



## ORACOM 2000

### Digital Simulator of Underwater Warfare

#### DESCRIPTION

Operational research oriented towards the design, development, evaluation and optimisation of Torpedoes and of Anti-Torpedo Defence Systems for surface ships and submarines demands sophisticated and specific tools capable of simulating the global theatre of operations.

The modelling of multiple torpedo launching, the manual wire guidance capability, the target characteristics and alert capability, and the soft/hard Kill Anti Torpedo Countermeasure (ATC) systems requires advanced computer simulation techniques.

The ORACOM 2000 System is a multi-role, stand-alone computer based simulator aimed at underwater operational warfare research, development and training, representing a comprehensive tool for statistical and deterministic evaluations. Incorporating, as default packages, detailed models of torpedoes, anti-torpedo countermeasure systems, warning systems, surface ships and submarines, the ORACOM 2000 allows the simultaneous running of all these models in a wide variety of environments and scenarios.

#### PECULIAR CAPABILITIES

- Availability of all kind of torpedoes (wire-guided, acoustic homing, straight-runner)
- Possibility of On Top launch
- Possibility to predefine research patterns (different pattern in function of the torpedo operating phase)
- Bathy Velocity and Propagation Loss computation and plots
- 3 dimensional view
- Sound during run execution
- Zoom during run execution
- Modification of existing packages to create:
  - . different torpedoes
  - . different ATC concepts
  - . different SUB/SURFACE platform models
- Sophisticated instruments to analyse a scenario:
  - . Playback
  - . Comparison up to four different runs on the same display
  - . Time reversal during the run
  - . Attack counters for each simulated object
  - . Graphical display of active/passive under torpedo attack or tracking
  - . Torpedo internal state window shown on user demand during simulation.
- Display of torpedo(s)/target/ Anti Torpedo Countermeasure kinematics
- Validated at sea by specific trials

## FEATURES

- Identification of torpedoes optimum tactical use
- SUB-to-surface-SHIP tracking
- Definition of torpedo launching envelope
- Assessment of torpedo engagement trajectories
- Surface-SHIP/SUB-to-torpedo alert capability
- Identification of optimum tactical use of Anti Torpedo Countermeasures
- Definition of Anti Torpedo Countermeasure effectors sequence and patterns and own ship counter-manoevres
- Assessment of escaping probability
- Generation of WASS C303/C310/CIRCE/SLAT TCM systems reaction tables to be directly downloaded into the real systems

## COMPOSITION

- ORACOM 2000 is composed of about 600000 source line code (C++, FORTRAN)
- The ORACOM 2000 simulator is based on a Windows NT/2000/XP Station configured as follows:
  - . Processor INTEL PENTIUM III/500MHz (min)
  - . RAM 256 Mb (min)
  - . Video Card SVGA
  - . Resolution minimum 800x600, suggested 1280x1024
  - . CDROM (for installation purpose)
  - . Operating system Microsoft WINDOWS NT 4.0 (service pack 4)/2000/XP
  - . Database manager Microsoft ADO 3.5

## FUNCTIONS

- Create or Modify existing scenario such as:
  - . RUN definition
  - . Environment
  - . SUB/SURFACE target characteristics and global capability
  - . Attacking SUB capability
  - . Heavy Weight Torpedoes
  - . Light Weight Torpedoes
  - . SOFT Kill Anti-Torpedo Defence
  - . HARD Kill Anti-Torpedo Defence
- RUN statistic or deterministic

- XY and XZ planes trajectories
- Torpedo beam view display
- 3 dimensional display
- Elapsed time, target-torpedo range, target/torpedo/ACM speed, depth, course, search, attack, acoustic mode, torpedo logic
- Detailed report generation for each simulated object
- Detailed statistical analysis (graphics and tables)
- Acquisition, hitting, killing probability assessment by iso-maps or Cartesian curves
- Target escaping probability

