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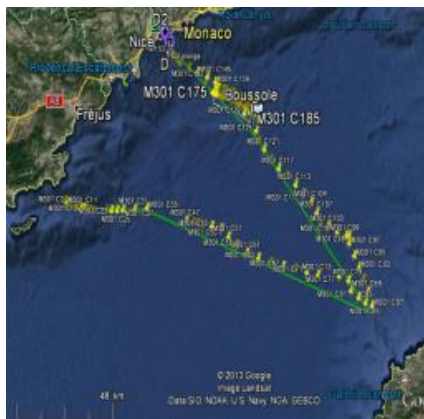
## The SeaExplorer underwater glider breaks World Record

Aix-en-Provence, France – December 5th 2013

ACSA is pleased to announce that the SeaExplorer glider, developed by ACSA in partnership with ACRI, CNRS and IFREMER, successfully completed a two-month record mission in collaboration with the Laboratoire d'Océanographie de Villefranche (LOV) of National Center for Scientific Research (CNRS) and Pierre and Marie Curie University (UPMC).

“The mission objective was to evaluate the endurance of our first glider equipped with rechargeable batteries while performing several round trips between France and Corsica Island” said Dr. Hervé Claustre of the CNRS LOV. Indeed, although all gliders on the market traditionally use alkaline or primary Lithium batteries, ACSA is the first glider's manufacturer to introduce rechargeable Li-Ion batteries as an effective, reliable and affordable solution for the market. “The SeaExplorer glider has also acquired a wealth of high resolution data along its transects whose results will be presented by LOV at the Ocean Science Meeting in Honolulu Hawaiï in February 2014” said Dr Claustre. The LOV team is now planning in the coming weeks the next deployment of this new sensing platform with additional biogeochemical sensors (e.g. Chlorophyll fluorescence, backscattering).

Launched on September 5<sup>th</sup> 2013, LOV scientists recovered their glider on Tuesday the 5<sup>th</sup> of November at 11:30 at Bay of Angels on the French Riviera. Completing a two-month mission, the SeaExplorer glider became the first glider to break a double world record for multi-sensors Unmanned Underwater Vehicle (UUV) with rechargeable batteries. A World Premiere.



Journey of the SeaExplorer glider between France and Corsica island

Reaching the mythic milestone of 60 days and a total of 1 183 kilometers on a single battery charge, the SeaExplorer glider has successfully set a duration and distance record. Launched south of Nice, SeaExplorer averaged 0,5 knots and provided over 1 168 profiles of the water column from near surface to 500 meters depth with 100% communications even in high sea-states. Supervised by satellite telemetry from onshore office using ACSA's IRIS software, the performance was manually stopped whereas internal parameters indicated 18% of its battery energy remaining.

The success of this world's longest mission performed by a rechargeable powered UUV highlights the reliability of the SeaExplorer glider. Besides the platform's endurance record, the scientific payload was equipped with SeaBird pumped CTD (Conductivity/Temperature/Depth) and Dissolved Oxygen sensors recording continuously at 4 seconds inter-sample time (metric resolution) for a total of 90 Mo. First comparisons of the SeaExplorer dataset with simultaneous profiles from a ship-borne CTD-rosette show very good data quality, even across strong temperature gradients.

On the other hand, this green technology also opens a new era for all scientists concerned about the environmental effectiveness of their activity. SeaExplorer becomes for scientists in charge of monitoring the climate change with glider, the lowest environmental impact thanks to replacement of batteries every 10 years !

From the French Operating Gliders Center (CNRS DT/INSU), Laurent Beguery, expert consultant for ACSA, said: "I am delighted with SeaExplorer performing 8 weeks and setting this record. The performance of the endurance test is clearly a success. This means that this first rechargeable glider is now mature enough to represent a reliable alternative to alkaline and primary Lithium powered gliders. I personally do appreciate that this type of glider avoids operations of batteries replacement every 2 to 4 months and reduces, to 20 hours only, immobilization time for refueling at the workshop. In other words, for scientists, it makes lots of savings in materials replacement, technician man-hours as well as for ballasting time and ... hopefully increases the Mean Time Between Failures (MTBF)."

Finally, since operating cost optimization concerns all fields including oceanographic research institutes, requiring less technicians to maintain a fleet definitively goes in the right direction. To understand the unique capability of rechargeable as a major step forward in the challenge to increase cost-effectiveness of gliders operations, Patrice PLA, Sales & Marketing Director comments: « Out of 10 months of at-sea operations per year, rechargeable batteries not only grant higher availability rate but also reduce operating costs between 75 000 to 150 000 Euros per glider over 5 years compared to alkaline and primary Lithium batteries traditionally used by scientists.»

In conclusion, with this endurance record, scientists can, from now on and for a certainty, have access to an affordable and sea-proven rechargeable glider with high performances to accomplish cost-effective missions up to 2 months.

### **The SeaExplorer Platform**

SeaExplorer can navigate at sea for months to persistently gather subsea data down to 700 m depth. For oceanographic applications, following six sensors are already integrated and available off-the-shelf: Conductivity/Temperature/Pressure (CTD), Dissolved Oxygen (DO), Chlorophyll, Phycobilins, Turbidity and Chromophoric Dissolved Organic Matter (CDOM). On-going developments concerns acoustic payload for marine mammals detection, nitrate sensor, video camera for jellyfish observation and an hydrocarbon sensor to monitor oil spills and marine pollutions. Also are considered current (ADCP) and turbulences sensors. Given the open software and hardware architecture of the scientific SeaExplorer payload, all users can easily and fastly integrate their own custom sensors. In addition, it is important to note that the interchangeable payload design enables users to conveniently remove and replace sections upon sensors needed. To increase operating reliability, new safety devices such as Argos and underwater pinger are now available in option. The SeaExplorer provides universities, governments and scientists with an affordable UUV to cost-effectively monitor the ocean.

### **About LOV**

LOV is a joint research unit (UMR) under the umbrella of CNRS and the Pierre and Marie Curie University (UPMC). Its main topics are biological, chemical and physical oceanography, as well as marine optics and instrumentation. The OAO team ("Oceanographic Autonomous Observation") has been involved for several years in the development, implementation and operation of underwater robots such as gliders and profiling floats. For more information, please visit [www.oao.obs-vlfr.fr](http://www.oao.obs-vlfr.fr).

### **About DT/INSU**

The Technical Division of National Institute for Earth Sciences and Astronomy (DT-INSU) is a CNRS laboratory which develops and operates instruments in the oceanography, Earth sciences and astronomy fields. It is in charge of the management of a set of 15 underwater gliders for the French scientific community. For more information, please visit [www.dt.insu.cnrs.fr](http://www.dt.insu.cnrs.fr).

### **About ACSA**

Founded in 1995, the company designs, manufactures and operates the affordable SeaExplorer as well as robotics and acoustics systems for oceanography, defense and oil&gas industries. For more information, please visit [www.acsa-alcen.com](http://www.acsa-alcen.com) or contact [dcoulomb@acsa-alcen.com](mailto:dcoulomb@acsa-alcen.com).