CONCEPT SYSTEMS
IT SOLUTIONS FOR THE WORLD E&P INDUSTRY

an I/O company

>ORCA Data Sheet

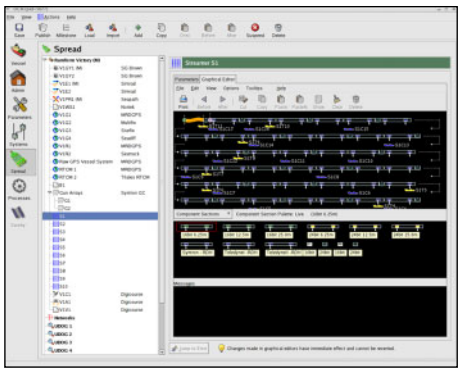
>Integrated Instrument Room System for Marine Geophysical Survey

>ORCA is an integrated instrument room survey control system designed specifically for streamer based seismic survey operations including 2D, Hi Resolution, 3D and 4D applications. This system provides the next generation technology for the instrument room by integrating and developing the combined functionality of SPECTRA, SPRINT and REFLEX to offer enhanced automation and integration capabilities.

>Consolidated Configuration

Currently the existing systems have multiple points of configuration which can lead to data duplication and in some cases erroneous input. ORCA provides a configuration focal point allowing information to be entered once and then uses this to configure all dependant sub-systems.

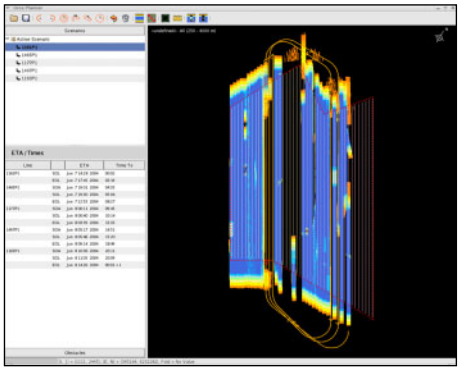
The ORCA Configuration and ORCA Web processes allow the user to set-up all of the required information. ORCA Configuration allows the user to define the physical machines and displays, processes, acquisition interfaces and in-water spread configuration parameters. The information defining the compass and acoustic network is also used to configure the DigiCOURSE Data Management Unit (DMU). ORCA Web allows the user to configure Survey and Binning parameters on the vessel or in the office where the information can be subsequently downloaded.



ORCA Configuration

>Real-Time Survey Planning

A key aspect of ORCA functionality is the planning of future acquisition passes. In order to carry out this function efficiently the operator must have as much information to hand as possible. The ORCA Survey Planning module (ORCA Planner) provides this functionality by integrating up to date coverage displays with optimized turn planning. This allows the user to plan different scenarios based on the latest information. Monitoring of water current information is utilized to predict streamer feather and end of turn/line arrival times with increased accuracy. This facility is particularly useful in 4D surveys for feather matching purposes. In multi-vessel surveys the Planner is used to design the tracks and turns of all vessels.



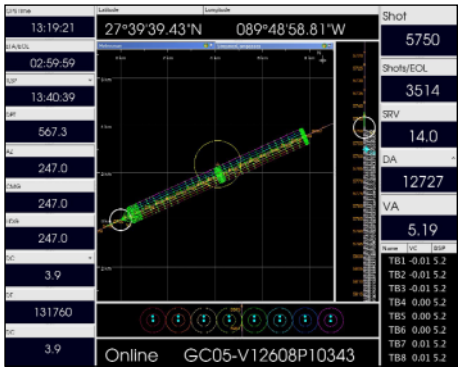
ORCA Planner

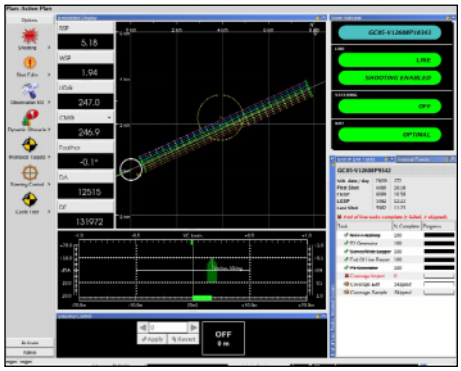
>Unified Control

The ORCA Control User Interface (Control UI) invokes the plan from the ORCA Planner and provides a central point for the user to control acquisition. Displays are automatically changed depending upon the status of the system, i.e. online, offline, deployment, etc. Each context is shown as a user configurable collection of non-overlapping displays. This provides the user with the correct information for the appropriate situation.

The Control UI also coordinates the end of line procedures. These tasks are automatically initiated at the end of line. The system waits for the Near Real-Time process to complete, then generates the P1 and P2 files. The completed P1 is then automatically binned and any edits generated during the line applied. Finally the end of line QC/QA reports are generated.

On a normal line all of the administration will then be completed. However on a number of lines the end of line tasks may have to be run again e.g. new edits. This functionality is provided by the ORCA Web Interface described below.





ORCA Control UI with typical navigation display above

>Diagnostics/Alarms

With increased automation the focus on the identification and diagnosis of problems is paramount. The ORCA Diagnostics module is designed to offer the user a simple summary of overall acquisition status.
The top level display breaks the acquisition into logical sub-functions.

- Resources – Monitoring the state of the machine hardware and operating software e.g. memory, load
- Processes – Monitoring the health of the ORCA processes e.g, stopped, hung
- Acquisition – Monitors the acquisition of all data
- Positioning – Monitors the quality of the spread positioning

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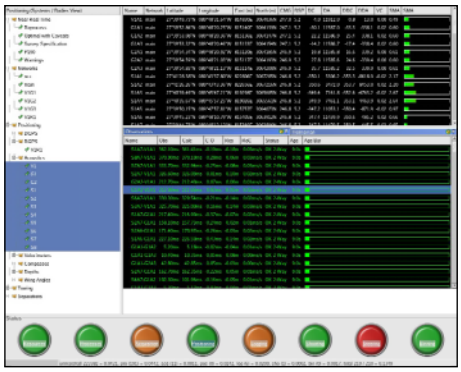
- Shooting – Monitors all functionality associated with shooting e.g. missing time break, missing/incomplete header
- Steering – Monitors the steering of the vessel
- Binning – Monitors all functionality associated with coverage
- Logging – Monitors all the required data is correctly logged

Each of the acquisition sub-sections listed above will indicate problems with red and amber colouring. The user has the opportunity to drill down into each sub-section in order to analyse specific problems in more detail.



ORCA Diagnostics

>Near Real-Time Final Positions

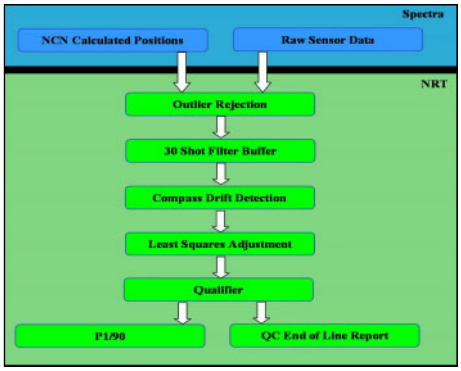
The ORCA Near Real-Time (NRT) module delivers final processed navigation positions containing vessel, source and receiver positions 10 minutes (60 shots) after the end of line. The software reads and filters raw data before passing the information into a least-squares adjustment. The QC data is completely compatible with Sprint. NRT qualifies each line and assesses the quality of the output positions as:

Optimal The data will not benefit from navigation post-processing.

Caveats The data will not benefit from navigation post-processing, however, some data are highlighted for further QC analysis.

Reprocess
The data may benefit from navigation post-processing.

Further QC analysis or reprocessing can be carried out with the SPRINT Navigation Processing application. SPRINT has been integrated into ORCA to allow reprocessed data to be loaded back into the ORCA data stores for re-generation of P1 data and standard reports.

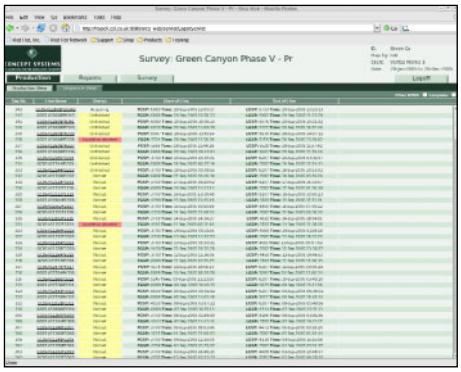


NRT Data Flow

>Web Interface

ORCA is designed as a survey-wide management system and therefore logs all data associated with every survey line into data stores. The ORCA Web Interface (ORCA web) provides the user with the functionality to view/configure reports, manage navigation/observer logs, manage edits, configure/download survey parameters, regenerate end of line deliverables and monitor production status.

The onboard web interface (Onboard Web) allows all users to monitor and manage the complete survey. The Onboard Web also has the functionality to synchronise production and report information back to the office where the ORCA office web interface (Office Web) provides monitoring and status over multiple surveys and vessels.



ORCA Web Interface

>ORCA Key Benefits

- **Reduces downtime** with increased automation and centralization of configuration
- **Improves acquisition** with better planning functions, improved data management, efficient multi-vessel operations and feather matching
- **Improves safety** providing improved deployment visualization and collision avoidance
- **Releases resource** through Near Real-Time Processing and automation of procedures

>System Hardware

Workstations
ORCA supports workstations and PCs running with Linux operating system.
A standard configuration would comprise three workstations supporting 6 displays.

Peripherals
Data is logged to two RAID disk servers.

Data Acquisition
Data acquisition is provided by the POWER Real Time Navigation Unit (PowerRTNU). The Power RTNU is a high capacity data acquisition and control system for 3D vessels with the following features:

- Based on a high performance PowerPC architecture
- Interfaces up to 24 independent sensors
- Multiple seismic header output port
- Interface code downloaded from the data server from an extensive library of over 100 navigation sensors
- Built-in GPS receiver providing closure timing to 50 micro-seconds
- 12 programmable input/output triggers (TTL and Relay)

Optional Hardware
A range of hardware options designed to enhance and extend ORCA's basic operation include:

- Work boat display unit with integrated PC, GPS receiver and radio link
- Radio-telemetry systems for multi-vessel operations

Full specifications for hardware options are available on request.

Further Information & Enquiries
Further information can be found on our web site at www.csl.co.uk or contact:

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