



NAUTIS Ship Handling & Manoeuvring

Instructor Station Suite

Functional Specification

VSTEP B.V.

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1. Introduction

Nautis Instructor Station Suite is a collection of software programs which can be used in combination with Nautis Trainee Station. It provides simulation instructors with a set of tools to enable full control of vessels, environments and exercises.

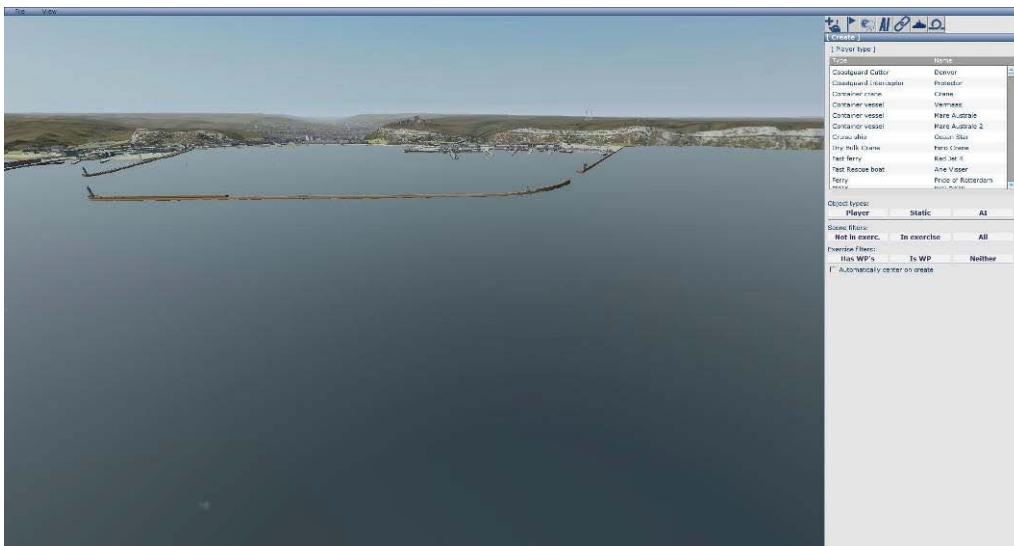
The Nautis Instructor Station Suite features:

- **Exercise Manager**, which is used to both create and control exercises
- **Object Editor**, which has subparts for modifying the ship hydrodynamics characteristics, the placement of navigation and Morse lights, mooring points and flag lines
- **Chart Data Editor**, to add and change buoy locations and characteristics on the charts of the simulation environments

These tools will be explained in the following chapters.



2. Exercise Manager

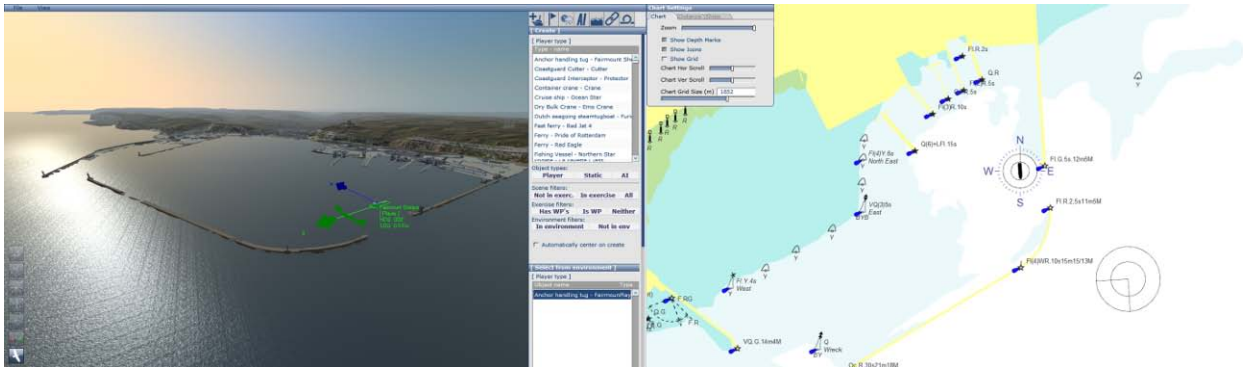


The exercise manager offers all required functionality required for an instructor to run an exercise. The tools available are provided in a logically set-up menu structure on the side of the screen. The exercise manager comes with a 2D and 3D overview for the instructor to keep maximum overview of the exercise.

Featuring:

- Various camera viewpoints to provide maximum overview to the instructor

- Control of weather (Real time)
- Control of current, time of day and tide (Real time)
- Control of the exercise in a 3D environment and on a 2D chart
- Real time control of static, AI (Computer driven) and trainee ships
- Creation and preparation of exercises in advance



2.1. 3D overview



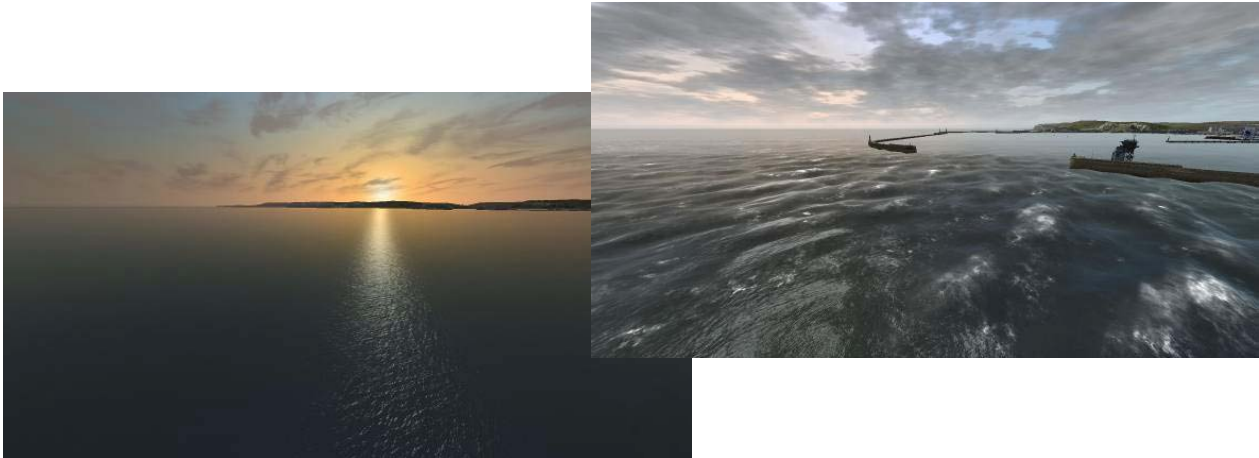
In the 3D overview the instructor can either see what the trainee sees or keep overview from a birds-eye view perspective. Because of the various viewpoints he is able to look ahead and anticipate on the actions of the trainees.

Featuring:

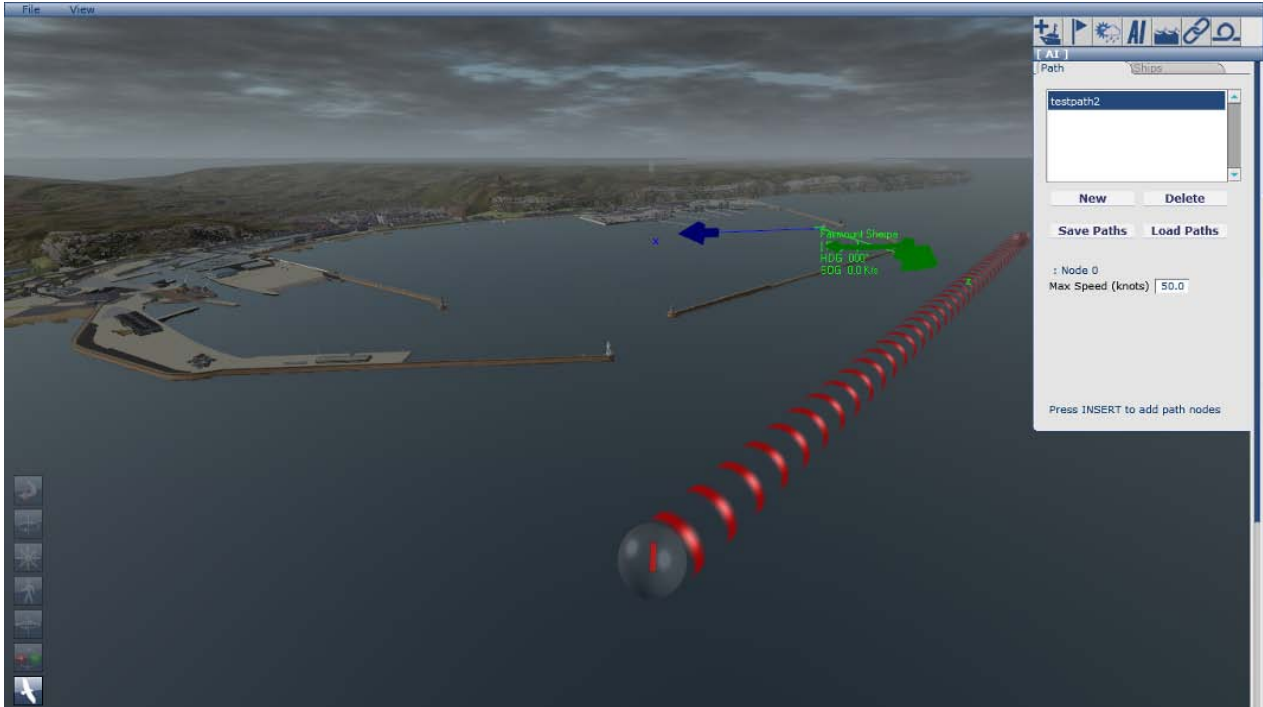
- Various camera viewpoints to monitor from trainee viewpoint or birds-eye overview
- Info labels per vessel inside the environment
- Easy to use 'gizmo' system to control vessels

Featuring:

- Extensive weather settings, including four different types of clouds, wind force and direction, rain, fog, thunder, wave height etc
- Real time changes during an exercise or during preparation
- Dual wave model
- In port or sheltered waves separated from open sea waves
- Dynamic current model to increase the required level of manoeuvring skills during entering of a port between breakwaters



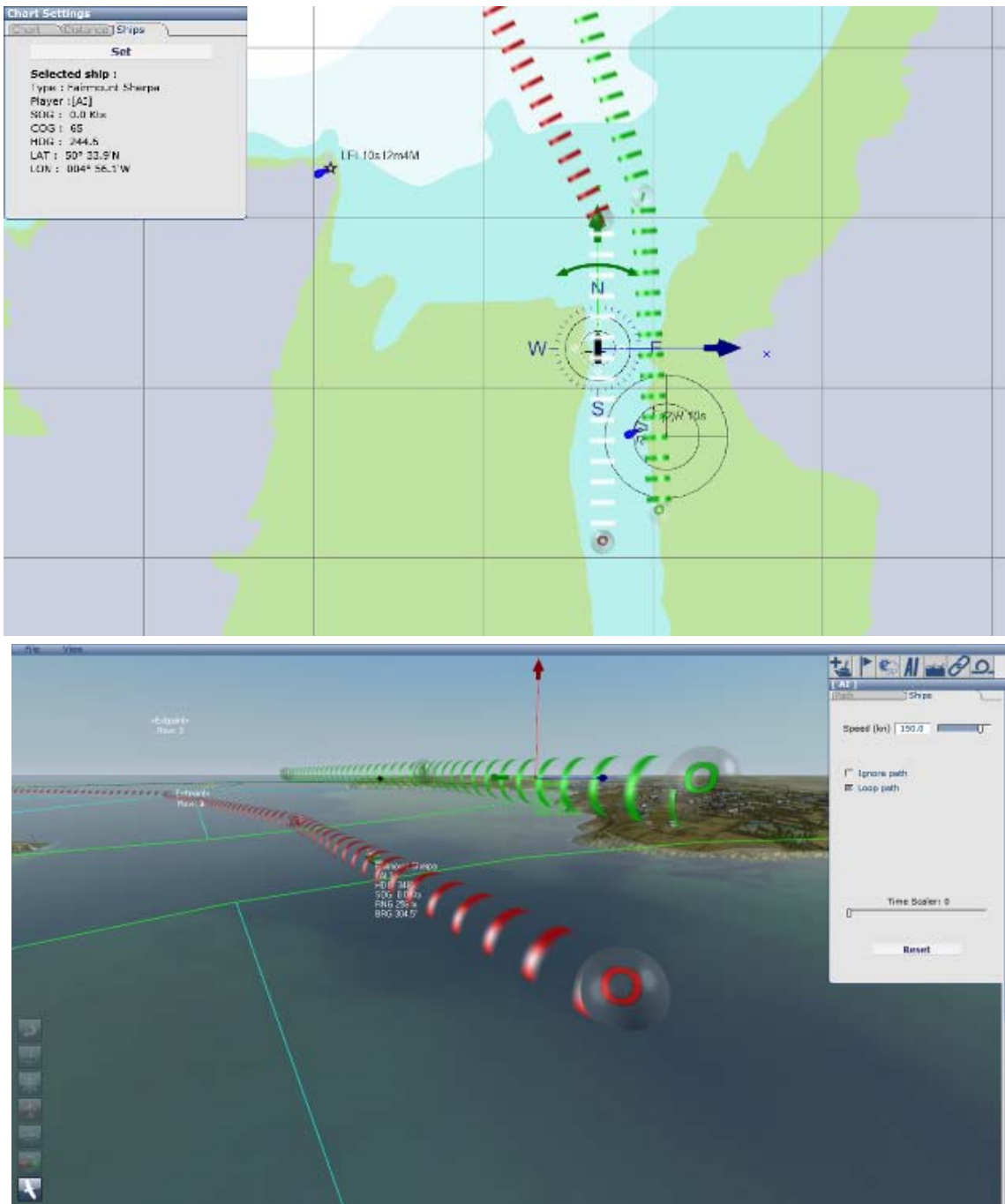
2.4. Computer-driven vessels (AI)



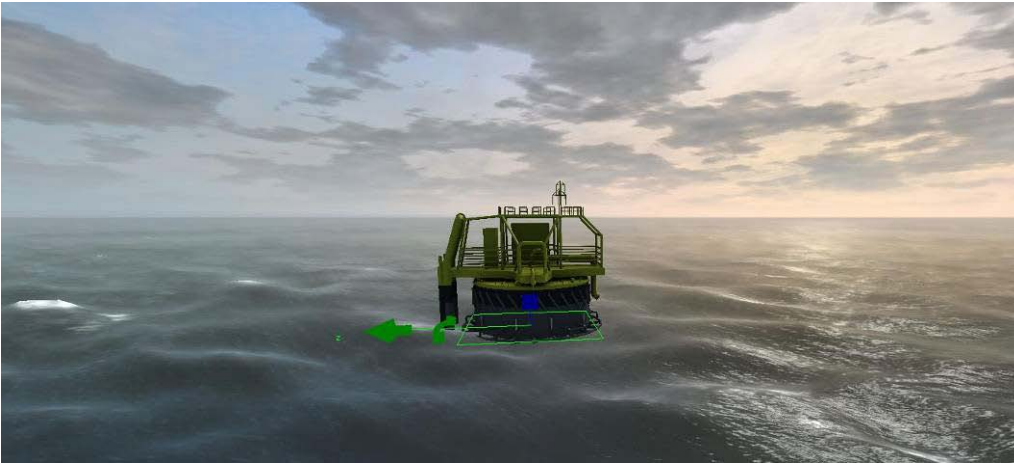
During a typical exercise the trainee will have to interact with various other vessels in the environment, many of which are computer driven. The instructor is equipped with the functionality to pre-plan the behaviour of such computer driven vessels so he can focus on the training objectives during the exercise. When required he is able to change the behaviour of the computer driven vessels at any point of time during the exercise.

Featuring:

- ‘Highway’ system to allow multiple vessels to follow a preset track easily
- One system for vessels and helicopters due to 3D view
- Vessels can be given individual course and speed due easy to use ‘gizmo’ system
- Various options to predefine vessel behavior on route
- 2D top view for extra overview and measuring tools



2.5. Objects

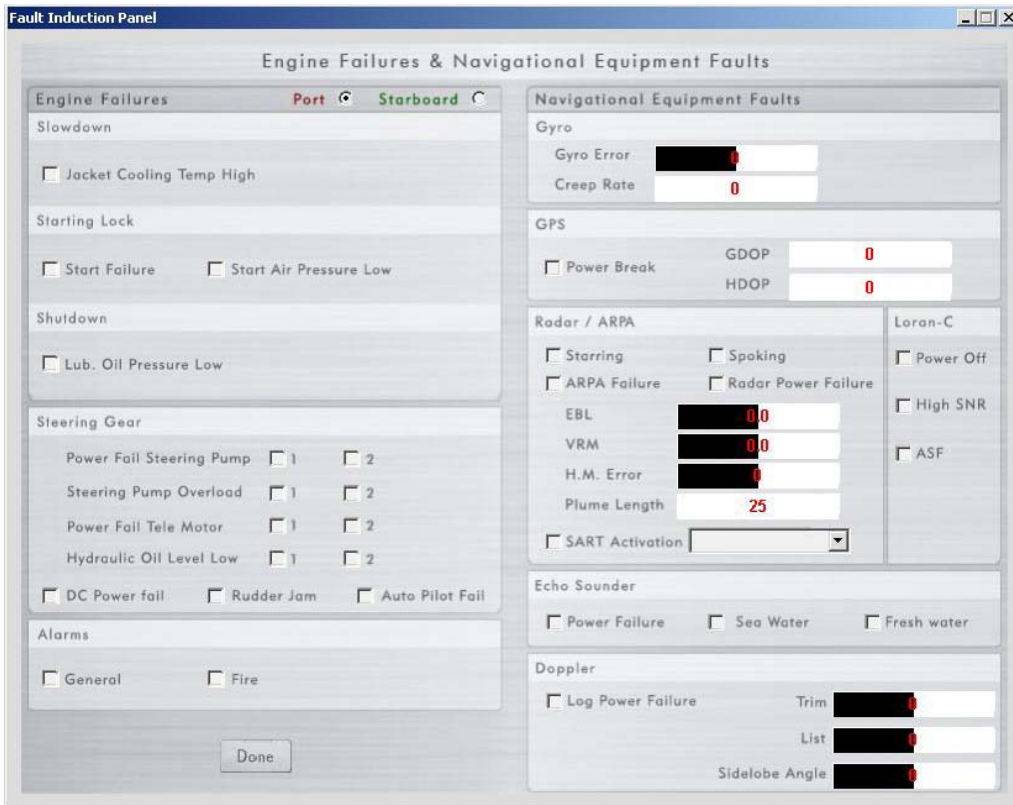


Nautis is equipped with various realistic objects for the trainee to interact with. Those objects can be dragged and dropped into an environment and can be made part of an exercise instantly. For example an exercise in which the trainee has to manoeuvre a tanker towards an off shore SPM Calm buoy either on his own or supported by tugboats.

Featuring:

- Add static objects to the environment during the exercise or during preparation
- SPM Calm buoy
- Extra bollards / mooring points for realistic mooring arrangements
- FPSO and various rigs
- Selectable behaviour for the objects

3. Faults & Failures



The Faults and Failure panel is for the instructor to add simulated errors in the instruments, for the trainee to detect and deal with, to enhance the training experience and to prepare the trainee for the unexpected.

This is an optional component, to be purchased separately from the standard Nautis Instructor Station package.

Features:

- Variety of most common faults and failures in the bridge equipment
- Variety of most common failures in machinery equipment affecting manoeuvring properties of the trainee vessel

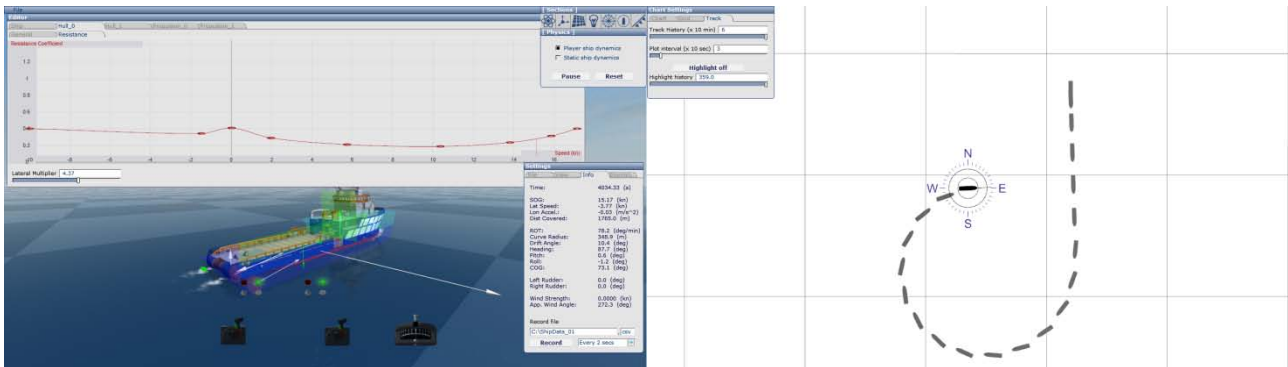
4. Object Editor

The Object Editor provides the instructor with a set of tools to change the appearance and dynamic properties of all vessels and other objects in Nautis.

It consists of the following components:

- Real time tuning of dynamic properties of all included vessels
- Customization of navigation and deck light positions on all included vessels
- Customization of mooring, towing and replenishment points on all included vessels

4.1. Ship Dynamics Editor



Nautis Instructor Station Suite is equipped with an advanced Ship Dynamics Editor. This allows the instructor to alter the included vessels' hydrodynamic properties to his preferences.

Featuring:

- Adjustable physical and dynamic properties of all vessels
- Real time result monitoring
- Single screen 3D or dual screen 3D and 2D overview
- Force based dynamic system
- Measuring tools in 2D overview for testing of turning circles, MOB manoeuvres etc
- Various filters to adjust to user preferences

4.2. Light Editor



The light editor allows the instructor to add or remove navigation and/or signal lights to his own preferences.

Featuring:

- Navigation lights and signal lights can be placed in 3D environment by easy-to-use 'gizmo' system
- Lights can be assigned to groups representing navigation status, e.g. Underway or Anchored
- Lights can be controlled individually conform the navigation light control panel in the Trainee Station
- Illumination range adjustable to be set conform the International Rules of the Road

4.3. Connection Point Editor



The Connection point editor does not only control the location of mooring points on all vessels, but also the anchoring, towing, replenishment and distance line points.

Featuring:

- Connection points can be placed in 3D environment by easy-to-use 'gizmo' system
- Physical properties of mooring lines can be set, for example break strength

- Amount of mooring points assigned in accordance with the winch control panel in the Trainee Station

4.4. Flag line editor



The flag lines for day signals and flag signal communication can be customized and placed in positions up to the preferences of the instructor.

Featuring:

- Flag lines can be placed in 3D environment by easy-to-use ‘gizmo’ system
- Dedicated flag lines are included e.g. Jack Stay

5. Chart Data Editor



The chart or 2D view in Nautis Instructor Station suite and Trainee Station serves a number of purposes.

- Provide situational awareness in cases where Nautis is used without an external ECDIS
- Provide additional situational awareness to the instructor
- Provide the option of past track projection

- Accommodation of set of measuring tools

The chart itself is subject to an editor which allows for:

- Placement of buoys and lights which appear directly in the 3D environment according to the IALA system.
- Addition of text
- Add depth readings to the chart
- Add spawn points for stand-alone operation

The original (BA) chart can be displayed as overlay.

DISCLAIMER

The 2D charts that are part of Nautis are based on a 3D bathymetry model, which was created from navigational sea charts. As such they are not usable for real navigation. For navigational training, the real charts or a real ECDIS system with recent ENC's should be used. It is possible to interface these with Nautis.