



*NPCNS is intended for training of:*

- *navigator cadets in accordance with Section A-II/1, A-II/2 of STCW Code requirements, as related to obtaining navigation plotting skills,*
- *and B-II/1 p/19 “Training in celestial navigation” of STCW Code, in the early stage of training.*

### Practical Skills Drilling

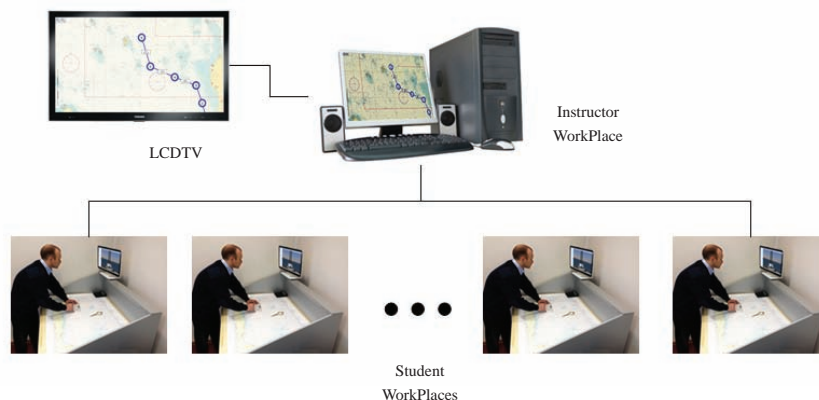
- work with the nautical chart;
- position fixing with the use of navigation equipment;
- performance of plotting;
- maintaining basic types of navigation calculations;
- use of astronomic instruments and aids to achieve the aim of position fixing and heading indication system adjustment reckoning in real time mode.



## Structure

Standard set includes the following software:

- Instructor WorkPlace software,
- Exercise editor software,
- Student WorkPlace software,
- Electronic chart of the area.



## Scheme of work

Instructor on the Instructor WorkPlace (IWP) issued to each Student WorkPlace advance made exercises, consisting of one or several navigation and astronomic tasks.

For task solution each student being on its "virtual" vessel has the possibility to: observe surface picture and sky, take readings from the navigation equipment and astronomic instruments imitators, use "paper" nautical charts and astronomic tables.

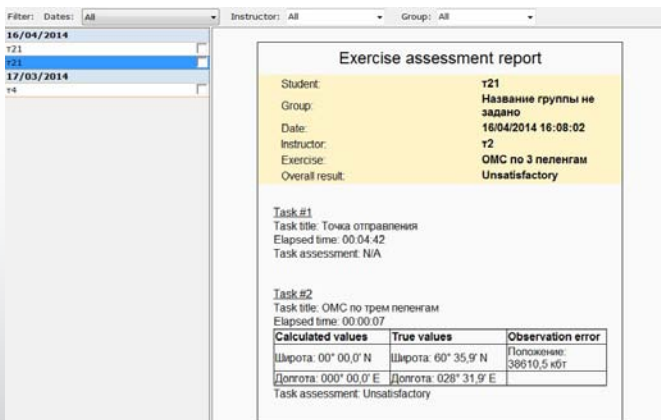
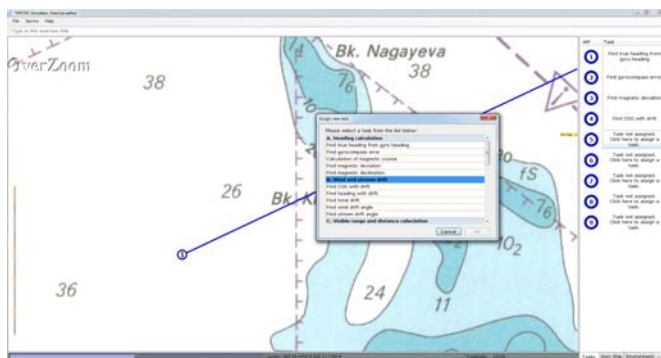
Results of performing calculations on each task are saved on Student WorkPlace.

After performing of the full exercise results of calculations are sent to Instructor WorkPlace where automatical valuation is made.

## Instructor WorkPlace Software

IWP is intended for control of the students' training process. With the help of IWP instructor has the possibility of:

- assign advance made exercises to Student WorkPlaces;
- control the status of student included tasks performance;
- monitor the way points, current location, course, speed and other vessel parameters, location of target vessels and navigation references on the implemented electronic chart system monitor;
- receive results of each task implementation individually and full exercise in general by automatically formed evaluations;
- form and store in the register the results logs of students' practical training.



## Student WorkPlace Software

Simulation of the following equipment on the Student WorkPlace gives feeling of the real navigational bridge:

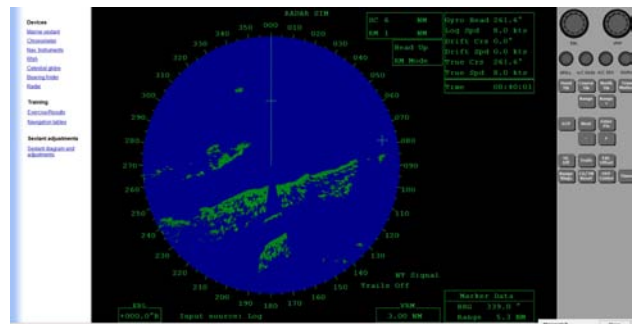
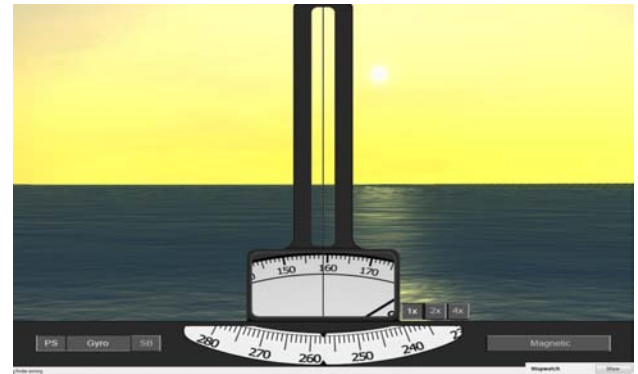
- magnetic compass,
- gyrocompass,
- optical position-finding device,
- radar,
- GPS receiver-indicator,
- water speed log,
- sextant,
- celestial globe;
- chronometer;
- stop-watch timer.

Student WorkPlace software includes system of surface picture and sky visualization in different time of the day.

On Student WorkPlace the following practical skills are drilled:

### in navigation

- dead-reckoning navigation (performing the main types of graphic plotting on the paper chart taking into consideration the external factors influence) including:
  - calculation of vessel's position by known movement elements (course and speed):
    - vessel coordinates,
    - distance covered,
    - log readings;
  - calculation of the course and arrival time to the waypoint with the known coordinates in the given moment of time;
- position-finding (observation) by landmarks with the use of Radar imitator and visual monitoring:
  - by bearings and distance;
  - by 2 bearings;
  - by 2 distances;
  - by 3 bearings;
  - by 3 distances;
  - by 2 horizontal angles;
  - by cross-bearing method.
- pilotage (student should go through all the given waypoints), among them in the presence of wind and current.





On Student WorkPlace the following practical skills are drilled:

## in nautical astronomy

- determine sextant corrections by horizon, star, Sun observation;
- determine chronometer correction;
- measure celestial altitudes with the use of sextant;
- correct celestial altitudes measured by sextant;
- adjust altitudes measured by sextant to one zenith;
- figure out celestial bodies for astro-navigational observations with the help of celestial globe;
- calculate longitudinal solar altitude time;
- determinate latitude by the Polar star height or by longitudinal solar altitude;
- determinate sunrise/sunset time;
- determinate time of the beginning and ending of observation (nautical twilight );
- train for celestial observation with the help of celestial globe;
- obtain coordinates fixed by observation by Sumner position lines;
- study the starry arch in any hemisphere;
- compass correction determination by sunrise azimuth or by celestial body bearing in selectable azimuth.

## Exercise editor

Software is intended for developing and storing exercises for their future use. During forming of the exercise:

- navigation area and type of the vessel are determined;
- current date and time of the date is set;
- the route of the vessel is set up. It consists of waypoints. For each waypoint the certain task is appointed for position fixing by different ways and performing of navigational and astronomic calculations;
- required corrections are input;
- limit of time for performance is set up;
- location of target vessels is set;
- hydrometeorological conditions are set;
- condition of navigational and astronomic devices work mode is set up.

