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Re-conquering the seas (a response to the French **Government's guidelines for its maritime surveillance mission**).

Editorial The ASV team would like to wish you all a happy and prosperous maritime year, driven by the trade winds of growth and success.

Will 2010 be the year that witnesses France finally taking to the seas once more? In a rousing speech given last summer in **Le Havre**, **President Sarkozy certainly didn't pull any punches, highlighting France's failure to look towards the sea over the last few centuries**, despite the country having the second largest maritime territory in the world (11 million km², just behind the USA). So, is this speech a sign of things to come? Will re-conquering the oceans become a national priority? If so, this would certainly bode well for everyone involved in the maritime sector!

In the "Blue Paper" presented at the recent "Assises de la Mer" in Brest, the French Prime Minister François Fillon reaffirmed this objective by revealing the broad outlines of the national maritime governance strategy: "... **Making shipping safer along French coasts, intercepting drugs traffickers, clamping down on illegal immigration ... monitoring and controlling pollution levels, preventing accidents at sea, and protecting marine biodiversity**". **These objectives could all undoubtedly benefit from the sheer ingenuity of the ASV system**, one of the technologies that will prove key in realising this national ambition. Our all-seeing 'third eye' system, which comprises state-of-the-art automatic detection technology and can be adapted to practically all ship models, ports and offshore problems, will undoubtedly attract many professionals and organisations in the maritime sector, just as it did with the French Border Police in Mayotte. The ASV system will certainly prove to be an effective tool in making this "maritime new deal", as it has been dubbed!

ASV will be demonstrating its automatic alert system on the River Seine on February 18th, in its 'protection of port infrastructures' operating mode, with backing from the French Sea Rescue Society (SNSM) and the company SAGEM Défense Sécurité. And to further illustrate just how versatile this electronic eye can be, we will also be showcasing it at the PROSEC expo in Athens at the end of February, and at the Dubai International Boat Show in March. This truly international programme of events is perfectly in keeping with the current economic challenges facing us all – **the security aspect forms a pivotal part of France's new national ambition, and simply cannot be ignored**. Why, it would take a special 100-page edition of Third Eye to list every instance of piracy and illegal immigration that occurred this past year alone!



While this edition of the newsletter is packed with interesting articles and information, one item that doesn't appear is the history of the forerunner to Automatic Sea Vision. For those of you wanting to know more, here are a few snippets... In Turkey, superstitious fishermen to this day attach the 'evil eye' to their wooden doors to ward off evil spirits when they're at sea. It's actually a small enamel amulet in the shape of an eye, normally blue or red in colour. We'll be featuring this ancient legacy in a future edition of the newsletter – that's a promise!

In the meantime, we hope you enjoy this newsletter, and wish you an excellent start to the year!



Credit Marine Nationale



Interview with Mr Fernand Gontier, Contrôleur Général, sous directeur de l'immigration irrégulière et des services territoriaux de la DCPAF (Deputy Director)



How is State Action at Sea going to change? Was the President's speech at Le Havre a major turning point?

FG : When President Sarkozy gave his speech in Le Havre on July 16th, he expressed his desire to “set up a coastguard network, in order to pool together the human and material resources of the State authorities that are active at sea and in coastal areas”. Our State Action at Sea strategy has several components – the responsibilities of the French Prime Minister, decentralising the directorate of operations, and coordinating the various authorities with sea-related skills and resources, including those falling within the remit of the French Ministry of Defence. This strategy has so far proved effective – the Prime Minister, François Fillon, even referred to it in an address delivered on December 2nd in Brest: “The coastguard network will give increased visibility to State Action at Sea and facilitate dialogue with our European partners”. Once France has put this coastguard network in place, Europe will be one step closer to establishing its own much sought-after integrated maritime policy. The network will also strengthen cooperation between Ministries and Government authorities. Geared towards efficiency and economy of resources, the initiative will optimise the management of an organisation which has already proved its worth in the field. The State Action at Sea strategy therefore needs to be identified in a clear and unambiguous manner, and revolve around the concept of this new network that will combine the missions of the various relevant authorities in order to improve their coordination and pool their resources.

Of the various bodies participating in State Action at Sea (and there are several), what is the role of the French Border Police (PAF)?

FG : In terms of the prevention and control of illegal migratory flows, the French Border Police, answerable to the Director General of the National Police Force, coordinates the activities of all the departments. The Circular of August 23rd 2005 rubber-stamped this role by introducing immigration police in both mainland France and its overseas territories. The DCPAF performs risk analysis at both local and national level. In this context, maritime surveillance is absolutely vital in controlling and monitoring migratory flows.

In order for the maritime mechanism to be as effective as possible, it must have strong ties with the on-shore reception and processing centres, both for administrative reasons (waiting areas, refusal-of-entry facilities) and legal reasons (dismantling illegal immigration networks). Individual and collective entries by sea are just one aspect of illegal migratory flows. At ground level, the DCPAF has concentrated much of its risk-analysis efforts in the French overseas territory of Mayotte,

a group of islands north of Madagascar, where migratory pressure is much higher than in mainland France.



In this specific case, what part will ASV's on-board technology play in detecting small vessels off the coast of Mayotte?

FG : It is vital that we continue to try out new equipment, not with a view to replacing the police, but rather to assist them in detecting small vessels as early and precisely as possible, both during the day and the night. It will also enable us to better clarify the information transmitted from the State Action at Sea control station, which processes surveillance radar images.

How do you envisage the future of maritime surveillance? And what role will technology play in it?

FG : Effective maritime surveillance is absolutely critical in ensuring that territorial areas and all migratory flows are properly monitored and controlled. Illegal immigration is a scourge of our times – the daily headlines from Spain, Italy and Greece are proof of that – and places great danger on the people being transported by unscrupulous smugglers who are only in search of huge profits.

Frontex (the European border agency) and a whole host of European countries are taking decisive action to tackle this problem, in cooperation with the countries from which the immigrants are being trafficked. Technology is making it possible not only to deter illegal attempts over huge areas, but also to identify suspicious small crafts in dense maritime traffic, board targeted vessels for inspection and organise rapid sea rescues where necessary.



Photo de la PAF

The sea harbours an absolute wealth of riches, many of which remain to be discovered. Covering almost 72% of the surface of our planet, it impacts on our existence, both economically and socially, in any number of ways – it boasts resources that are hugely important to a whole host of sectors, from the food industry to energy, from climatology to medical research. It is therefore absolutely critical that we protect the sea as best as we possibly can.

These concerns have prompted France's Government and all its maritime organisations to set up the Grenelle Maritime Forum, an initiative bringing together representatives of central government, local authorities, trade unions, business and NGOs that mirrors the country's successful Grenelle Environment Forum. Proposals were put forward during widespread consultation sessions and a whole host of round-table meetings, resulting in a great number of pledges being made, which President Sarkozy intends to form the core of his impending national 'sea and coastline' strategy. These pledges, incorporated into a Blue Paper, include improvements to the State Action at Sea strategy, which, since its inception, has continuously evolved due to an increase in marine transport and high-risk shipments, combined with an expansion of economic activity and water-based recreational activities.



One step closer to a new State Action at Sea strategy

There are two main inputs to the State Action at Sea strategy – firstly, the coordination of authorities with maritime skills and resources, and secondly, the involvement of the French Ministry of Defence. The remit of State Action at Sea includes marine safety and sea rescue, marine and harbour security, measures to combat illegal trafficking, surveillance geared towards environmental protection, and fishing surveillance and controls. It is currently focusing on 45 different missions, with the involvement of more than ten French Ministries, including those of the Interior, Foreign Affairs, Agriculture and Fisheries, Defence, Overseas Territories, the Economy, Infrastructure, Transport, the Sea, Research, and Justice. Given this context, it hardly takes a genius to realise the staggering amount of bureaucratic red tape currently obstructing the effectiveness of the State Action at Sea strategy. Inter-Ministerial in principle and multi-authority in its functioning, State Action at Sea operates through the Maritime Prefectures in mainland France and the Prefects and High-Commissioners in the Overseas Departments and Territories, overseen by an inter-Ministerial body, the Secretariat General of the Sea, answerable to the Prime Minister.

As an organisation, it has generally proved effective, but there is certainly room for improvement. In the past, it has been found wanting in terms of forward planning (relating to the purchase and distribution of new equipment), and its international profile is not as high as it could be. Granted official recognition in a speech given by President Sarkozy in Le Havre on July 16th, 2009 and confirmed by the Prime Minister, François Fillon, at the recent Conference on the Sea, the coastguard network forms part of the practical measures included in the Blue Paper ratified by France's Inter-Ministerial Commission on Marine Affairs (CIMER) in December 2009. The coastguard network is not intended to replace the State Action at Sea strategy, whose regional structure is best-suited to respond to the immensity and variety of French marine areas, but will smooth the way for the French Government's inclusion in the European Union's integrated maritime policy.

Towards cooperation and the pooling of human and material resources

The first step in setting up the coastguard network will be the formation of a steering committee, comprising senior officials from marine authorities under the aegis of the CIMER. This committee will be responsible for the coordination and arbitration of the coastguard network. The committee will contribute to the formulation of a resource development plan, which will focus on the deployment, siting and renewal of resources by the relevant authorities. The committee will also facilitate and oversee the pooling of training, human resources and expertise to ensure that these resources are fully functional.

In parallel, a centre responsible for monitoring the reference maritime picture will be established. Hosted by senior naval personnel, the centre will operate for the benefit of the Secretariat General for the Sea and process data obtained from maritime surveillance systems and intelligence databases. The centre is intended not to oversee operations, but to supply information to national inter-Ministerial crisis-response centres. This new initiative will undergo a preliminary trial in French Polynesia, where the French economic zone is largest. The results of the trial will determine whether or not the network will be established in other areas.

Innovative technology equal to the new challenges facing the French Government

In the face of emerging threats (terrorism, drug trafficking, piracy, illegal transportation of emigrants and arms-trafficking), the French Government is seeking to adopt a strategy of close surveillance and reactivity. The aim is to detect any warning signs as early as possible by acting right at the source of the threats or dangers. Before any action can be taken at sea, it is necessary to know and understand what exactly is happening there. While this may seem extremely obvious, it is surprising just how difficult it is to achieve – the sea is a continuously evolving and shifting environment, with a whole variety of different inter-related factors in play. There are now a great many sensors at our disposal that enable us to detect what is happening at sea, with a significant proportion put in place by businesses and other economic players to assuage their safety and security concerns. If action is to be taken, all this information needs to be integrated. This was one of the objectives set by President Sarkozy in his address of 16 July – the creation of a marine surveillance system to enable France to monitor its coastal regions, its exclusive economic zone and the high seas beyond.

One of the technologies capable of performing these various tasks is ASV; through its automatic object-detection system, it is designed to prevent threats and risks posed by activities on or in the vicinity of the sea. The Central Directorate of French Border Police (DCPAF) is testing this technology on board its main patrol boat in the French overseas territory of Mayotte, a cluster of islands to the north of Madagascar that is subject to high migratory pressure.

Trials of this state-of-the-art equipment have demonstrated its capability of detecting small vessels earlier and with more precision than previously, whether during the day or the night, in a vast and shifting environment. ASV fully meets the requirements defined by President Sarkozy; the integrity of France's maritime economic area is dependent on maintaining proper control and monitoring no matter what the circumstances. This will ensure that ASV will be implemented in the new maritime policy, in particular in operational terms.

What is infrared imaging and why do we use it?

“For starters, infrared rays are the invisible rays emitted by burning charcoal – these rays give off heat but no light, and can be stopped by a screen. Then there are the invisible rays that emanate from our bodies towards the sky on a clear winter’s night as we cool down. These notions are so basic that Man must have been aware of them since the dawn of time. However, there are also far more complex examples of infrared rays, such as those from the Sun, which give off heat and light at the same time. A relatively recent quantitative analysis was necessary to clarify these examples”. (1)

Infrared (known as IR) is hence linked to the notion of light and the undulatory phenomenon, and is characterised by wavelengths ranging from 0.78 μm to 1000 μm . Wavelengths of 0.78 μm to 1.4 μm are known as ‘near IR’ and wavelengths of more than 3 μm ‘far IR’.

Infrared is also linked with the notion of heat, and it is this characteristic that makes it so useful in our current applications; an infrared sensor can detect heat variations of tenths of degrees and makes it possible to distinguish thermal masses of different temperatures. One key benefit of **this is that we no longer need sources of ‘visible’ light to differentiate these objects** (and therefore no longer have to worry about factors relating to day or night vision).

The hotter the object, the clearer the image: for example, on a boat, the funnel through which the heat from engine combustion escapes is significantly more visible than the rest of the vessel. See for yourself in the photograph taken

(1) Translation from the French book “L’Infrarouge” [Infrared], taken from the “Que Sais-je ?” [What Do I Know? NDT] collection by Armand Hadni, published by Presses Universitaires de France



(Picture 1)



(Picture 2)



at night (photo 2): the clearest area is at the top of the funnel. Also notice how distinguishable the rest of the photograph is – you can clearly make out the shape of the boat, its wake and the breakwater marking the entrance to the harbour (picture 1).

Since infrared imaging uses heat radiated by objects and does not require illumination (although infrared projectors do exist, and infrared ‘sees’ light emitted by a laser particularly well), this technology is passive and causes no damage to the environment. A human being may therefore be positioned close to an infrared camera without suffering any adverse consequences, unlike radar, for example, which behaves actively and emits microwaves that are potentially harmful to humans in close proximity.

There are many different types of infrared applications, particular in the military sector, such as missile tracking and night vision. In civil industrial applications, *infrared spectroscopy* is used in domains such as process-control in the food, chemical, pharmaceutical and petrochemical industries. Meanwhile, *infrared thermography* is used for example to detect problems such as voltage overload in electrical power supply networks and heat loss in building insulation.

And as you can see from the photograph (picture 2), infrared is now being used by a number of car manufacturers, such as this one in Germany.

Infrared image presented by the interface Argus



2 ASV – A TECHNOLOGY MEETING ALL THE NEEDS OF THE SEA

Among the measures included in the French Blue Paper “National strategy for the sea and oceans”, adopted by the country’s Inter-Ministerial Commission on Marine Affairs (CIMER), is the creation of a steering committee for research and innovation in marine construction and activities (CORICAN). This committee will be tasked with formulating a medium- and long-term strategy for technological research and development, with particular emphasis being placed on devising an industrial programme for the ‘Ship of the Future’. Chaired by Jean-Marie Poinboeuf, who also heads the Grouping of Marine Industries, Construction and Activities (GICAN), the ‘Ship of the Future’ operating committee will launch a research programme involving the five branches of the French Maritime Cluster (military, merchant, scientific research, fishing and water-sports) to design a ship of the future which is more ‘economical, operational, safe, clean and intelligent’. Having developed an infrared-image-processing software solution that makes it easier to detect objects floating on the sea, ASV has pledged its full support to the research programme by vowing to make the ‘Ship of the Future’ as safe and secure as possible. Apart from the safety of vessels, goods and crew, ASV has also pledged to play a part in protecting whale, dolphin and porpoise populations. It is hoped that, by adapting the technology algorithms, it will be possible to detect the breathing of these mammals when they are close to the surface of the sea, and therefore avoid any potentially fatal collisions.

4 A LIVE DEMONSTRATION IN MALTA !

In December, a team of Automatic Sea Vision has moved to Malta to conduct a live demonstration of our ASV system ASV to an audience representative of the Maltese maritime diversity: Defense, Customs, Maritime Institute, security professionals, naval integrators. This mini-seminar has allowed to get numerous contacts and show the effectiveness of the detection of ASV for port surveillance

5 SAVE THE DATE !

 PROSEC 2010 Athens February 26-28	 DUBAI INTERNATIONAL BOAT SHOW Dubai March 09-13	 EURONAVAL 2010 OCTOBER 25 - 29 / PARIS LE BOURGET, FRANCE 40th INTERNATIONAL NAVAL, OFFSHORE & MARITIME EXHIBITION & CONFERENCE Paris October 25-29
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1 MILIPOL 2009 – ASV RESPONDS TO THE INTERNAL SECURITY ISSUES FACING GOVERNMENTS !

The ASV team was lucky enough to meet a great many of you at last year’s Milipol exhibition (the worldwide exhibition of internal State security), 17 to 20 November. Appearing at Export Trading Service booth in the area reserved for the Paris Chamber of Commerce and Industry, ASV was also invited, alongside other visionary SMEs, to share the French Ministry of the Interior’s booth. This presented us with a valuable opportunity to showcase our system for automatically detecting objects on the water, developed in response to the safety and security concerns of the French and foreign professionals present at the exhibition.



3 ASV ON THE RIVER SEINE – 18 FEBRUARY 2010

On February 18th, between 4.00 pm and 7.00 pm, ASV will be giving a continuous demonstration of its automatic alert system, putting it in action to protect the port infrastructure at the ile de Monsieur in western Paris. Several intrusion attempts will be simulate with the help of the Société Nationale de Sauvetage en Mer (the French Sea Rescue Society). Sagem Défense Sécurité will present their new-generation infrared cameras compatible with the ASV system, to highlight how important it is to ensure proper surveillance and detection in harbour, offshore and shipping environments.

KEY FIGURES

- France and its overseas territories border three oceans and four seas in total. Its maritime footprint is 20 times larger than its land footprint
- 500,000 French people are currently employed in marine related activities
- The State Action at Sea strategy is currently focusing on 45 missions, involving more than ten French Ministries.
- 1.6 billion people travel by passenger ship throughout the world



**AUTOMATIC
SEA VISION**
First smart vision system at sea

The third eye
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