MARITIME UNIVERSITY IN SZCZECIN

ORGANIZATIONAL UNIT:

FACULTY OF NAVIGATION - DEPARTMENT OF NAVIGATION DEVICES

Instruction

PRINCIPLE OF OPERATION AND HANDLING OF THE NAVIGATION ECHOSOUNDER
(Skipper GDS 101)
Lab

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Purpose of the exercise

The purpose of this exercise is to understand the operation of the navigation sonar and how to use the device during navigating. Familiarization with the construction of the navigation sonar: Skipper GDS 101, and the adjustment and placement of controls available to the operator.

Preliminary information, knowledge test and report.

For a third class, a brief knowledge check will take plac.

Scope of preparation: the issues are in the introductory part, the theory of literature on the next page.

Report writing on your computer will not be accepted

The reports are written individually!

The report consists of 2 parts:

- Part A - Preliminary
- Part B - Exercise course (see details below) and additionally:

Measurement Cards: signed by the teacher; own conclusions

*) On the measurement card (exercise diary) the actions are recorded - then they are rewritten purely in the report.

**) Reports of repeated applications from other students will be rejected !!!

Part A - In the introductory part shall be included:
- Purpose of the exercise;
- Depth measurement principle (drawings, descriptions, patterns);
- Sonar block diagram (drawings);
- Basic technical parameters: Skipper GDS 101;
- Description of the measuring system;

Part B preparation of report (course of the exercise) describing its individual stages:

- Describe all activities performed on the exercise;
- Translate the names of the used sonar functions and describe how they affect the operation of the sonar.
- Own conclusions;

(!) Be sure to include a complete measurement card signed by the instructor

(!) At the end, write the conclusions - an individual report of the exercise.

Conclusion should include: own comments on: device operation, interface comfort, presentation of data, etc.

No requests - report rejected

Conclusions borrowed - report rejected;

Complete reports must be submitted to the next class - to the teacher, from

which classes were held.

The exercises include:

1. Presence in the class;
2. Pass the test;
3. All reports must be positively approved

Literature:

„Urządzania Nawigacji Technicznej”, Autorzy: M. Gucma, J. Montewka, A. Zieziula. wyd. Fundacja AM Szczecin, 2005.

Skipper GDS 101 instruction www.skipper.no : *products/navigation*

1. Description of the measuring system

SKIPPER GDS 101 sets a new standard for navigation for all vessels required to have a navigation echo sounder onboard. The GDS 102 has a dual transmitter. GDS 101 is a graphic, digital navigation echo sounder. A backlit LCD with high resolution Dot- matrix screen gives an instant access to all vital in- formation. The screen shows the information in graphic and/or numeric presentation. The user can select between six different screen languages (English, French, German, Spanish, Russian or Norwegian). On Fig. 1.Main Display unit Panel Layout

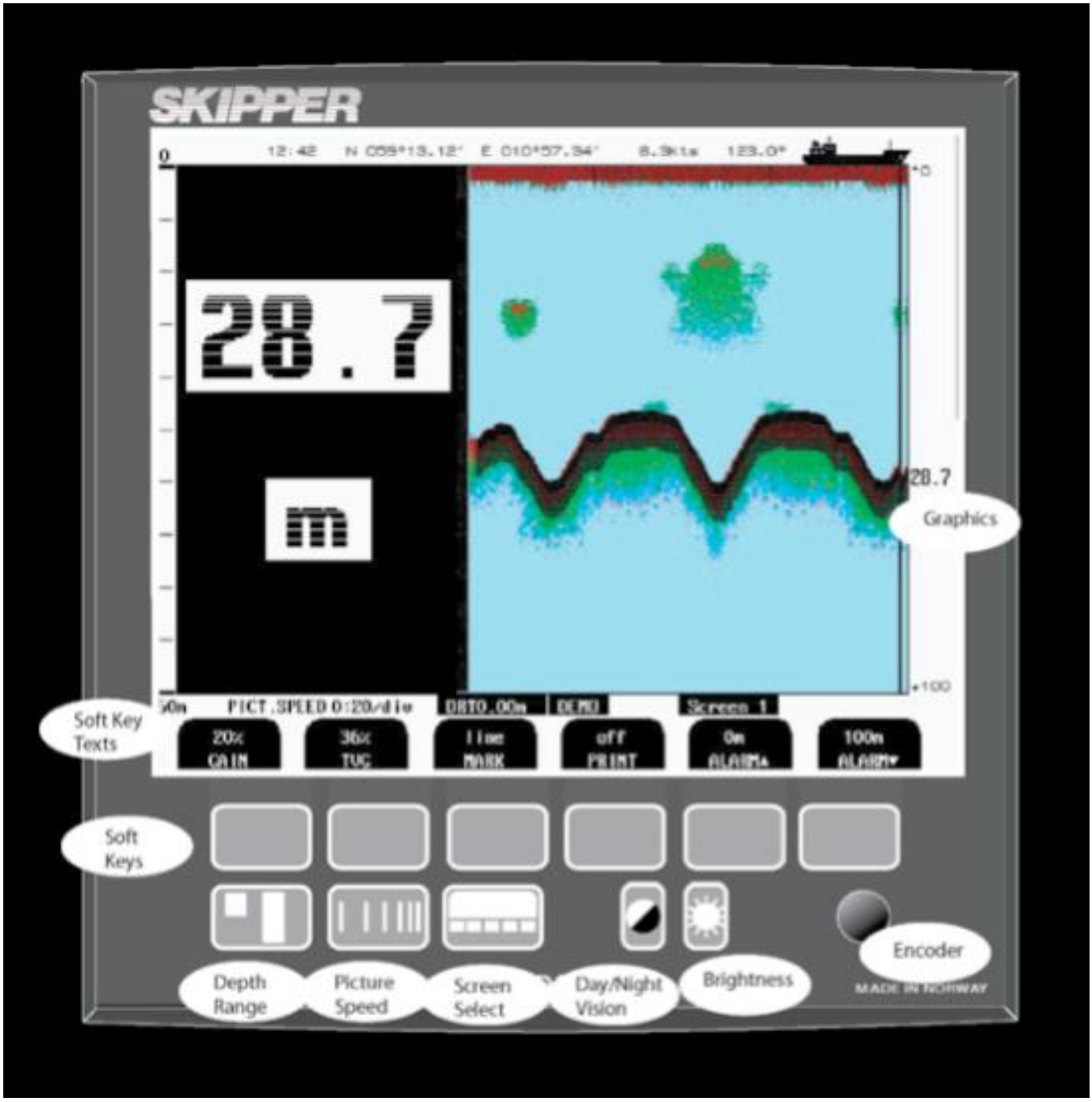


Fig. 1. Main Display unit Panel Layout

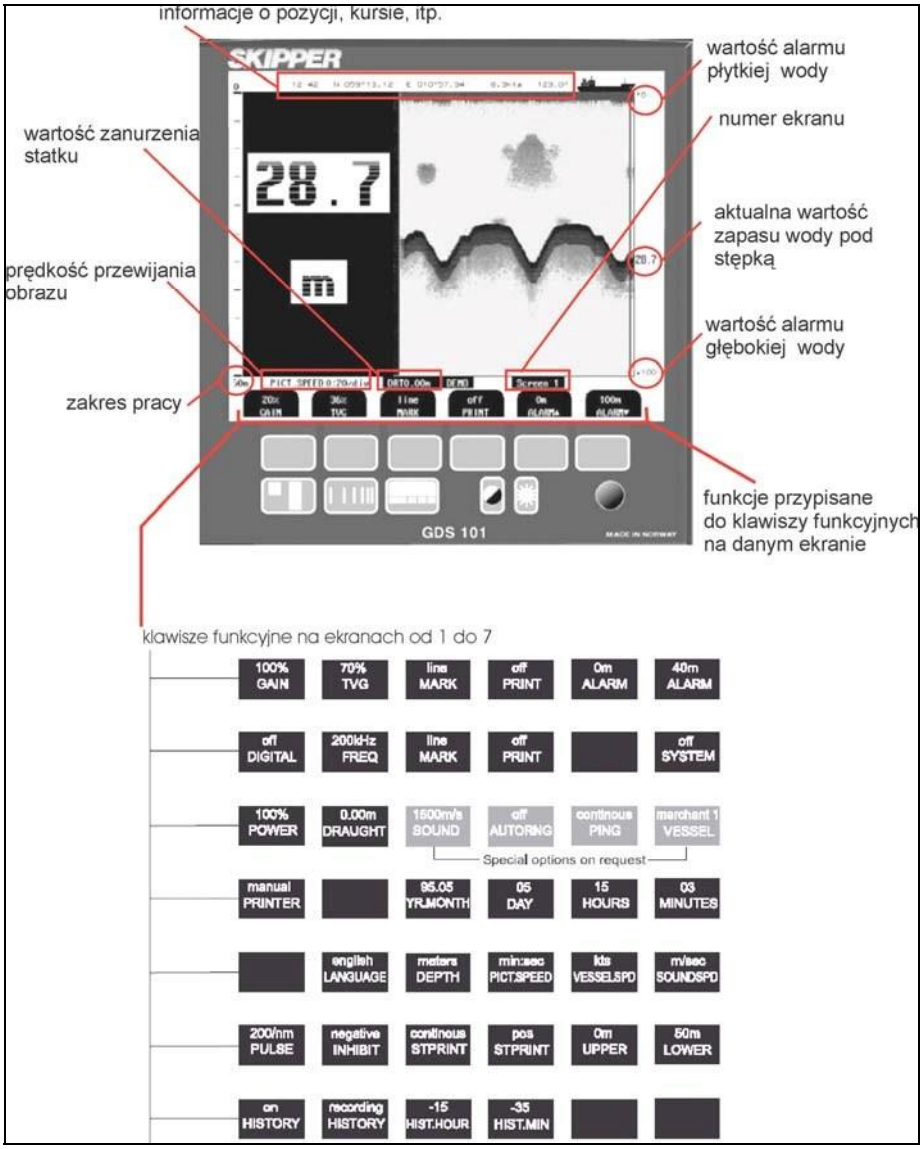
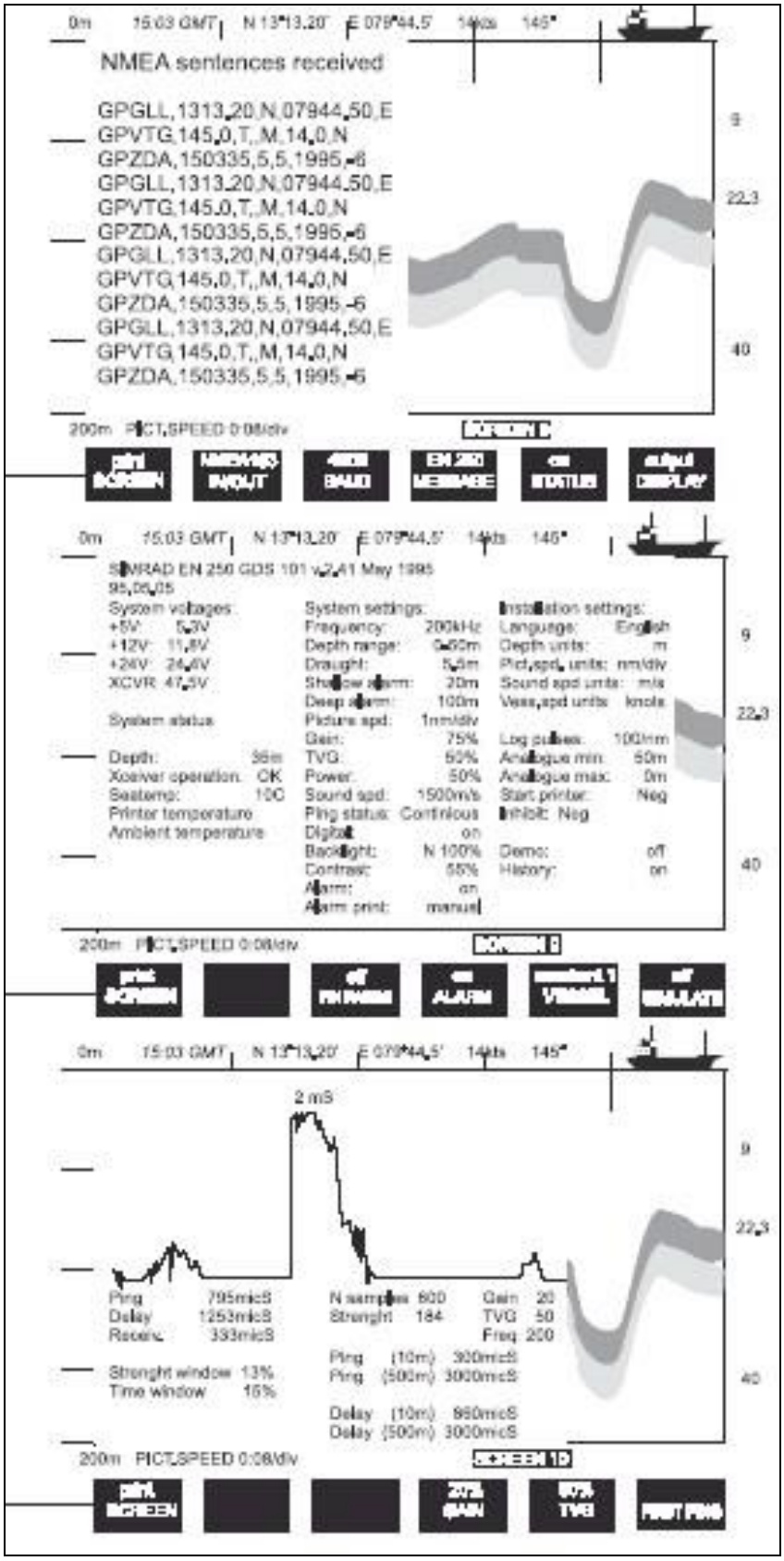
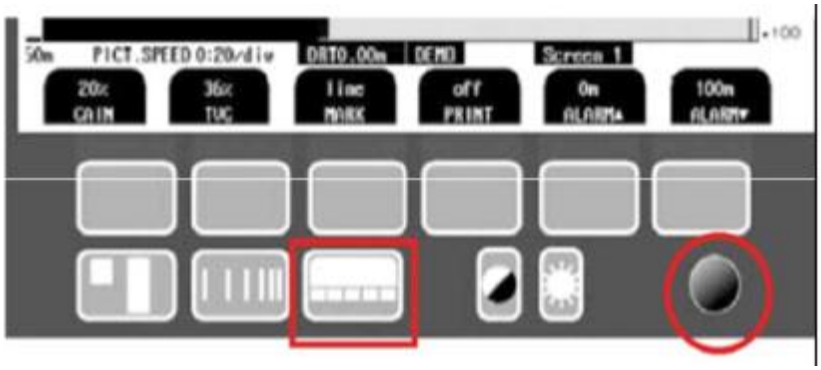


Fig. 2. Description of echo sounder user interface Skipper GDS 101, Primary function



Rys.3 System status screen of Echosondes Skipper GDS 101

Changing the function screen, and thus accessing the individual functions, is as follows:



Operation screen: Each of the operation screens contains a graphic picture and a selection of up to 6 soft key buttons. The various screens are selected by keeping the “Menu” button pressed and rotating the encoder in either direction. Turning the encoder clockwise cycle the screens in the sequence 1 to10, and counter clockwise rotation cycles the screens in the sequence 10 - 1. Screens no. 1 - 3, covering the primary functions, may also be cycled by repeatedly pressing the “Menu” button.

TECHNICAL PARAMITERS:

Transducer: single beam, 3 frequencies

Frequencies:	200 kHz 50 kHz 38 kHz
Output power:	1000 W
Impulse Ranges:	38 kHz – 1600 m
	50 kHz – 1000 m
	200 kHz – 500 m
Type of the receiver:	dual channel
Receiver Gain:	0 – 100 %
	TVG – 25 % – 75 %
Measurements:	meters, foot, braccias
Phase range:	0 – 980 fm w krokach co 4
	0 – 6460 ft w krokach co 8
	0 – 1980 m w krokach co 4
Noise reduction:	analogy and digital filtering
Sound speed:	from 1400 do 1550 m/s
Maximum pulse rate:	8 pulses per second
	5 pulses per second when printing

Transmission power:	total power (1000 watts)
Printer:	8 "thermal
Memory:	Last 30 minutes of recorded data
Ranges	0-10 m to 0-1600 m. Immersion compensation

Classification: Conforms to IMO recommendations for navigation boaters on commercial vessels

2. Exercise Skipper GDS 101 echo sounder

Time to exercise: 85min

1. Start the echo sounder by the key  .
2. Set the appropriate contrast - by pressing few times  , and brightness hold the button  and turning the knob.
3. Check the minimum and maximum operating range of the sonar, for this purpose press The button  and turn the knob with your other hand (right values increase, left decreases). Include in the report: maximum, minimum range, and jump (that is, the value of change of range by one jump). Set range 100 m (by pressing  several times, either hold  Turn the knob to set the desired value.
4. Turn on simulation mode - hold down the button  Turn the knob to set screen number 9, on this screen press the function key under the inscription *OFF SIMULATE*, Simulation mode is active. Return to the main screen by pressing once: 
5. Watch the operation of the sonar for about 2 minutes. Redraw the screen write under keel clearance.
6. Change the scrolling speed of Pict. Speed 0: 20 / div, holding the button  and set the knob to Pict Speed: to 5: 0 / div;

7. Watch the operation of the sonar for about 2 minutes. Redraw the screen write under keel clearance.
8. The report should compare both echograms.

Answer the question

When it is preferable to reduce the scrolling speed of the image?

????

10. Set the scrolling speed at 0: 20 / div

11. By clicking the button  go to screen 3 (screen3), and enter the ship's draught (13,5m), - press the DRAUGHT key (hold and turn the knob)

12. Compare the current indicated under keel clearance from the preceding values.

What is the purpose of using this function?

In the report describe what dangers are to enter improper draft.

????

13. Enter the current navigation data from other devices - the top bar

What data comes from which devices?

What do the abbreviations mean?

????

14. Set up the screen 5 (Screen 5), the function key DEPTH change reading unit depth and record the values for each of the units

Which units are most useful in maritime navigation and why

?????

15. Set screen 5 (Screen 5), use the PICT SPD function key to change the units of image scrolling speed and note the values for each unit (screen1).

16. Set VESSEL SPD to Screen 5, press the VESSEL SPD Function Key, and note the values for each unit (upper bar).

Which units are most useful in maritime navigation and why

?????

17. Set screen 5 (Screen 5), use the SOUND SPD function key to change the speed units in the water and note the values for each unit (top bar).

Które jednostki są najużyteczniejsze i dlaczego?

????

18. Describe the functionGAIN,
    - TVG,
    - MARK,
    - ALARM,
    - DIGITAL,
    - FREQ,
    - POWER

Describe these functions, give full names)

????

19. Set draft to 0 m. (Screen 3)
20. Turn off the simulator (screen 9)
21. Turn off the '' OFF system '' (screen 2).