REDAS-5

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The ***REDAS-5*** Windows program interfaces the OCEAN SEVEN CTD probes model:

- OCEAN SEVEN 310
- OCEAN SEVEN 311
- OCEAN SEVEN 314
- OCEAN SEVEN 315
- OCEAN SEVEN 316
- OCEAN SEVEN 316*Plus*
- OCEAN SEVEN 320
- OCEAN SEVEN 320*Plus*
- OCEAN SEVEN 333
- OCEAN SEVEN 303
- OCEAN SEVEN 304
- OCEAN SEVEN 304*Plus*
- OCEAN SEVEN 305
- OCEAN SEVEN 305*Plus*
- OCEAN SEVEN EA/89

REDAS-5 software through a simplified and friendly operator interface allows to take full control of the OCEAN SEVEN 3xx probes easing real time acquisition, configuration of unattended acquisition cycles and uploading of data stored in the OCEAN SEVEN probes memory. REDAS-5 program is a true 32bit Windows application which runs flawlessly on any Windows platform. REDAS-5 shows graphically and numerically the acquired data allowing the operator to dynamically change the graphical and numerical setup during data acquisition. Post-processing functions and data extraction procedures in function of time, pressure or numerical intervals can be applied to acquired data in real time or on data retrieved from the probe memory. Among the operations that REDAS can perform is worth to mention: automatic start and stop of data acquisition; management of the bottle sampling (Rosette); Processing and filtering of acquired data in real time; Acquisition of geographical coordinates from a GPS device; Acquired data conversion in text files; automatic scaling of the graphical window X and Y axis.

- ***REDAS-5*** it is easy to use thanks to a friendly user interface based on floating multiple windows and a main menu and tool bar. A big effort was made to simplify at the most the procedure to start an acquisition, as they are usually carried in unfavorable environments and under pressure.
- ***REDAS-5*** gives to the operator an immediate graphical and numerical representation of the acquired data, through few keystroke or mouse click.
- ***REDAS-5*** manages automatically the beginning and end of an acquisition, freeing the operator that thus, can manage and attend at the probe deployment without the need to trigger the acquisition program at the same time.
- ***REDAS-5*** it is a true 32bit Windows® multi-threaded software allowing during acquisition the modification of the plot window as well as the parameters shown in the other open windows. Printout of plot, bottle list and value windows contents

are obtainable in real time during data acquisition. Furthermore other Windows® applications can run concurrently with ***REDAS-5*** without degrading its performances.

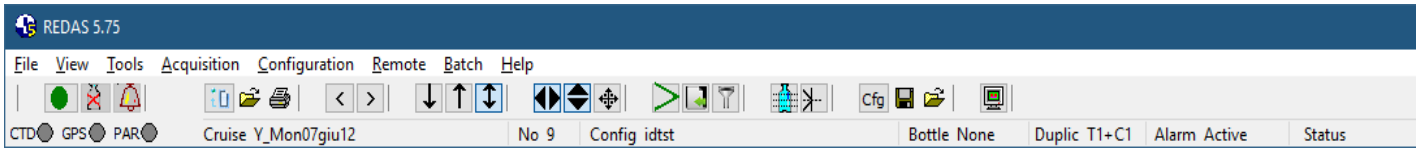
- ***REDAS-5*** take care of the safety of probe during the profile operations through different kind of alarms like: checking of probe depth, probe altitude or other error conditions, that can be customized by the operator. Alarm condition is reported to the operator though visual and acoustic signals.

Accordingly with IDRONAUT policy and in respect to the ethic of scientific research, no modification on the acquired raw data are done without the permission of the operator that can easily select the processing function among different data filtering, time lag compensations, or other specific sensor compensation algorithms. Therefore it is possible for the operator to extract from the probe stream data it needs applying the selected and customized processing algorithm. Real time extraction is primary implemented to accelerate the display of the acquired values, where only few data are shown on the screen accordingly with the chosen algorithms. Anyhow all data sent by the probe (up to 20Hz) is carefully stored in a so called "RAW" data file. Additional parameters like the GPS geographical coordinates (Latitude, Longitude), the ship bathymetry can be processed and displayed as they are probes sensors. Thanks to the modularity and the OOP technique adopted to develop ***REDAS-5***, new sensors, additional parameters and/or post-processing algorithms can be easily added upon customer request. Nearby the real time features, the remote menu allows the operator to setup the OCEAN SEVEN probes for unattended cast and afterward to retrieve data stored in the probe internal memory, showing it with the same functions and facilities available for data acquired in real time.

<u>REDAS 5.0 distinctive characteristics:</u>

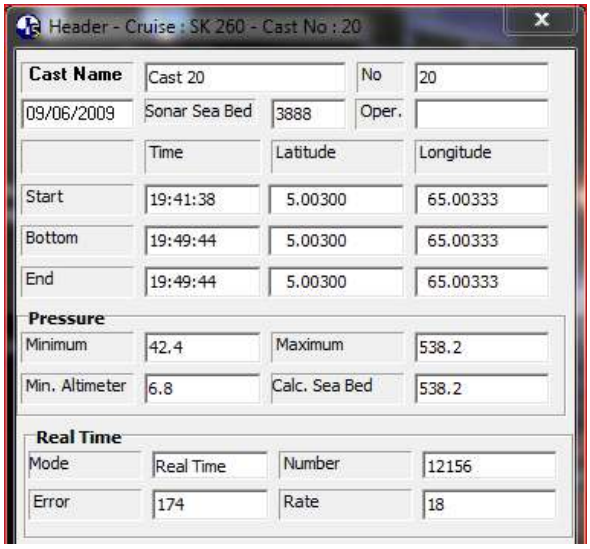
- *Multiple floating windows*

  Apart of the Main window, all the opened child windows which floats on the Windows® desktop can be resized or hidden. The position and size of each child windows are restored when the software runs again. Each child window has it own context menu allowing the operator to modify the configuration and to access the contextual help.



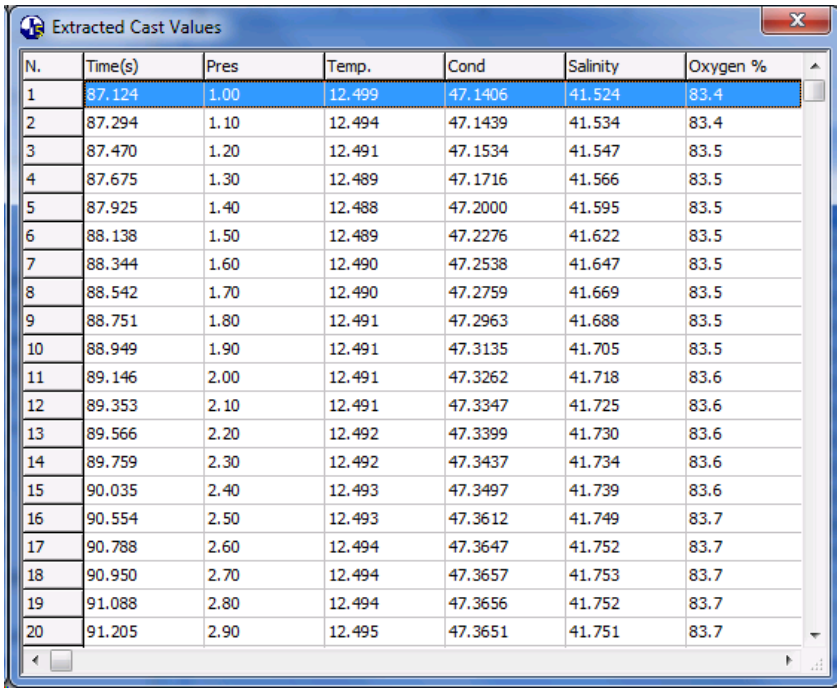
  - The *Main window* is always visible at the top of the screen. Through the View menu it is possible to show or hide the opened child windows. The status part of the main window is used to indicate information about the cast currently shown, the rosette status and the probe undertaken operations.

- The *Header window* shows cast info like date and time, position, depth, probe info, and other useful information. They can be modified in real time without disturbing data acquisitions process.



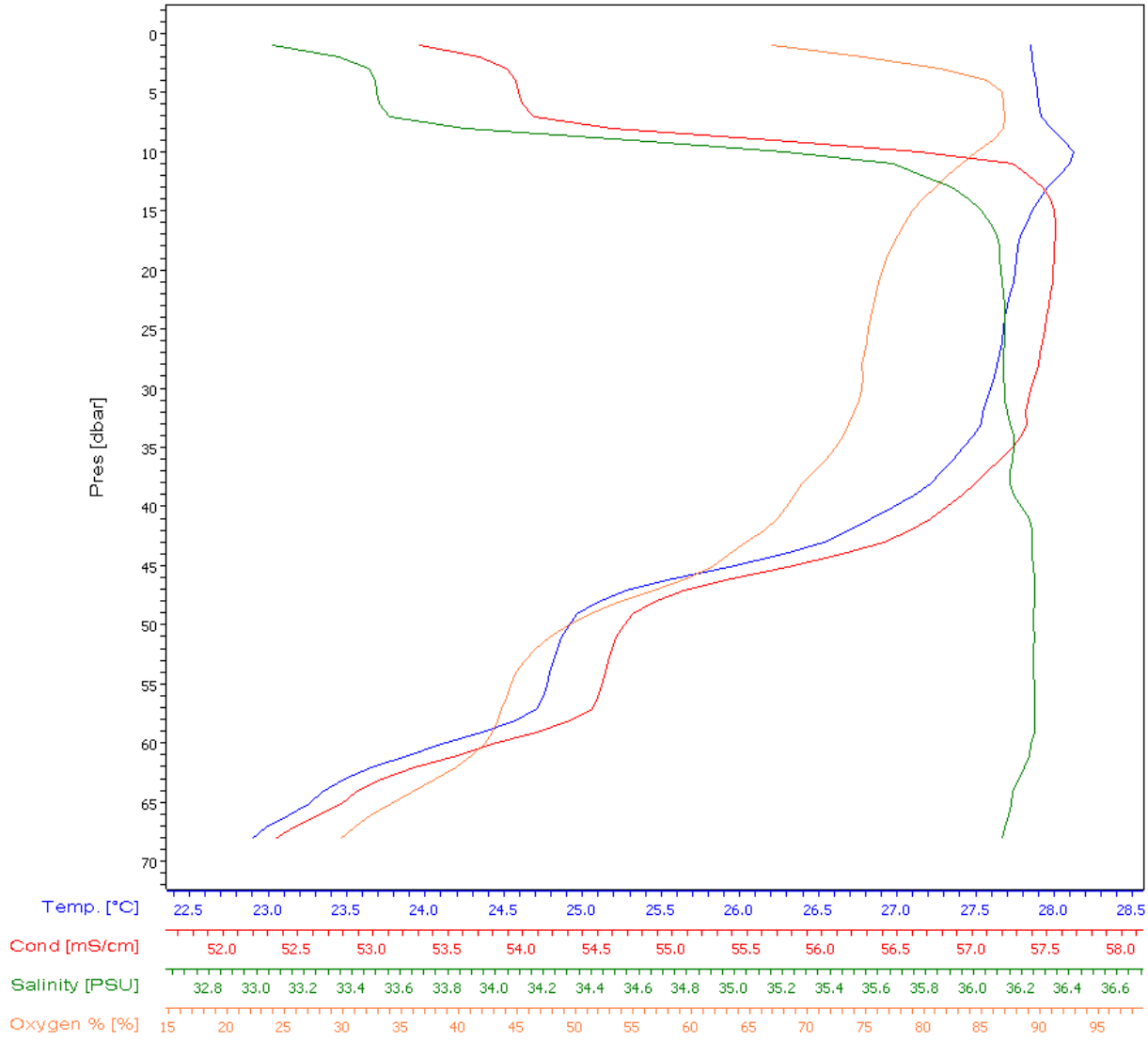
- The *Bottle window* shows the list of bottles taken. The selected bottle is shown on the plot window by means of a dedicated cursor.

- The *Value window* numerically shows acquired data. When a cast is displayed the selected data can be linked with a cursor which appears on the plot window and vice versa. Two different methods allow the operator to show acquired data numerically: scrolling or steady.



N.	Time(s)	Pres	Temp.	Cond	Salinity	Oxygen %
1	87.124	1.00	12.499	47.1406	41.524	83.4
2	87.294	1.10	12.494	47.1439	41.534	83.4
3	87.470	1.20	12.491	47.1534	41.547	83.5
4	87.675	1.30	12.489	47.1716	41.566	83.5
5	87.925	1.40	12.488	47.2000	41.595	83.5
6	88.138	1.50	12.489	47.2276	41.622	83.5
7	88.344	1.60	12.490	47.2538	41.647	83.5
8	88.542	1.70	12.490	47.2759	41.669	83.5
9	88.751	1.80	12.491	47.2963	41.688	83.5
10	88.949	1.90	12.491	47.3135	41.705	83.5
11	89.146	2.00	12.491	47.3262	41.718	83.6
12	89.353	2.10	12.491	47.3347	41.725	83.6
13	89.566	2.20	12.492	47.3399	41.730	83.6
14	89.759	2.30	12.492	47.3437	41.734	83.6
15	90.035	2.40	12.493	47.3497	41.739	83.6
16	90.554	2.50	12.493	47.3612	41.749	83.7
17	90.788	2.60	12.494	47.3647	41.752	83.7
18	90.950	2.70	12.494	47.3657	41.753	83.7
19	91.088	2.80	12.494	47.3656	41.752	83.7
20	91.205	2.90	12.495	47.3651	41.751	83.7

- The *Plot window* quickly shows up to 8 plot lines at the same time. Each plot line can be fully customized and associated to a parameter or sensor. Scales for each plot line can be customized or managed through built-in auto-scale function. Auto-scale function can be associated to the "Y" scale too.



- *Operator interface*
  - The *Tool bar* gives an easy access to the most important and used program functions.
  - A *dedicated database* allows the operator to access cast information about: how, when and where data has been acquired.
  - *Deep cast* is displayed in a very short time because only an extracted set of the acquired data are shown in real time.
  - *Separated acquisition* thread running concurrently allows a painless access to the open windows functions even during real time acquisition.

- *Graphical facilities* are always available during real time acquisition, the shown graph and bottle list can be printed any time.
- The *extraction function* allows the operator to customize the strategy used to extract data from the probe stream easing the numerical, graphical display. Extraction can be selected among: pressure, time or number of acquisition.
- The *post processing* of acquired data can be done in real time during acquisition, thus there is no need to process again the cruise data. Post processing functions can be fully customized by the customer and they comprise: Time lag compensation, Conductivity thermal mass effect compensation, data filtering accordingly to different methods.
- The *acquired raw* file is not modified, therefore the operator can always re-process it again using different settings and post-processing algorithms.
- Different formats are available to customize the representation of time, date and geographical coordinates (latitude, longitude).

- *Real time Acquisition*
  - Acquisition is started by a single click on the RECORD tool-bar button. Acquired data storage starts automatically without the help of the operator according to the chosen strategy: immersion of probe in water; pre-defined time.
  - During the real time operations different files are automatically created by the program for each new acquisition and frequently updated. The program takes care to store the probe configuration like: sensor calibration coefficients; parameter settings; rosette type; etc. and associating them to each acquisition. This method ensures that the probe configuration information is always up to date and correctly associated with the acquired data.
  - All data received from the probe is stored into the raw file. For safety and ethically purposes it cannot be edited or modified. The file is updated each 10 seconds ensuring that in case of problem with the personal computer running the ***REDAS-5*** program, only the last 10 second of data is lost at maximum.
  - Rosette management is completely automatic: the rosette type is obtained from the probe; and automatic bottle firing strategy can be defined. Anyhow the operator can decide to overpass the automatic functions performing the bottle firing manually.
  - All child opened windows are regularly updated to reflect the values sent in real time by the probe.

- *Data Conversion*

  Curves, data, cruise and cast information and bottle list can be exported to text files or printer using configurable format.