alphanumerical definition module for the slots is delivered together with option 2.b.5. Module 2.b.5. stands apart from the new layout module, but they share a common slot definition, so data are mutually usable.

2.3 Compartments

Until recently, for the definition of compartments, use could be made of so-called reference planes. PIAS' subcompartments can have such a reference plane as bounding plane. As a regular update of PIAS this mechanism was lately extended, so that also physical decks and bulkheads can be defined. In some sense such a deck or bulkhead is similar to a reference plane, albeit a reference plane is infinite, while decks and bulkheads have finite boundaries. Besides, it now also possible to define oblique planes or bulkheads. Still, also in the new version, application is limited to *plane* decks and bulkheads.

3. EDITABLE DATA, AND AVAILABLE FUNCTIONS

Before the layout module can produce output, four kinds of data have to be defined:

1. Desired section, i.e. locations where the layout module must generate intersections with the ship hull. These locations are identical to defined bulkheads and decks, as defined at the compartment defininition module. If a section is specified not be be *complete*, i.e. not over the whole vessel, only the desrired partial section is drawn.
2. Desired locations for the general arrangement plan, as welll as their relative locations. This specification is more or less similar to the way the layout of a lines plan can be defined in Fairway.
3. Container slot definitions, which can be produced with the accompanying slot definition module.
4. Options which are specific for this module, such as units of measurements and colors.

Finally, there is an additional function which can determine the overlap between containers and compartments. These overlaps can be co-drawn in the several plots, so that conflicting space occupations can be identified quickly.

4. OUTPUT

There are three kinds of output:

1. Rendered 3D model with hull, compartments, bulkheads, decks and containers (see figs, 2,3,4, and 5)
2. Schematic 2D general arrangement plan (see figs. 6 and 7)

3. A 3D DXF-file, where lines are represented by means of DXF-polylines, which can contain all mentioned components. This DXF-file contains 9 layers: all cross sections, all horizontal sections (decks) all vertical sections, all oblique sections, slot locations 20', slot locations 40', slot locations odd-size containers, and finally the hull and all compartments (in wireframe model). The system of units can choosen to be meters or millimeters.

The output of the second item is performed by means of PIAS' standard system, where 3D shapes, by means of user-defined projections, are reduced to 2D. This system offers the possibilities of 2D output to screen and on paper, as well as files in the formats RTF, EPS and DXF (see fig. 8).

The general arrangement plan as produced by this module is schematic by nature; it contains all primary components as available in PIAS, but all kinds of details, such as cranes, deck houses, masts and hatches are missing. This general arrangement plan will have to be completed with a general-purpose CAD system. For that purpose the layout module can deliver the shape of the primary components, through a DXf file with DXF-polylines, on two different ways:

- As a pre-defined 2D general arrangement plan, according to the second output options, as discussed above.
- As a complete 3D model, according to the third output option. With this option the user is assumed to extract the desired projections and sections from the 3D model, and place them appropriately in the drawing by himself.

5. PRICE AND AVAILABILITY

The price of the layout module amounts € 1.400 per user license (including container slot definition module), with for the rest the standard PIAS arrangement for multiple licenses. In order to be able to export the 2D general arrangement plan to DXF format, PIAS' option 4.b.7 is required, which carries a price of € 1.280 per license.

The layout module will be released around the end of March 2004. The release date for the container slot definition module is expected to be half of April, 2004.

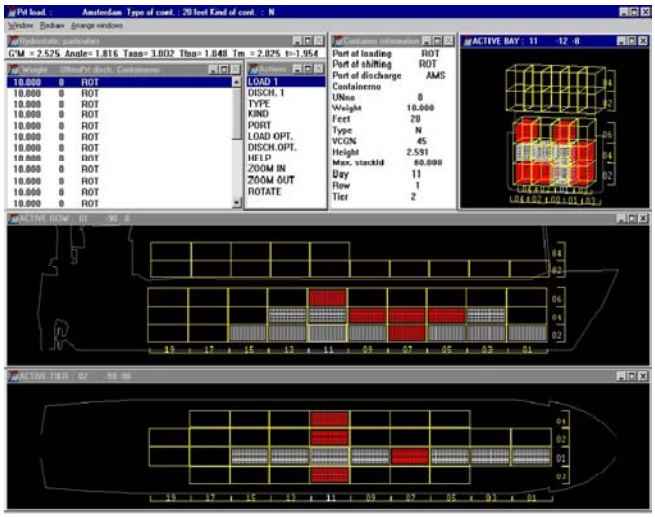
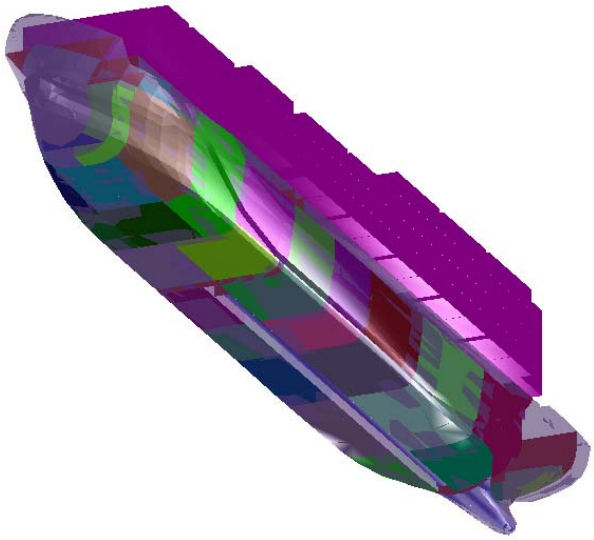


Fig.1. Containermodule of LOCOPIAS/PIAS

Fig. 2. Rendered 3D model with hull, compartments, bulkheads, decks and containers



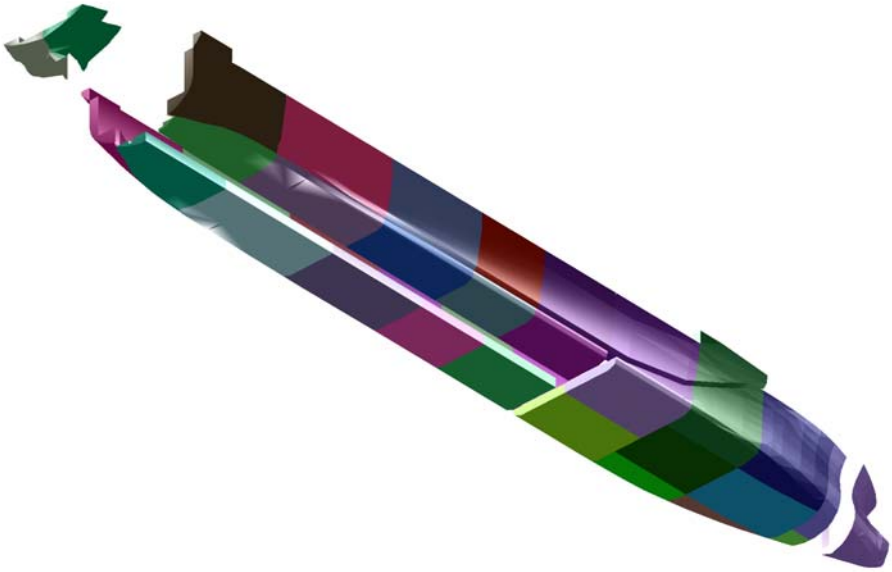


Fig. 3. Rendered 3D model with compartments,

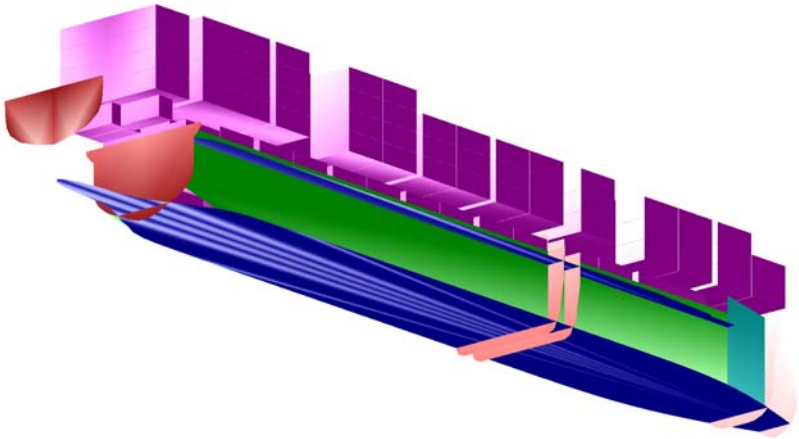
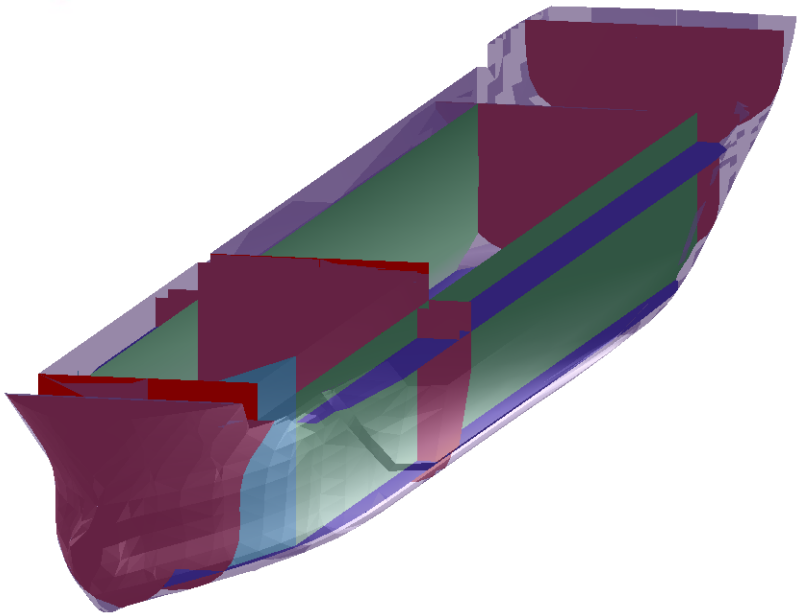


Fig. 4. Rendered 3D model with bulkheads, decks and containers

Fig. 5. Rendered 3D model with hull, bulkheads and decks



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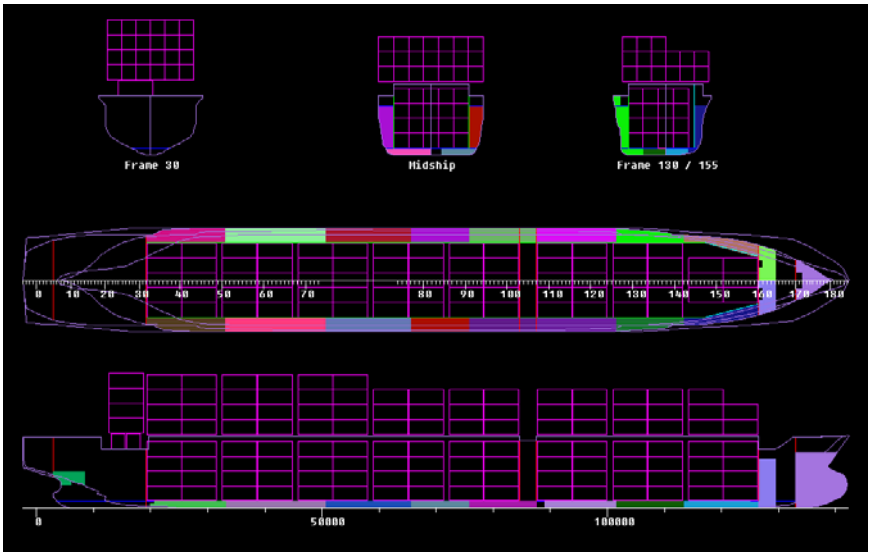
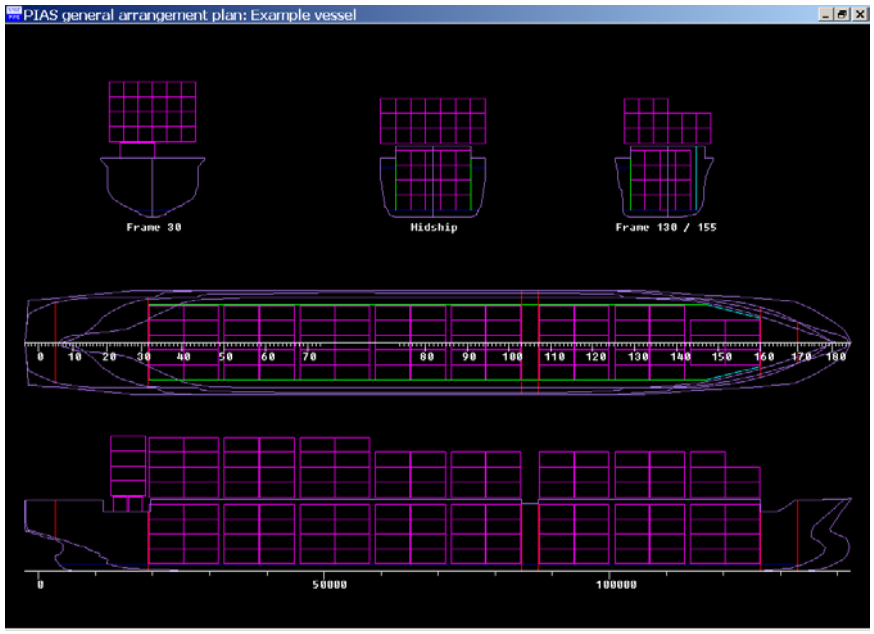


Fig. 6 Schematic 2D general arrangement plan, including compartments, bulkheads, decks and container arrangement.

Fig. 7 Schematic 2D general arrangement plan, including bulkheads, decks and container arrangement.



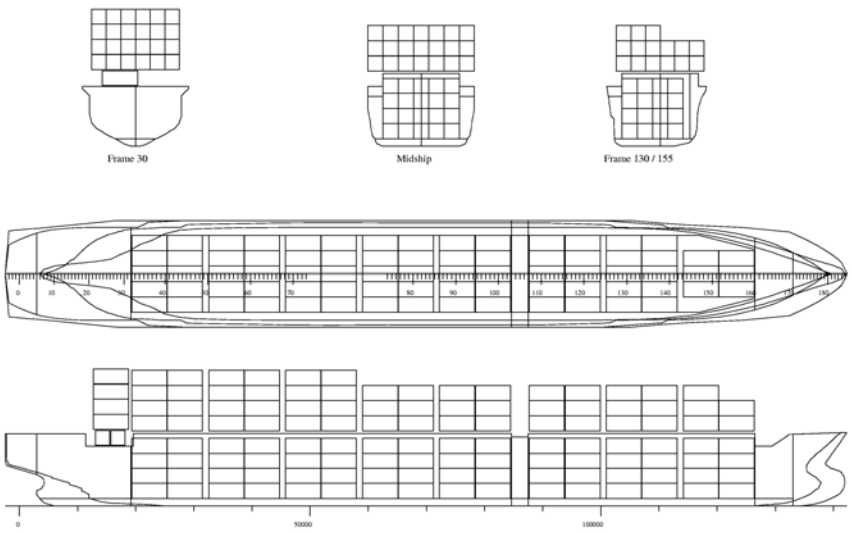


Fig. 8. Example 2D output (to screen and on paper, as well as files in the formats RTF, EPS and DXF)