



Press release

## **Total and ONERA sign major research contract for airborne remote sensing**

**Paris La Défense, March 6, 2014 – Total and ONERA today signed a large-scale research and innovation partnership agreement, spanning five years and budgeted at 30 million euros. This partnership aims to develop new remote sensing technologies for use in oil and gas exploration, security and environmental protection applications.**

Remote sensing, using airborne or spaceborne systems, provides key data on the Earth's land surface, oceans and atmosphere.

The research partnership between Total and ONERA is designed to refine existing technologies, enhance data coupling and information management, and determine the best platforms to use, whether balloons, drones, aircraft or satellites. The research engineers and scientists at Total and ONERA will be working on leading-edge technologies such as hyperspectral imaging, radar and lidar (laser radar). Research and testing will be carried out at both Total and ONERA facilities, in France and other countries.

In concrete terms, these innovative solutions should enable the partners to improve our knowledge of minerals on the Earth's surface, and detect and characterize hydrocarbons on land or at sea, whether naturally occurring or the product of accidents. They will facilitate the 3D geological modeling of subsoils, while optimizing the detection of hydrocarbon gases or gas byproducts of the production process.

"We are delighted to sign this very promising partnership agreement with the European leader in remote detection technologies," said Arnaud Breuillac, President, Exploration & Production at Total. "The expected innovations will enable us to address the major challenges involved in prospecting for oil and gas, and could also make significant contributions to security and environmental protection."

Thierry Michal, General Technical Director and acting Chairman of ONERA, added, "The contract signed today clearly reflects ONERA's proactive approach with industry, based on joint research and technology transfers. It should enable us to expand the scope of defense-funded R&T applications to encompass other sectors in today's economy."



#### About Total

Total is a leading international oil and gas company with operations in more than 130 countries. It is also a world-class chemical producer. Its 98,000 employees put their expertise to work in every part of the industry — exploration and production of oil and natural gas, refining and marketing, new energies, trading and chemicals — to keep the world supplied with energy, both today and tomorrow.

Total is striving to diversify its supply to help meet growing energy demand in the long term. Through SunPower, it is a global leader in the solar industry. Additionally, Total is actively engaged in many R&D projects focusing on renewable energies, in particular solar energy and biomass.

Total's R&D activities are designed to continuously improve energy-related processes. It now has 22 R&D centers worldwide and filed more than 250 patents in 2012. Total conducts an active R&D policy through an international network of top-tier partnerships with laboratories and innovative start-ups, to promote the development of efficient, competitive new technologies.

To learn more, go to [www.total.com](http://www.total.com)

#### About ONERA

ONERA is the leading aerospace and defense Research & Technology organization in France. A public establishment created in 1946, it reports to the French Ministry of Defense. ONERA has 2,100 employees, including 263 doctoral candidates. It is the only public research organization in France with the capabilities needed to address the complex challenges facing the aerospace and defense sectors. Offering a fleet of experimental facilities unrivaled in Europe. ONERA works for both government and industry, spanning ministries and agencies, major corporations and small businesses. Calling on its partnership-based research model, ONERA generated a business volume of 233 million euros in 2013, half from contract research. ONERA is a recognized source of innovative solutions, technical expertise and long-term design vision. It has contributed to some of today's most successful aerospace and defense programs, including the Ariane 5 launcher, Airbus commercial jetliners and Eurocopter helicopters, the Rafale fighter, the Falcon 7X business jet, the Graves space surveillance radar, the Very Large Telescope, and much more.

To learn more, go to [www.onera.fr](http://www.onera.fr)

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