



**FEATURE**  
20 years on: the sinking of the *Prestige*

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^ Clean-up operations in Spain following the *Prestige* spill

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^ Cedre based at the port of Brest



# EDITORIAL

**M**ajor spills at sea are now less frequent, thanks to the efforts of international organisations, States and the maritime industry. The introduction of tighter regulations, of appropriate, proactive response strategies and of inspections by States, in particular in their ports, has led to a high-performance system. However these advances should not cause us to drop our guard. The development of maritime trade, the ever-increasing size of vessels, new propulsion systems and new fuels, as well as the growing density of coastal activities, all escalate maritime risks against a backdrop of very high and legitimate public sensitivity to environmental issues.

Spill response at sea is one of the International Maritime Organization's major concerns. Several conventions exist in relation to this issue:

- the International Convention for the Prevention of Pollution from Ships (MARPOL), 1973, as modified by the 1978 and 1997 Protocols;
- the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, known as the "London Convention", and its 1996 Protocol;
- the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990;
- the Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol), 2000.

The conventions relating to maritime safety, liability and compensation, and salvage reinforce this set of measures.

Cedre was created on 25th January 1979, in the aftermath of the *Amoco Cadiz* oil spill, in a bid to be more fully prepared to respond to spills, to capitalise on knowledge in this field and to strengthen the French response organisation. As an internationally recognised expert organisation, Cedre works with French and foreign authorities to rapidly provide support and expertise. Cedre is also able to dispatch highly skilled, multidisciplinary teams to incident management centres and to shorelines affected by a spill. When I took part in the One Ocean Summit held in Brest at the beginning of the year, I had the pleasure of visiting this original organisation with its remarkable scientific, technical and training facilities geared towards assisting the authorities and implementing emergency response. Cedre has successfully built a very coherent system and has developed cutting-edge skills across all aspects of spill response. Its regular contributions to the work of IMO and of other international and regional organisations are always greatly appreciated.

This Information Bulletin is devoted to the 20th anniversary of the sinking of the *Prestige*, which heavily hit the Spanish and French coasts, and to the measures taken following this major oil spill. I would like to take this opportunity to wish Cedre every success in its undertakings and to wish you an interesting read. ■

Mr Kitack Lim, Secretary-General of the International Maritime Organization



# A revolution in spill response in Spain

^ Manual clean-up operations in Galicia, Spain

On 13th November 2002, the oil tanker *Prestige* (gross tonnage 42,820 UMS-Universal Measurement System), registered in the Bahamas, was carrying 76,972 tonnes of heavy fuel oil when it suffered structural damage some 27 nautical miles off Cape Finisterre and began to list and release oil. Due to its significant starboard list, the vessel lost propulsion and began to drift towards the western coast of Galicia (Spain). In harsh conditions, Spanish rescue helicopters airlifted 24 crew members off the vessel in the afternoon of 13th November.

By **Benito Núñez Quintanilla**,  
Director-General of the Merchant Navy,  
General Secretariat of Transport and Mobil-  
ity, Spanish Ministry of Transport, Mobility  
and Urban Planning

Between the time the incident occurred and 12:40 on 14th November, the *Prestige* had drifted uncontrollably towards the coast, until it ended up 4.6 nautical miles off Cape Touriñán. Once Spanish tugs managed to control its drift, the extent of the damage to the vessel and the ongoing oil spill were able to be surveyed.

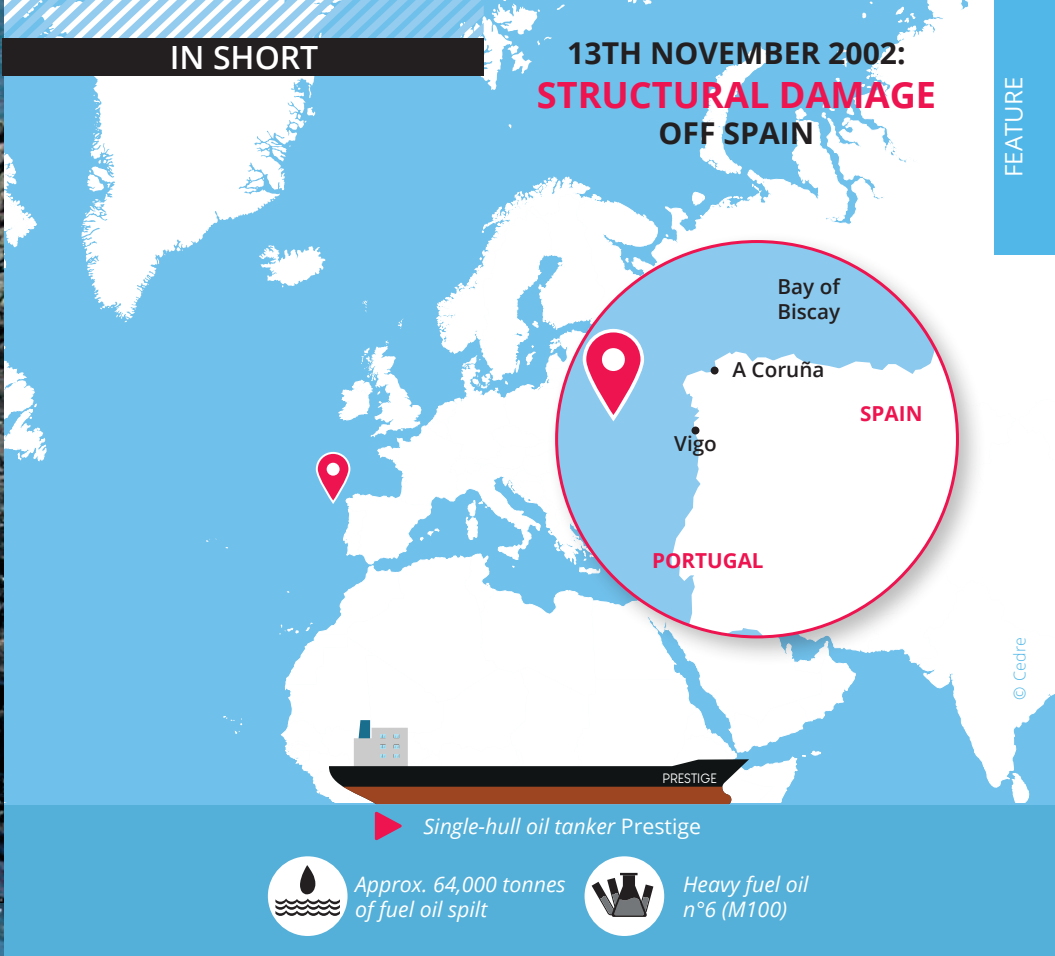
According to analyses produced by CEDEX (the Spanish Centre of Studies and Experimentation in Public Works) from images taken by the FLIR camera on board the *Helimer Galicia* helicopter belonging to *Salvamento Marítimo*, an estimated 10,500 m<sup>3</sup> to 21,000 m<sup>3</sup> of heavy fuel oil had been spilled between the start of the incident and 22:00 on the 13th. This first spill reached the coast of Galicia in the early hours of 16th November.

On 14th November, Smit Salvage joined operations and the Spanish maritime administration provided logistical support for

them to board the vessel. On 15th November, at 16:33, the Master of the *Prestige* requested the evacuation of the rest of the crew, due to the hazard posed by the vessel. Seventeen people, comprising technicians and crew members, were evacuated.

On 19th November, as a tug contracted by Smit Salvage was attempting to tow the tanker away from the coast, the vessel broke in two and sank, some 260 km west of Vigo (Spain). The bow section sank in waters 3,830 m deep and the stern section 3,565 m deep. An estimated 63,200 tonnes of oil were spilt after the vessel broke and sank. Over the following weeks, oil continued to seep from the wreck at a slowing rate. However, an estimated 13,700 tonnes of oil still remained inside the wreck.

The 13th November marked a turning point for spill response at sea in Spain. That day, the sinking of the *Prestige* caused one of the worst environmental disasters Europe had seen in the past 50 years. Today, we continue to look



back on this incident with great sadness, but also with satisfaction at the progress we have made since then to improve spill response safety and prevention, two major responsibilities that we assume each day with the greatest dedication and professionalism.

### Collaboration with EU countries for spill response

During the management of this emergency, collaboration with the French authorities was very beneficial for both countries. The pollution clause of the mutual assistance plan in case of a maritime emergency in the Bay of Biscay was activated on 14th November at midday. France provided aircraft (POLMAR I and II planes) and vessels (amphibious command ships (LCC), oil recovery vessels *Alcyon* and *Ailette*) to survey, assess and locate the slicks.

The European Union also dispatched two technicians from Cedre and the Maritime Prefecture for the Atlantic to join the Operations

Coordination Centre (CECOP) in A Coruña where they shared their experience and knowledge. France, which had experienced serious maritime incidents leading to major oil spills, such as that of the *Amoco Cadiz* and the *Erika*, already had more specialised resources and equipment.

Spain also contracted 13 specialised spill response vessels from the Netherlands, Germany, Belgium, Norway, Denmark, Italy and the United Kingdom.

### Crisis management: support from fishing vessels and mussel rafts

The primary objective during the management of this tragic environmental disaster was to respond to the oil spill. The operations conducted during the first month showed good results, with some 14,946 tonnes recovered from the sea surface by specialised spill response vessels. With time, as the viscosity of the slicks of emulsified fuel oil increased, these vessels' recovery systems (skimmers and

sweeping arms) were no longer effective.

However, the resounding success of the response at sea was without a doubt largely due to the contribution of fishing vessels and mussel farming craft, which became involved from the initial phase of the response, as the first large slicks of emulsified fuel oil, fragmented by wave action, drifted towards the Rías Baixas. Fishermen as well as workers and owners of mussel farms and other shellfish farms reacted to the situation and, under the coordination of the *Capitanías Marítimas* in the region (representing the maritime administration at a local level), they used artisanal tools to collect the oil manually, for instance with baskets designed to lift mussel farming ropes.

Thousands of mussel rafts, fishing boats and dinghies of all sizes were used.

During the second phase of the oil spill, once the oil had reached the Cantabrian Sea and the French coasts, coordination between Spain



© Douarhes Fran galises

^ Stern of the *Prestige* sinking in Spanish waters

and France continued, with the exchange of information and resources.

A large-scale mobilisation of Spanish fishing vessels was organised, which, guided by aerial surveys and by support from Spanish and French warships, resulted in the successful recovery of the emulsified, weathered, highly viscous fuel oil, which had formed hundreds of thousands of floating "patties", removed from the sea with manual tools, in the same way as for the coast of Galicia. The distance from the coast was already considerable and the fishing boats used in this case were quite large. The emulsified fuel oil recovered at sea in Spain by the fishing vessels and auxiliary crafts totalled 37,993 tonnes.

During shoreline and beach clean-up operations, 67,883 tonnes of waste (oil and oiled debris) were recovered in Galicia, and 21,855 tonnes in Asturias, Cantabria and the Basque Country.

The total quantity of oiled waste recovered on the Spanish coastline and beaches reached 89,738 tonnes.

With hindsight, we can ask ourselves the following question: what have we learnt from the environmental tragedy caused by the *Prestige* oil spill and what changes did it bring about in the various aspects of spill response?

Below are some conclusions:

### 1. Recovery of the oil remaining in the wreck of the *Prestige* at a depth of 3,830 metres.

As part of the response effort, Spain implemented an unprecedented operation to eliminate the risks posed by the fuel oil contained in the wreck of the *Prestige*. With support from the oil company Repsol and the use of ROVs (Remotely Operated surface Vehicles), 13,600 tonnes of pure fuel oil were extracted.



© AZTI

^ Spanish fishing boats recovering oil at sea

This operation involved:

- the development of an extraction strategy based on the difference in density between the fuel oil and water. The oil, although at a

- very low temperature, retained its fluidity;
- the watertight sealing of leaks by improving the initial plugs installed by the mini-submarine *Nautille* (Ifremer);
- the assessment of the quantity of oil remaining in the tanks of the *Prestige*;
- the installation of extraction valves on the deck of the vessel, with holes of a maximum admissible diameter of 700 mm being drilled for hot tapping;
- the design of "shuttles" (aluminium storage tanks) with a capacity of 300 m<sup>3</sup>, to transfer the oil from the seafloor to the surface;
- the pumping of the oil through flexible hoses (risers) with an annular water injection system, facilitating the transfer of viscous oil from the shuttles to another oil tanker.

### 2. A major effort by the Spanish State to procure equipment to respond to maritime emergencies

Since 2003, the Spanish maritime authorities invested major efforts in convincing the Government of the need to build investment plans in order to improve resources and increase the number of staff able to respond to all types of maritime emergencies.

The maritime rescue and spill response plan 2006-2009, with a €1,022 million-budget, represented the greatest investment in history for the procurement of vessels, rescue boats, planes, helicopters and other assets for maritime traffic control and spill response. Following this plan, subsequent plans were approved, also with multi-million euro investments, thanks to which the Spanish maritime safety and rescue service has become a benchmark within Europe and around the world.

Since the *Prestige* spill, the following maritime and aerial assets have been commissioned: 15 fast rescue *Salvamar* boats, 4 *Guardamar* vessels, 2 multipurpose oil spill response vessels (their heated storage tanks for oil recovery have a capacity of 1,750 m<sup>3</sup>. Each vessel also has good firefighting capacities), 2 medium tugs, 7 small tugs, 3 *EADS-CASA CN 235-300* planes (used to locate MOB and vessels at sea, detect spills in

the marine environment and follow and identify offending vessels), 8 medium *Agusta Westland AW139* helicopters and 1 larger *Eurocopter EC225 Super Puma* helicopter.

### 3. Regulatory commitment to spill response at sea

Another lesson learnt from the *Prestige* disaster is without a doubt a revolutionary change in legislation, in Spain, in Europe and internationally. Spain introduced positive measures essential for spill prevention and response.

Regulatory actions over the past 20 years have been aimed at strengthening the preventive framework through which administrations are able to ensure effective compliance with the conditions for the safe transport of oil and petroleum products, to gradually increase the safety of these modes of transport, and,

finally, to provide coordinated, effective marine pollution response tools. Some of the major changes include: the accelerated phasing-in of double-hull tankers, the European vessel traffic monitoring and information system, the regulation on the inspection of foreign vessels in Spanish ports, and the common rules and standards for ship inspection and survey organisations.

Additionally, the improvements made to the International Oil Pollution Compensation Funds (IOPC Funds) should not be overlooked. In March 2005, the Supplementary Fund Protocol entered into force, bringing the compensation for States Parties to the Protocol up to 750 million SDR (USD 1,037 million), including the amount payable under the 1992 Civil Liability Convention and the 1992 Fund Convention, which represents 203 million SDR (USD 281.8 million).

In short, over the years, the number of major ship-source spills has considerably decreased. However, all maritime sector players continue to remain vigilant and maintain the collective effort to reduce the risks induced by maritime transport on the environment. This is what we strive to achieve and will continue to do so. ■

## ABOUT

Benito Núñez Quintanilla has a degree in Naval and Oceanic Engineering from the Polytechnic University of Madrid and has been a member of the Corps of Naval Architects since 2004.

He worked as a naval inspector with the *Capitanía Marítima de Burela* between 2004 and 2005. From 2005 to 2009, he held the positions of Director of the Provincial Service in Albacete, Deputy Assistant Director under the General Secretariat and Advisory Member of the support unit for the General Mutual Insurance Society for Civil Servants. In 2009 he was appointed Deputy Director for Economic and Administrative Affairs under

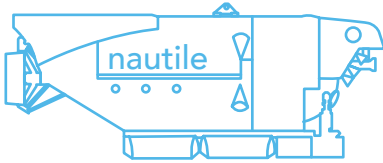
the Infrastructure and Equipment Directorate of the Ministry of Culture and in 2010 he became an advisor to the Cabinet of the First Vice-President of the Government.

From November 2010 to 2018, he worked as a member and principal advisor of the support unit for the Directorate General of the Merchant Marine, and since 2014 he has been the alternate representative of Spain on the Administrative Board of the European Maritime Safety Agency. On 22nd June 2018 he was appointed General Director of the Merchant Marine.



© Spanish Ministry

# ACCOUNT OF EVENTS BY THE CO-PILOT OF THE NAUTILE



On the evening of 26th November, the technicians and scientists who were onboard our ship the *Atalante* for a technical testing mission disembarked in Nice. With the *Nautilie* onboard, we retrieved the robot *Robin*, useful for exploring the inaccessible parts of wrecks, and set off with the necessary equipment to transit via Gibraltar to the sinking location.

On 2nd December, we arrived on site and began the first dives at the last known location of the vessel at the surface.

The first dive crew was composed of pilot Patrick Cheilan, co-pilot Franck Rosazza and passenger Perez de Lucas.

In November 2002, Xavier Placaud was the co-pilot of the *Nautilie*, working as a diver and in charge of piloting the submarine. He was on a testing mission with the *Nautilie* off Nice and Toulon when he learnt of the sinking of the *Prestige* over the radio. President Jacques Chirac offered assistance and immediately mobilised the submarine to search for the wreck and perform an initial subsea inspection of the damage.

By **Xavier Placaud**, Genavir (subsidiary of Ifremer in charge of the management of the ships and vehicles of the French Oceanographic Fleet).

The aim was to qualify the *Nautilie*, which had just returned to service after maintenance, for the 4,000 meter-deep dives and to locate the bow section of the wreck. This section was quickly found using sonar on an abyssal plain. The stern section however was not visible in the vicinity; it had drifted at the surface for many hours before sinking straight to the bottom as the whole world looked on.

The second dive was to inspect the bow section and to record imagery of the *Nautilie* in front of the bow of the *Prestige* with the *Robin* at a depth of 3,761 m.

Based on this video inspection, the various leaks were inventoried and plugging operations could be planned using what we had onboard thanks to our technicians' ingenuity.

This was followed by 3 dives in search of the stern section.



^ Retrieving the *Nautilie* with a diver in a special suit

On 7th December, the third dive met with success when we found the rear section resting on a very steep slope. For several days we had been systematically criss-crossing the zone.

**“Suddenly, inside the cliff above an overhang, we found ourselves inside one of the tanks of the stern section of the *Prestige*”**

Jean Jacques Kaioun and myself were following an isobath in a cliff, when I caught a glimpse through the porthole of various pieces of debris on the seafloor, although nothing was showing up on the sonar. Suddenly, inside the cliff above an overhang, we found ourselves inside one of the tanks of the stern section of the *Prestige*. After extracting ourselves to safety, we were able to inspect the rear part of the wreck.



^ The *Atalante* and its ROV *Nautilie*, searching for the *Prestige*





^ The Nautilie in front of the bow of the Prestige, photo from the Robin

This section had sunk vertically, before tipping into the slope and sliding like a bobsleigh until it reached the edge of the cliff where it was blocked by rocks.

Successive dives were then performed around the bow and stern sections, located a few nautical miles apart, during lulls in the weather. The Bay of Biscay at this time of year (wind, cold, depression) does not offer much respite and we often dived in harsh conditions with very strenuous launches and retrievals for the zodiac operators and divers.

After each dive, we spent hours cleaning the *Nautilie* to decontaminate it. We also had to decontaminate the divers and the zodiac. We were all contaminated by this viscous fuel that we were trying to block as much as possible to prevent it from continuing to escape from the wreck and going on to pollute the coast of Galicia.

When weather conditions allowed it, a Spanish Navy helicopter came to retrieve images of the wreck and the diving work in order to send them to the incident management units and the Spanish media. Crew rotations were also organised in this way, as well as onboard visits from Spanish officials. A team of two agents from the Spanish television broadcaster TVE was also present to film operations.

The first part of the PRESTINAUT1 mission was stopped on 21st December when we returned to Vigo after 10 dives.

This break was also due to the fact that the weather conditions were very harsh at this time of year. During this period, we were able to stock up on supplies, change over the crews of the vessel and the *Nautilie*, collect specific tools which had been produced at our request to plug leaks, such as special tarpaulins that we laid over the leaks and that we made watertight.

The *Atalante* set sail again on 2nd January 2003. The plugging operations during the PRESTINAUT1 mission continued until 14th February, with the *Nautilie* performing 36 dives!

The purpose of the second mission, PRESTINAUT2, was to clear the wreck of all floating hazardous objects such as hawsers (mooring or towing ropes), to eliminate any hazards for the robots that were to come and pump out the wreck.

By the end of this mission, the *Nautilie* and its teams had plugged the leaks in the *Prestige* and ensured the wreck was safe for further operations.

The *Nautilie* was then completely disassembled at a shipyard for deep cleaning of all oiled parts, as the oil had seeped into every corner of the submarine.



^ Retrieving the Nautilie onto the Atalante

Years later, traces were still being discovered. All the teams in the underwater vehicle department of Genavir Toulon were involved in all the "Prestige" missions. ■



^ The oiled Nautilie after exploring the Prestige

# THE RESPONSE AT SEA

## The coordinating role of AZTI and the fishermen's solidarity

The *Prestige* spill marked a turning point in operational oceanography in Europe, and in particular in the Basque Country. Prior to this incident off the Basque coast, the observation network consisted of a single buoy (*Bilbao-Vizcaya, Puertos del Estado*), and the oceanographic and meteorological station of Pasaia had just been activated. Today the coastal observation network (EuskOOS) has developed considerably and is equipped with HF radars that measure surface currents and are thus able to track oil spills.

By **Manuel González**, AZTI, marine and food science and technologies.

If another *Prestige* disaster were to occur today, we would be capable of avoiding many of the moments of intense stress that we faced at the time. Today, there is a special marine spill contingency plan (*Itsasertza*) which clarifies the communication protocol in the event of a similar incident and accelerates spill response.

The *Prestige* disaster, which lasted until autumn 2003, was difficult to imagine. Before the *Prestige*, such a scenario was inconceivable and we went through a phase of denial (Manuel Gonzalez declared that "the probability of the Basque coast being hit by the pollution is very low", in the *Diario Vasco* newspaper, on 20th November 2002), and yet six days after the incident, on 19th November 2002, the oil spill was threatening the Bay of Biscay. On 26th November, the Interdepartmental and Interinstitutional Commission for Monitoring the *Prestige* Crisis in the Basque Country was created.

On 6th December, faced with the threat of a large oil slick approaching the Bay of Biscay, thanks to the Asturia crisis committee, two drifter buoys were launched off Llanes and the information was published on the AZTI website.

The following day, dozens of Cantabrian and Basque fishing boats started to respond to the spill. On 29th December 2002, thanks to collaboration with Cedre and SASEMAR, two drifter buoys were released within oil slicks north of *Punta da Estaca de Bares*. One of them continued to operate until April and was a key element in improving our slick drift forecasts. In January and February 2003, more than 150 boats were involved in the response at sea. The successful efforts of the fishing fleet were partly due to the 230 bulletins prepared with our own information, together with information from Cedre, SASEMAR, *Puertos del Estado*, MeteoGalicia, the University of Cantabria, the Basque service of meteorology, etc.

During January and February 2003, the largest quantities of oil washed up on the coast of Cantabria. Indeed, 40% of the oil spilled entered the Bay of Biscay during this period. On the Basque coast, oil was collected from practically all the beaches, with the exception of only a few beaches inside estuaries where clean-up operations were not required. On the coast of Galicia, some 66,000 tonnes of residues were recovered, and on the coast of the Bay of Biscay, 51,000 tonnes (25,000 tonnes in the three municipalities on the Spanish coast and 26,000 tonnes on the French coast).

The operational oceanography procedure to provide advice on spill response included:

- aerial and ship-based observations to assess slick dimensions and estimate where and when they would reach the coast;
- the information and dispatch of vessels to recover oil at sea, as well as onshore clean-up operations in affected areas;
- the analysis of satellite images, weather forecasts, and drifter buoy data, to estimate surface water movements and oil drift;



Spanish fishermen manually recovering the fuel oil from the *Prestige*

- the use of digital models to predict the trajectories of oil slicks that could not be recovered or had been lost sight of.

The response involved 190 vessels, between 9 and 30m long, more than 1,000 fishermen, as well as volunteers and professionals on shore. In total, more than 21,000 tonnes of waste were recovered at sea over a 10-month period, and 3,200 tonnes reached the Basque coast.



Fishermen recovering floating oil



Fishing vessels accounted for 63% of the total amount of oil recovered at sea, i.e. almost twice as much as specialised spill response vessels. In Galicia, faced with slicks that were still very fluid, fishing vessels managed to recover 7,800 tonnes, i.e. nearly half the amount collected by specialised vessels (15,500 tonnes).

Response operations by specialised spill response vessels and fishing boats were key. The involvement of the fishing fleet was an innovative aspect of the response. The fishermen's knowledge of the marine environment, their rapidity and their ability to adapt contributed to the success of their mission.

As an incident such as this could happen again, it is important to continue to train in new response techniques, to keep up-to-date with the latest recovery equipment, safety measures on board, progress in port logistics, etc.



^ Examples of custom-made skimming devices made by Spanish fishermen on display in Cedre's showroom

The inclusion of these issues in international, national and regional contingency plans is crucial, especially where large spill response vessels are not readily available in the vicinity. ■

## Dr. Michel Girin, Director of Cedre from 1995 to 2008

Meeting Michel Girin is, without a doubt, one of the few positive memories associated with the sinking of the *Prestige*.

From November 2002, when the threat to the Cantabrian coast was not yet clearly identified, we were able to count on the collaboration of Cedre, directed at the time by Michel Girin. In late November 2002, staff from Cedre travelled to the Basque Country to help us identify the chemical footprint of the *Prestige* fuel oil. On 29th December, we managed to position two drifting buoys in large oil slicks which were sweeping into the Bay of Biscay. These buoys had been donated by Cedre and were deployed using aerial assets belonging to SASEMAR (*Sociedad de Salvamento y Seguridad Marítima*). They proved to be vital for obtaining information when weather conditions prevented us from tracking the oil's

trajectory. On 24th, 25th and 26th January, 2,000 tonnes of waste were recovered offshore to the west of Gironde by the spill response assets—specialised vessels and fishing boats—mobilised in the Bay of Biscay and coordinated by the French authorities. Thanks to the invaluable collaboration of Michel Girin, we were able to share this experience and work together as colleagues. Despite being novices, we felt appreciated and gained from his vast knowledge.

Nothing would have been possible without Michel's tact, kindness, serenity, intelligence and wonderful Spanish with an elegant French accent. In September 2005 in Madrid, in an excellent presentation, he summarised the lessons to be learnt from this disaster for future incidents: the need for a permanent database of objective, visual and easily accessible infor-

mation; an effective communication system between the stakeholders involved and transparent public communication; the drafting of an accurate account of the response, the impacts observed, natural recovery and restoration actions implemented; preparation of better response tools and better communication systems for future incidents. Sadly, the next time Michel Girin won't be there to guide us with his presence.



By Manuel González, AZTI.

Editor's note: Michel Girin passed away in July 2018.

# Decision support systems 20 years on

By **Vincent Gouriou**, GIS specialist at Cedre.

The *Prestige* spill sparked the creation of many decision support tools that are used today by Cedre and its partners.

## The genesis of the Drift Committee

From the onset of the incident, Cedre worked together with Météo-France to provide daily slick drift forecasts. On 18th November, an engineer from SASEMAR travelled to Brest to join the mapping and modelling unit. From this date onwards, SASEMAR produced a daily map of oil observations. On the instructions of France's General Secretariat for the Sea, on the 21st the unit was extended to include SHOM and Ifremer, and became known as the "Drift Committee". The French slick drift monitoring and prediction committee studies how spills evolve in time and space, in order to support incident management decision-making by the maritime authorities. During the *Prestige* spill, the committee met every day at Cedre to prepare a map combining aerial and ship-based observations of the pollution and four-day drift forecasts. The committee is cited in the instruction of 11th January 2006 on the adaptation of regulations relating to pollution

response in the marine environment (POLMAR). This committee continues to train once a year during a maritime ORSEC exercise and is regularly activated in the event of spills (*Grande America* in 2019, *Wakashio* in 2020).

## More accurate, reliable and numerous metocean forecasts

The slick drift forecasts produced during the *Prestige* incident integrated ocean currents for the first time; these currents had a strong influence on drift, especially along the Spanish coast. These were the first steps in this field, in particular thanks to the organisation Mercator Ocean. Predictions of ocean currents have greatly improved since then, especially from the mid-2000s. The European project MERSEA (2004-2008), involving 40 agencies and laboratories from 16 different countries, demonstrated the positive impact of new high-resolution ocean products on oil slick drift prediction. This led, a few years later, to

the establishment of the Copernicus Marine Environment Monitoring Service (CMEMS). This service provides free, regular, systematic and authoritative information on the state of the ocean, on a regional and global scale. Funded by the European Commission (EC) and implemented by Mercator Ocean International, it supplies key information to efficiently operate slick drift forecast systems.

Météo-France used probabilistic forecasts for the first time during the *Prestige* incident. Wind forecasts are a source of uncertainty in drift calculations. To estimate this uncertainty, drift calculations are performed on the basis of several atmospheric scenarios (51 weather scenarios, assumed to be equiprobable). For the first time, Météo-France applied a slick drift calculation based on a continuous leak from the wreck. Thanks to this technology, oil slicks were located in the Bay of Biscay. It was also used during the *Grande America* incident.



^ A mapping platform was specially developed to support analysis work conducted by the Drift Committee; it compiles the results of the different models and includes all the relevant operational data (onshore and offshore pollution, drifter buoy trajectories, etc.). Example taken from a Drift Committee exercise in French Guiana

A wide variety of metocean datasets exist today. Studies conducted over recent years have highlighted the importance of comparing different oil drift models (current, wind, slick movements) so that the drift committee can compare several modelling outputs and discuss their relevance.

### Mapping tools to compile and convey information from the field in near-real time

In the event of a major spill, data relating to response operations should be archived on

a daily basis. Cedre therefore offered to set up a computerised system for each of the defence zones affected by the *Prestige* spill, in order to compile the data relating to the number of people involved, the organisation they belonged to, the quantities and types of waste collected and the response technique or equipment used. This system, which operated in real time and at different organisational levels, had a twofold objective: to use data relating to clean-up operations for operational purposes in order to define strategies and to provide a user-friendly communication tool. At a later stage, a data archiving system capable of generating

technical and statistical summaries was required for the feedback process and the settlement of legal disputes relating to the spill.

Since then, new web and mobile technologies have been developed with which data can be entered straight from the field and multimedia data (photos, videos) can be included. These features are particularly useful for an incident management unit to share information on coastal pollution surveys and quickly provide an overview of the extent of the pollution. ■



▲ Example of information collected via the ARGEPOL platform (archiving, management and dissemination of data on coastal pollution observations and clean-up worksites), CSL Virginia incident in the Mediterranean.

## MANAGEMENT OF MAJOR MARITIME INCIDENTS: THE SINKING OF THE *PRESTIGE* AND THE ROLE OF SGMER

In its role as the central body for the coordination of the State's action at sea<sup>1</sup>, the General Secretariat for the Sea (SGMer) decided, on 21st November 2002, to immediately set up a drift committee at the disposal of the Maritime Prefecture for the Atlantic. Shom, Ifremer, Météo-France and Cedre were asked to provide representatives to predict, monitor and analyse the slick trajectories at sea using mathematical models (such as MOTHY) and aerial observations. This initiative led to the successful recovery of 53,000 tonnes of crude oil (of the 64,000 tonnes spilled).

Subsequently, the work of SGMer consisted in the preparation of a session of the Interministerial Committee for the Sea (CIMer) in April 2003, less than 6 months after the *Prestige* disaster. During this session, and in line with the previous CIMer meeting that focused on the sinking of the *Erika*, the French Prime Minister ratified a series of important measures relating to maritime safety. The CIMer meeting of 28th February 2000 had focused on increasing port state control to reach a target of 25% of ships inspected<sup>2</sup>. The meeting held in June 2000 concentrated on the reduction of illegal discharges. The

measures taken in 2003 reinforced the French maritime safety system: joint request to IMO from 6 countries (France, Spain, Portugal, United Kingdom, Ireland and Belgium) to designate a Particularly Sensitive Sea Area (PSSA), definition of the places of refuge procedure, reinforcement of the coordination powers held by Maritime Prefects.

By Denis Robin,  
Secretary-General for the Sea.

<sup>1</sup> French Order 1995-1232 of 22nd November 1995 on the Interministerial Committee of the Sea and the General Secretariat for the Sea.

<sup>2</sup> At the time of the *Erika* disaster, the number of ship safety inspectors in France was four times lower than in England and Spain. It was decided that this number would be doubled in the space of two years: 66 positions were created by the four most recent finance laws.

# The role of the Maritime Prefect and relations with the Spanish authorities

By **Jean-Michel Chevalier**, General Administrator of Maritime Affairs, Deputy Maritime Prefect for State Action at Sea.

The sinking of the *Prestige* on 13th November 2002 triggered the last major spill to have hit the French coastline.

For the Maritime Prefecture (PREMAR) for the Atlantic, the maritime authority acting as the first line of defence for this type of maritime disaster, this tragic event gave rise to the following conclusions: firstly, the *Prestige* had passed through the Ushant TSS\* a few hours before the incident occurred; while the initial response focused on Spain, it could just as easily have been France. Yet, as spills rarely take heed of maritime boundaries, the Spanish response quickly involved France, with the activation of the POLMAR-Mer contingency plan by the French authorities and the mobilisation of considerable assets for use in the coastal waters and onshore.

As concerns regulatory aspects, the sinking of the *Prestige* accelerated the adoption of a preventive and repressive legal corpus, the implementation of new organisational

measures, and the procurement of appropriate equipment. The event reinforced PREMAR's organisation, in particular bilateral Franco-Spanish collaboration formalised under the Biscaye Plan, previously applied in the case of the *Erika* spill, and accelerated the enhancement of maritime safety; its current organisation is the direct outcome of these initiatives.

## Risk reduction

Measures to significantly reduce the risks in the European approaches consisted first and foremost in the acceleration of the phase-out schedule for older vessels, in particular single-hull oil tankers, the generalisation of AIS transponders for ships calling at European ports, the reinforcement of port state controls, the notion of port of refuge whereby coastal States are required to identify places of refuge for ships in distress and to designate an authority in charge of the management of such incidents and endowed with enforcement powers. Before sinking, the *Prestige*, having suffered structural



^ Vice Admiral Olivier Lebas,  
Maritime Prefect for the Atlantic

damage, was refused access to Spanish and Portuguese ports. The Maritime Prefect now has the power to order the port authority to receive a vessel in distress.

## New response assets

The maritime authorities benefit from new human resources and equipment to handle maritime emergencies, including:

- risk assessment teams, a forerunner of the expert committees that the authorities call upon to forecast the pollutant's behaviour and slick drift;
- the MRCC equipment modernisation plan (new radars, new remote sensing systems for maritime safety);



^ The offshore tug based in Brest, the Abeille Bourbon, here in an observational capacity

- the modernisation plan for nautical and aerial assets belonging to administrations involved in State Action at Sea: the Maritime Prefect for the Atlantic benefited from substantial reinforcement of the maritime resources provided by the French Navy. In addition to the *Abeille Bourbon*, an offshore tug stationed in Brest, two specialised spill response vessels, the *Argonaute* and the *Sapeur* were specially chartered to increase spill response capacities. Furthermore, French Customs planes were equipped with updated, high-performance spill response equipment.

To clearly identify the role of these specific assets, they were branded with a Tricolour livery symbolising the French public service. The vessels are on permanent alert with response times that vary according to the weather conditions. In the case of severe weather conditions, the *Abeille Bourbon* is stationed off Ushant island in order to be ready to immediately provide assistance to a vessel in difficulty.



^ The Ailette and the Alcyon, French service vessels providing assistance to the Prestige



^ Overflight of the Prestige by the French Customs plane POLMAR II

## A tailored criminal policy

To complete the system, specialised jurisdictions were created: dedicated maritime high courts, including the maritime court in Brest. The sentences faced by captains and shipowners in the event of marine pollution were increased.

The "Erika packages" introduced by the European Commission and adopted in the 2000s following the *Erika* and *Prestige* incidents substantially improved the procedures and assets contributing to maritime safety in European waters. France adapted its legal arsenal and allocated new resources to the representatives of the State at sea to deal with such incidents.

The sinking of the *Prestige* bolstered the Maritime Prefect for the Atlantic's emergency organisation, which was not found to be at fault,

and triggered the modernisation of its fleet and the MRCCs' tracking equipment. Pleasure boating also benefited from this boost to maritime safety with the experimental launch in summer 2003 of a single emergency phone number (simplified and generalised in 2014 as the number "196"). ■



### \*AIS

Automatic Identification System, an automatic tracking system used to view marine traffic

### \*TSS

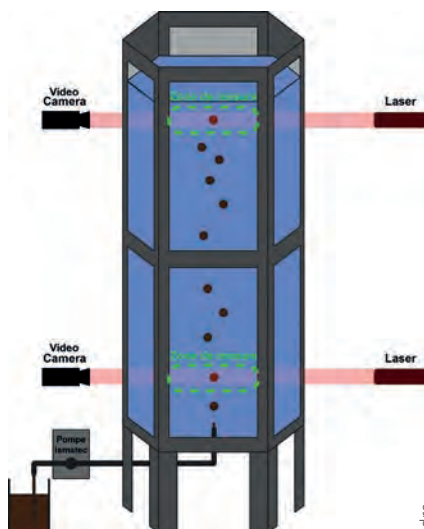
Traffic Separation Scheme, a system of shipping lanes to ensure safe navigation in high risk areas

# The journey of an oil droplet rising through the water column

By **Thomas Le Bihan** and **Stéphane Le Floch**, Research Department, Cedre.

On 19th November 2002, the *Prestige* sank with part of its cargo in waters 3,000 m deep. Oil leaked from the wreck resting on the seafloor and rose through the water column. Various questions therefore naturally arose. The most fundamental of these questions, which sums up all the unknowns was: what happens to the released oil? It was essential to gain an accurate understanding of the behaviour of this oil in order to define the response strategies to be implemented. Would the oil immediately shoot up to the surface to form a slick or slowly trickle through the water column, dissolving as it went? Would the leaks from the wreck form a stream of droplets or a plume of variable density? This information was vital if subsea chemical dispersion was chosen.

Two years prior, Cedre had been faced with a similar issue with the wreck of the *Ievoli Sun* which lay at a depth of 100 metres and whose cargo of chemicals was leaking out in the form of strings of droplets. This situation inspired the design of the Cedre Experimental Column (CEC), a 5-metre-high hexagonal tank with a 1-metre diameter.



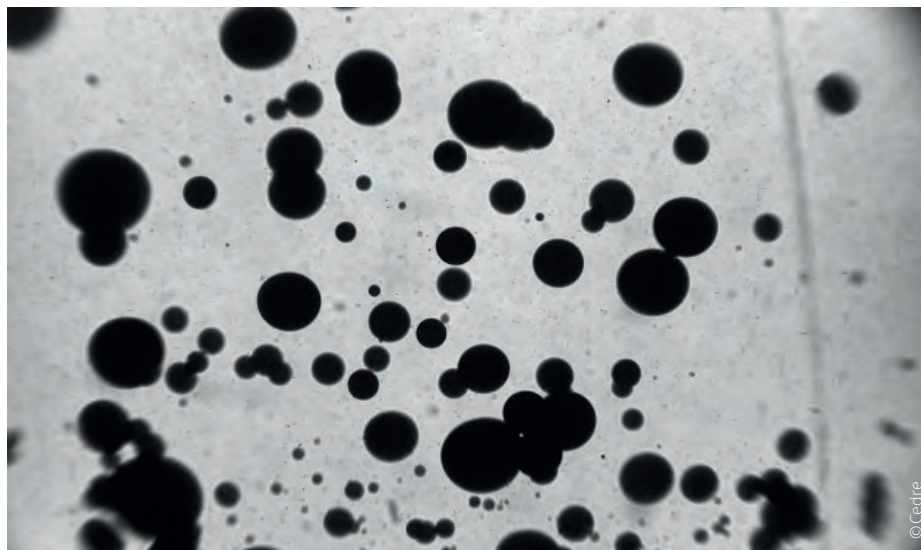
^ Diagram of the CEC equipped with the laser shadowscopy system

This device is used to characterise two-phase flows at pilot scale, i.e. to study the fate of liquids as they rise or settle in a water column. The analytical protocol used is based on image processing and uses the so-called laser

shadowscopy technique. As objects rise through the water column, they obstruct the laser beam and are shown in black on the camera screen. With this imaging technique, the shape, mass loss per unit time and speed of movement can be studied. Typically, the effectiveness of treating a moving stream of oil with a chemical dispersant can be characterised and even optimised if the study focuses on assessing the oil-to-dispersant ratio.

Since its creation, this device has been regularly used to understand the dissolution kinetics of chemicals and oils in a water column, and the results are disseminated in response datasheets, in particular for the French Navy.

The results of research work involving this device also benefit modellers who use them to validate and develop their computer models in order to characterise the fate of oil from wrecks like the *Prestige*. ■



^ Example of an image obtained using the shadowscopy imaging technique. Oil droplets rising through the water column



^ Experimentation column specially designed by Cedre's engineers



# Problem of identifying the fuel oil from the *Prestige*

By **Julien Guyomarch**, Analysis and Resources Department Manager, Cedre.



^ Wreck of the ro-ro vessel Tricolor which sank on 14th December 2002 off Pas-de-Calais

One of the specificities of the *Prestige* spill was the very wide dissemination of the oil, which contaminated the entire coastline of the Bay of Biscay before extending beyond the tip of Brittany and reaching the English Channel. Identified on the Cotentin peninsula, after several months at sea it reached the Pas-de-Calais coastline, which was affected at the time by various oils connected to the *Tricolor*, which sank less than a month after the *Prestige*, and to ships colliding with the wreck of the *Tricolor*, despite the fact that it was recorded and mapped.

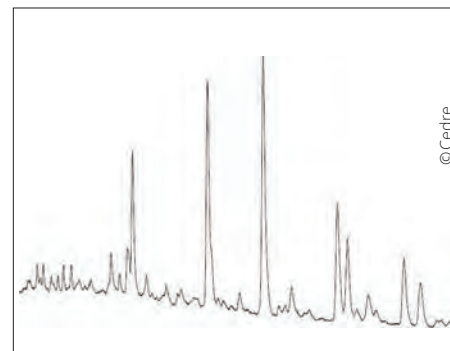


^ Gas chromatography coupled with mass spectrometry used to identify oil samples

The analytical procedures used to identify the origin of an oil sampled in the environment proved to be of key importance, the legal consequences being closely linked to the analysis results. While the results obtained for the hundreds of samples taken in the first few months showed little uncertainty, the samples taken in the Pas-de-Calais area were subject to certain limitations. The *Tricolor* spill involved many different oils (at least four different heavy fuel oils as well as marine diesel and lubricants). Furthermore, the samples taken at sea were found to be heterogeneous, and all likely to come from sources other than the ship itself. One of the samples analysed was found to be very similar to the oil from the *Prestige*, which could be explained by the Russian origin of the two oils that generated these heavy fuel oils. Given all these factors, the oil identification results were interpreted with caution, due to the particularly high degree of uncertainty related to the sampling process and the reference samples.

Several lessons were learnt from this incident and the application of the identification

techniques and procedures. Cedre worked in collaboration with the laboratory AZTI, in the Spanish Basque Country, to apply the protocols developed at European level. The samples, which all appeared to be from the *Prestige*, showed greater variability than expected, leading to the interpretation criteria being reconsidered. Given all these elements and in order to improve the oil identification capacity, OSINet, the Bonn Agreement oil spill identification network of experts, was established in 2005, following difficulties in identifying the various reference samples from the *Tricolor* spill in 2002, combined with the simultaneous presence of the *Prestige* oil, whose fingerprint proved to be very similar. ■



^ Fingerprint of the oil from the *Prestige*. Each oil has its own fingerprint. Whenever oil is found at sea or on the shoreline, analysis work is carried out to identify the oil and trace the origin of the pollution.

# Slick drift and onshore operations

On 16th November 2002, the first slicks washed up on the coast of Galicia, which has suffered several waves of widespread oilings. On 4th December, the north coast of Spain (Asturias) was in turn also affected by oil slicks. Moving eastwards, increasingly fragmented deposits were washed up on the coastline as far as the Spanish Basque Country.

By **Florence Poncet**, Engineer in the Research Department, Cedre.

The first of the residual slicks reached the French coast at Biscarosse, in the Landes area, in late December 2002. From January to March 2003, recurrent strandings, driven by westerly winds, also affected the neighbouring areas of Pyrénées-Atlantiques and Gironde. The prevailing easterly winds in the Bay of Biscay herded the oil out to sea before it returned westwards in May, affecting the coasts of Finistère, then Morbihan and Loire-Atlantique, before entering the Channel.

In Spain, clean-up operations were organised, mainly involving manual collection, to remove the very large deposits (up to 10 cm thick) affecting many sites. Volunteer mobilisation reached exceptional levels, with the additional involvement of military personnel and contract staff (10,000 people mobilised daily in December).

Once the bulk of the oil had been removed, a lengthy pressure washing phase began in order to remove the black film coating the rocks,



▲ Manual clean-up, Barrañan, Galicia

shingle bars and docks (1,266,000 m<sup>2</sup> of rocky surfaces were washed (X. Novoa, 2004)). In some areas that were particularly difficult to access, the residual pollutant was left to be removed by natural processes. A few surfwashing operations (moving oiled pebbles and boulders into the surf zone) were carried out at certain sites exposed to strong hydrodynamics.



▲ Using towed beach cleaners, Gironde

In France, the extremely fragmented pollution essentially took the form of tarballs and patties scattered over several hundred kilometres, after being remobilised by the sea then re-deposited further away with successive tides or buried under sand carried by the wind. The widespread use of beach cleaners during this response can be explained by the vast lengths of shoreline affected and the recurrent, scattered deposits in relatively homogeneous environments, in particular in the Landes and Gironde areas.

More marginally, recurrent strandings of fresh oil led to tests using rollers covered with a very fine wire mesh to give them oleophilic properties; these devices proved

very effective, but only on wet fine-grain sand. 4 private companies developed this concept at different scales.



▲ Demonstration of an oleophilic roller pushed by a caterpillar-tracked trolley, Gironde

Finally, as summer approached, some rocky areas and riprap were washed with high-pressure cleaners, and large-scale surfwashing operations were carried out on beaches in order to eliminate the micro-tarballs mixed into the sand, deemed problematic in relation to tourism. ■



▲ Surfwashing operation, Bidart (Pyrénées-Atlantiques)

# A pan-European disaster

By **Anne-Laure Dugué**, LPO (*Ligue pour la Protection des Oiseaux*).

The *Prestige* oil spill remains today an unparalleled disaster which affected 3 European countries. Birds washed up in Portugal, Spain and France, calling for a coordinated response from the associations that are partners of BirdLife International (SPEA in Portugal, SEO in Spain and LPO in France).



^ Oiled guillemot



^ Puffins in rehab at the LPO centre

A few days after the spill, the specialists and permit holders at LPO and at ONIRIS' veterinary centre for wildlife and ecosystems in Nantes worked alongside the Spanish rehabilitators to share their experience and help care for the birds collected. In total, 23,069 birds were collected, including 2,831 taken to specialised centres in France\*.

Since this disaster, the rehabilitation centres have had to face many other incidents, of varying severity. Their methods and organisation have evolved, although in the event of a major incident the capacity in terms of the number of

birds that can be handled at one time remains limited. Today, in France, two mobile rehab units and a dozen accredited centres can receive and rehabilitate oiled birds.

During the *Prestige* disaster, as we have sadly seen in the case of numerous other spills, oiled birds washed up on the French coastline before the oil. Therefore, while such incidents are disastrous for seabirds and shorebirds, in the event of a major spill, birds can be "used" as an indicator to help organise the response and mobilise the necessary resources. ■



^ Common guillemots released after rehabilitation

\*Hegalaldia, Alca Torda, LPO Aquitaine, Marais aux oiseaux, Centre ONIRIS and LPO Ile Grande

## INVOLVEMENT OF SYCOPOL

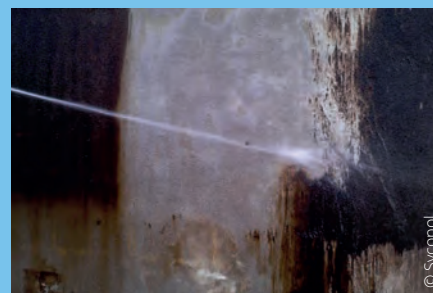
Three years after the *Erika* spill, with clean-up operations barely completed, the *Prestige* sank 270 km off the Spanish coast on 19th November 2002.

Drawing upon their past experience of shoreline clean-up, SYCOPOL's member companies had to adapt their practices to recover the tarballs that were washing up on the coasts of Spain and France, in Aquitaine, Vendée and Brittany.

A film-forming agent, known as Balarep, was applied to reduce adhesion of the tarballs on

surfaces (riprap, docks, hulls of response vessels, hull of the *Nautile*...).

On the beaches, SYCOPOL's member companies had to adapt their equipment to recover the oil patties scattered across the beaches of Aquitaine, using sieves and beach cleaners installed at the front of tractors. This was a new and enriching experience for SYCOPOL, which rose to the challenge of modifying its traditional techniques used to perform mechanical recovery on this new type of pollution.



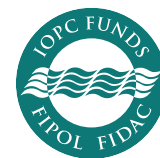
^ Cleaning test on an oiled wall pre-treated with Balarep

By **Nicolas Tramier**, SYCOPOL (French Association bringing together spill response equipment manufacturers and service providers).

# The experience of the IOPC Funds in relation to the *Prestige* incident

^ Clean-up operations in Spain, Aiguillon cove, Corme, December 2002

By **Ana Cuesta**, Claims Manager, IOPC Funds, *Prestige* spill.



**T**he International Oil Pollution Compensation Funds (IOPC Funds) are two intergovernmental organisations (the 1992 Fund and the Supplementary Fund) which provide financial compensation for oil pollution damage in Member States, resulting from spills of persistent oil from tankers.

The *Prestige*, affecting Spain, France and Portugal, is one of the major incidents that the 1992 Fund has had to deal with.

In Spain major clean-up operations were carried out at sea and on shore and there were losses in the fisheries and related sectors, mainly as a result of fishing and harvesting bans imposed by the authorities (the coastline of Galicia,

one of the richest fishing areas in Europe, was particularly affected by the incident). In France significant clean-up operations were carried out at sea and on shore and claims were received from the mariculture sector (oyster farmers claimed to have suffered losses as a result of market resistance due to the pollution) and tourism sector (the area affected in France, with sandy beaches, is popular with tourists). Clean-up operations were also undertaken at sea off Portugal.

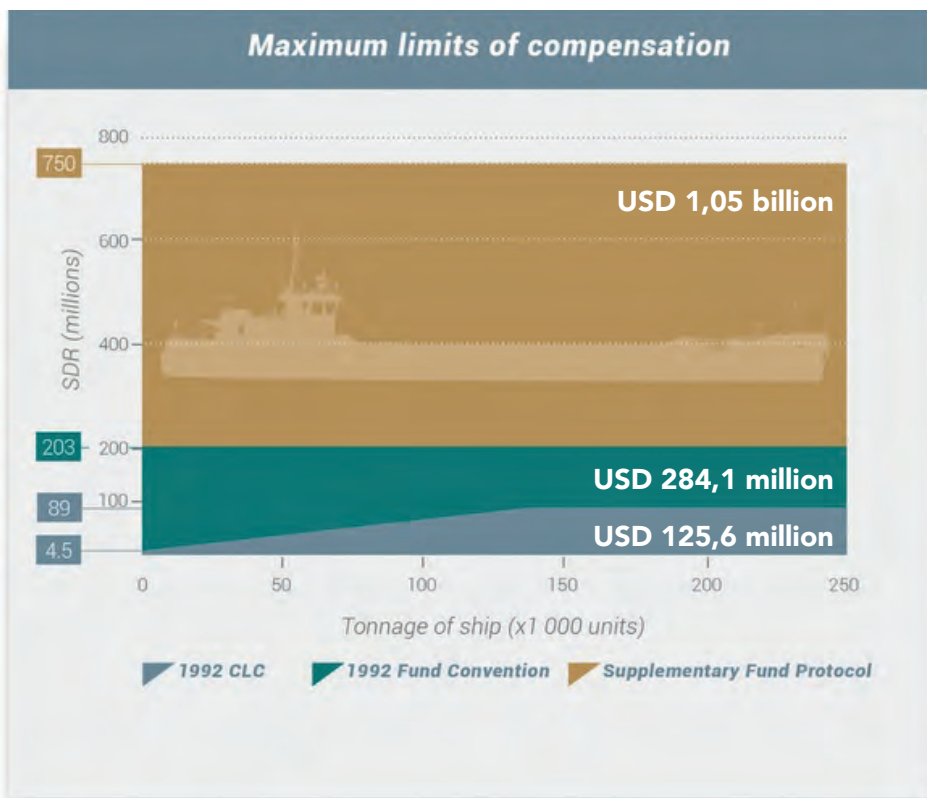
In anticipation of a large number of claims, the London P&I Club (the shipowner's insurer) and the 1992 Fund established a claims-handling office in La Coruña, Spain. A claims-handling office was also established in Bordeaux, France, and later transferred to Lorient.

The claims-handling office in La Coruña received 845 claims totalling EUR 1,037 million, the majority in respect of the costs of clean up and preventive measures, economic losses in the fisheries sector and property damage. The claims-handling office in France received 482 claims totalling EUR 109.7 million, with the majority related to costs incurred in clean up and preventing measures and economic losses in the tourism and fisheries sectors. The 1992 Fund also received a claim in respect of the costs incurred in clean up and preventive measures in Portugal, totalling EUR 4.3 million.

There were criminal proceedings in Spain, with the Spanish Supreme Court awarding a total of EUR 1,439.08 million (pollution damage EUR 884.98 million + pure environmental and moral



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damages EUR 554.10 million) to claimants. The judgment clarified that pure environmental and moral damages were not recoverable from the 1992 Fund, since these type of damages and other damages calculated on the basis of theoretical models are not admissible under the international Conventions.

In France there were civil proceedings and the French courts have awarded some EUR 1.18 million to claimants. Further actions are still pending.

The maximum amount of compensation for pollution damage claims arising from the *Prestige* incident under the 1992 CLC and the 1992 Fund Convention was EUR 171,520,703, which was clearly not sufficient to compensate

all the recognised losses in full (the losses as assessed by the experts engaged by the London P&I Club plus the amounts awarded by the Courts). In order to treat all claimants equally, the 1992 Fund was required to prorate payments in order to compensate all claimants for the same percentage of their damages and the claimants could only get a small proportion of their established losses.

The 1992 Fund has paid the amount available for compensation from the 1992 Fund for this incident (retaining EUR 804 800 for potential liabilities). The London P&I Club paid into the Spanish Court the amount of the CLC limit i.e. EUR 22.8 million.

This case showed that for major incidents, the amount available under the 1992 Conventions was not sufficient to compensate all claimants and hence this incident provided a major push towards the adoption of the Supplementary Fund Protocol in 2003, which provides an extra layer of compensation in Member States. ■

more info  
[www.iopcfunds.org](http://www.iopcfunds.org)

# Legislative changes

## At European and international levels

The incident involving the *Erika* oil tanker on 12th December 1999 and the resulting oil spill that hit the French coast led to major legislative changes, particularly in Europe and France. A timely reminder that oil spills are not something of the past. The sinking of the *Prestige*, in November 2002 off Galicia, accelerated and reinforced many of the measures defined in the wake of the *Erika* spill.

By **Anne Le Roux**, Emergency Response Coordinator at Cedre.

### The end of single-hull vessels

The age and condition of ships transporting products has ranked among the concerns of the European Union since the 1990s. The *Erika* spill brought this issue back to the forefront and speeded up the replacement of single-hull tankers with double-hull or equivalent design tankers (EC 417/2002).

The *Prestige* disaster showed that these measures could still be insufficient. The 2002 Regulation has been amended and now prohibits the transport of heavy grades of oil in single-hull tankers to and/or from ports in EU Member States. The notion of "heavy grades of oil" is clearly defined, in terms of density and viscosity (EC 1726/2003).

As of 21st October 2003, single-hull oil tankers carrying heavy grades of oil were no longer allowed to enter or leave Member States' ports. This marked a shift from a move to accelerate the replacement of single-hull vessels to an outright ban. At this stage, the problem of passing vessels not stopping in an EU port was not resolved. The European Union therefore turned to the International Maritime Organization to request changes to certain rules of Annex I of the MARPOL 73/78 Convention. This modification was adopted at the December



△ The *Prestige* with its damaged hull

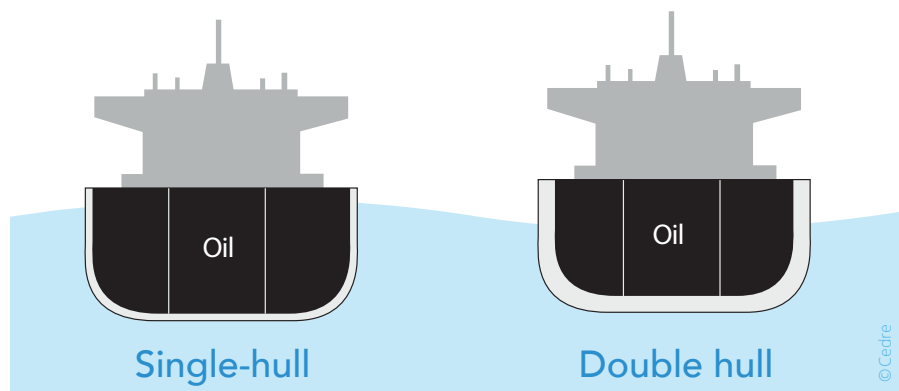
2003 meeting of IMO's Marine Environment Protection Committee (MEPC). Thus, as of April 2005, the transit of old single-hull oil tankers carrying heavy oil was prohibited near the coasts of EU Member States. It should also be possible for all coastal states worldwide to enact the same ban.

Ship control requirements were also tightened, through the extension (especially to smaller vessels) and early implementation of the special inspection arrangements for oil tankers to assess the sound structural state of single-hull oil tankers which are more than 15 years old.

### The missions of EMSA

The European Maritime Safety Agency (EMSA), created in the aftermath of the *Erika* disaster, was in the process of being set up when the *Prestige* sank, accelerating its installation and further extending its missions with the addition of:

- technical and scientific assistance in relation to spill response for Member States; where required, the chartering of



© Cedre

△ Diagram illustrating the difference between a single-hull and a double-hull oil tanker



© Douanes Françaises

This resolution refers to a Maritime Assistance Service (MAS) as the point of contact within the coastal State. The role of this service is defined by Resolution A.950(23). In France, this service is performed by the CROSS\*.

## Legislation in France

At the time of the *Prestige* disaster, France had already significantly modified its organisation in the wake of the *Erika* incident. The *Prestige* accident was the opportunity to test the new system in real conditions. The results were overall satisfactory, but required a few adaptations. In addition, the 2004 French law on the modernisation of civil security modified the presentation of contingency plans, including the POLMAR plan.

The French Prime Minister's instruction of 11th January 2006 lays down:

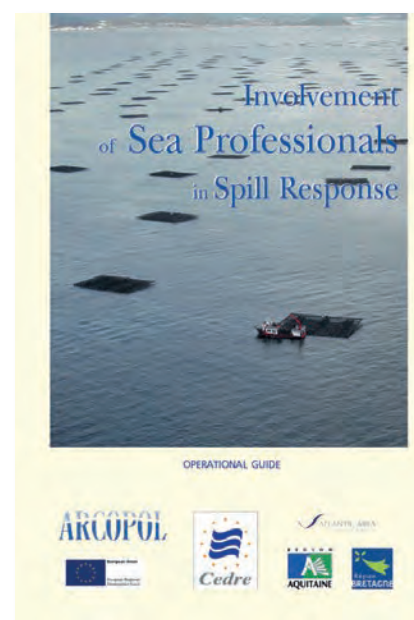
- vessels and equipment;
- maritime safety (including ship inspection);
- seafarer training;
- hosting and operation of the EU maritime information and exchange system SafeSeaNet (regulation EC 1644/2003).

## Establishing ports of refuge

Although the problem of choosing a place of refuge for a vessel in distress, sometimes severely damaged and leaking, predates the *Prestige* incident, it was particularly clearly illustrated in this case. On 5th December 2003, IMO adopted Resolution A.949(23), which sets out guidelines on places of refuge for ships in need of assistance. This document is relevant to ship masters and salvage companies as well as to coastal States. Its objective is to reduce the time taken to manage the vessel, notably via a procedure to assess the vessel's situation (and its probable evolution) by the master and/or the salvage company and an assessment of places of refuge by the coastal State. It also makes mention of the communication and exchange of information between these different parties.

- the official creation of a Drift Committee (see article on pages 10 and 11);
- the mobilisation of sea professionals for spill response operations at sea. While fishermen were only able to work at sea for 3 days during the *Erika* spill, they were far more heavily involved in operations to recover the fuel oil from the *Prestige*, resulting in higher quantities than those recovered by the specialised oil spill response vessels. The instruction initiates the establishment of a national agreement setting out the terms and conditions for the participation of fishing vessels in the national spill response system;

- the anticipation of public procurement contracts. With this procedure, requisitioning was no longer necessary during the first phase of onshore response, as the contract award process in the event of a spill was made quicker and easier. ■



^ Guide produced by Cedre intended for the authorities and sea professionals



\*CROSS

Centre Régional Opérationnel de Surveillance et de Sauvetage, equivalent to an MRCC (Maritime Rescue Coordination Centre)

# Impact of the *Prestige* on EMSA's mandate



In the middle of a winter storm, disaster struck. Twenty-six years old, single-hulled, and carrying 77,000 metric tonnes of heavy fuel oil, the *Prestige* was off Costa de la Muerte in Galicia on 13 November 2002, when she began to experience structural failure. After six days of leaking oil, she split in two and sank.

By **Maja Markovčić Kostelac**, Executive Director of EMSA.

It is impossible to overstate the impact caused by the *Prestige* incident. Her cargo covered coastlines in Spain, Portugal, and France with oil, and reached as far as the Channel and into the UK. The resulting environmental and economic damage was staggering. The oil from the *Prestige* soaked beaches for weeks, the bodies of tens of thousands of birds washed up on shore, and fishermen in Galicia feared for their livelihoods as the oil lingered, and a blanket ban was imposed on fishing.

In Brussels, the effects of the *Prestige* were felt immediately. A few months before, on 27 June 2002, the European Parliament and the Council of the European Union had adopted Regulation (EC) No 1406/2002 establishing a European Maritime Safety Agency (EMSA). The new legislative framework originated in another oil pollution disaster three years previously, the sinking of the tanker *Erika* with a cargo of 23,000 metric tons of heavy fuel oil on the 12 December 1999 in the Bay of Biscay.

By the time the *Prestige* foundered, EMSA was still not operational – its founding Regulation had included a 12-month deadline for the Agency to get up and running. However, the *Prestige* and its aftermath caused the first revision of EMSA's original mandate.

Post-*Erika*, and before the establishment of EMSA, there had been much debate about the role of a maritime safety agency in relation to oil spills. Some Member States felt that, given the circumstances of its birth, it was only logical that the new Agency should have some competence in these situations.

## “The entire incident raised many issues in terms of efficient response at sea”

But others disagreed. Member States have a general obligation to protect their citizens from natural and man-made disasters (including oil pollution), as well as specific obligations under international conventions like the Oil Pollution Preparedness Response and Cooperation Convention (OPRC 1990), just to name one. In addition, a number of regional cooperation agreements already existed, through which response operations were supported in the event of oil spills. So how, the counterargument went, could an EU Agency provide added value and not interfere with existing arrangements or responsibilities?

This view eventually prevailed, with the result that EMSA's original mandate did not contain any operational tasks related to oil spill response.

But the *Prestige* was a game-changer. Coming just three years after *Erika*, the entire incident raised many issues in terms of efficient response at sea, and made the need for action at European level even more evident. Regulation (EC) No 724/2004 of the European Parliament and of the Council of 31 March 2004 closed the gap.

The new Agency was charged with assisting Member States, within certain boundaries, and with a mandate to “support on request with additional means in a cost-efficient way the pollution response mechanisms of Member States, without prejudice to the responsibility of coastal States to have appropriate pollution response mechanisms in place and respecting existing cooperation between Member States in this field”.

The *Prestige* is therefore the origin of EMSA's pollution response services, initially in the form of the network of standby oil spill response vessels. Some years later, after the explosion of the Deepwater Horizon rig in the Gulf of Mexico, the pollution response services offered by the Agency were also extended to spills from offshore oil and gas installations, thus triggering the establishment of stockpiles of stand-alone equipment and dispersants.





▲ The MSC Flaminia in July 2012

In parallel, EMSA had also begun active cooperation with Member States through the Consultative Technical Group (CTG) on Marine Pollution Preparedness and Response. The MAR-ICE service, a 24/7 expert service based on a cooperation Agreement between EMSA, Cedre and CEFIC was set up, in response to the request of the CTG to develop technical support for Member States dealing with a chemical incident at sea.

Beyond pollution response services, the *Prestige* had also a more general consequence on the work of the Agency as its initial mandate was – and still is – to contribute to ensuring a high, uniform and effective level of maritime safety and prevention of pollution caused by ships. In this respect the *Prestige* highlighted the need to strengthen the procedures to deal with ships in need of assistance.

Following the *MSC Flaminia* incident in 2012, the debate on Places of Refuge regained momentum. In 2013, EMSA organised a tabletop exercise on the subject and subsequently spearheaded the formulation of Operational Guidelines on Places of Refuge which were adopted in 2015 under the auspices of the Cooperation Group on Places of Refuge led by the European Commission.

But the *Prestige* effect did not end there. In the aftermath of the incident, several spills were caused by ships discharging oil into already polluted waters to avoid the cost of using port reception facilities. The devastation caused by the *Prestige* effectively served as cover.

This behaviour, which was also seen during the *Erika* incident, led to the adoption of Directive 2005/35/EC of the European Parliament and of the Council of 7 September 2005 on ship-source pollution and on the introduction of penalties for infringements. The new Directive gave EMSA the mandate to organise satellite surveillance of European waters and is at the origin of the CleanSeaNet service by EMSA, which started operations in April 2007.

Nearly twenty years after oil first began to seep from the *Prestige* into the surrounding waters, EMSA continues to improve and enhance its toolbox of support to Member States. Remotely piloted aircraft systems (RPAS) are now standard in many of its response vessel fleet, allowing more information to be gathered on any possible spill.

EMSA has also continued to build capacity at Member States and third country level, including on environmental issues, through the EMSA Academy.

Turning ahead, although the European Maritime Transport Environmental report jointly published by EMSA and EEA last year shows a trend towards the diminution of such extensive spills, the threat of accidents is still there. Apart from satellite surveillance, which is the most activated service during emergencies, in the last five years EMSA response services have been mobilised seven times in response to incidents, i.e., the same figure as for the previous ten-year period. Most of these recent mobilisations were for bunker spills and one was related to the leaking of a historical wreck. At the same time, given the impetus for rapid decarbonisation in the sector, the alternative sources of power for ships currently being explored will present new challenges; not just how they are used safely on board ships, but what risks might be posed by their release into the marine environment.

The development of a decarbonised economy may also have an impact on the overall amount of oil being shipped around Europe but, as the war in Ukraine is showing, oil traffic patterns may also change, affecting the regional and European risk map. In parallel, the containerised traffic of hazardous and noxious substances continues to increase.

All these elements will have to be monitored and reflected in the continuous upgrade of EMSA pollution response services in order to better support Member States in the future, as well as ensuring that the European framework for maritime safety and protection of the marine environment remains at the forefront, in the interest of the EU and its citizens. ■

## TESTIMONIAL

Luis Miguel Macías, who was the Basque Government's Vice Minister for Fisheries at the time of the *Prestige*, commends the laudable attitude and the epic, milestone achievements of the Basque fishermen. They made a huge effort, "fishing the slick" as they traditionally do for tuna in the African waters of the Atlantic, and by establishing themselves as the only effective resource to tackle an oil spill that could have led to the scenes of desolation seen in Galicia being reproduced in the eastern Cantabrian Sea.



## Peru: crude oil spill at sea

▲ *Clean-up operations on the Peruvian coast, January 2022*

On 15th January 2022, a spill of 11,900 barrels (1,950 m<sup>3</sup>) of crude oil occurred at an offloading buoy at La Pampilla refinery north of Lima, Peru. Drifting northwards, the spill impacted 80 km of coastline across five districts and two natural protected areas, and affected several thousand families whose livelihoods depended on fishing and tourism. Within the framework of the international assistance requested by the Peruvian Government, Cedre was on site for two weeks.

By **Emmanuelle Poupon**,  
engineer in the Studies and Training  
Department, Cedre.

On 15th January 2022, the Italian-registered oil tanker *Mare Doricum* was loading at La Pampilla refinery, operated by Spanish company Repsol, located 30 km north of Lima, in Peru. The ship experienced an uncontrolled movement due to strong swell caused by the eruption of the underwater volcano Hunga Tonga off the Tonga Islands, resulting in the release of Buzios crude oil into the sea. The volume spilled was initially estimated at 6,000 barrels, a figure that was revised to 11,900 barrels (1,950 m<sup>3</sup>) a few days later.



▲ *Aerial view of the pollution*

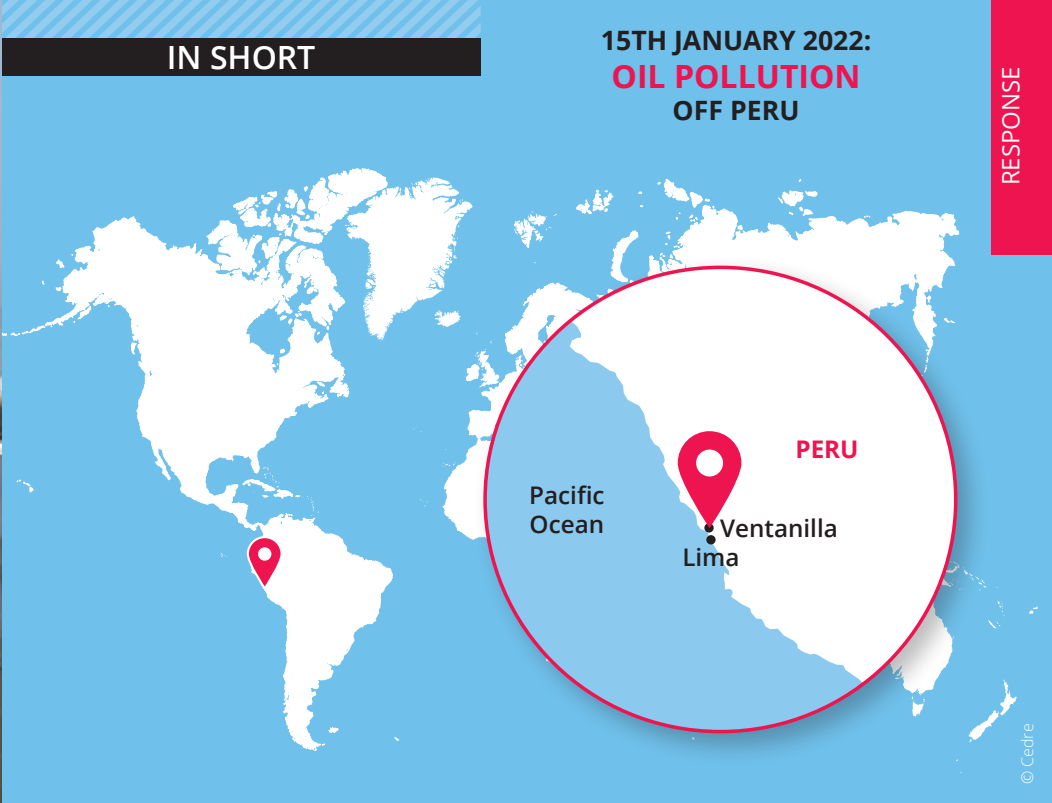
Drifting northwards driven by the wind and currents, the crude oil hit almost 80 km of coastline across five districts: Ventanilla (where the refinery was located), Santa-Rosa, Ancon, Aucallama and Chancay (furthest north). The National Reserve of the system of islands and islets and the Ancon protected area were also affected by the spill. Several families whose livelihoods depended on fishing and tourism were also affected, given the interruption to their professional activities.

Faced with the scale and consequences of the spill, the President of the Peruvian Council of Ministers requested support from the United Nations on 20th January. The next day, the Peruvian government declared a 90-day state of environmental emergency for the coastal areas affected by oil pollution.

Cedre provided its expertise as part of the United Nations' response. Following a request from the ERCC\* (European Union Emergency Response Coordination Centre) on behalf of the JEU\* (Joint Environmental Emergency Unit



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Approx. 1,950 m<sup>3</sup> of crude oil spilt  
Approx. 80 km of coastline oiled



© Cedre

▲ Laying containment booms

formed by UNEP - United Nations Environment Programme and OCHA\* - United Nations Office for the Coordination of Humanitarian Affairs), Cedre immediately proposed two experts in water pollution assessment and pollutant behaviour in the aquatic environment. Following discussions with the Peruvian authorities, their application was accepted on the evening of Monday 24th January. The two experts left Brest on 25th January at midday and arrived in Lima on 26th January where they joined a multidisciplinary team of 11 experts. In accordance with the terms of reference of the

mission, the team focused its efforts on three areas of work:

- technical assistance and advice to the national government on containment of the oil, clean-up of the affected area and environmental restoration;
- technical assistance and advice for the management and coordination of environmental, socio-economic and humanitarian emergency issues;
- technical assistance to the national authorities to reduce the risk of future oil spill disasters in the ocean, including methodological and regulatory recommendations. ■



\*ERCC

Emergency Response Coordination Centre

\*JEU

Joint Environmental Unit

\*OCHA

Office for the Coordination of Humanitarian Affairs

## ONE OCEAN SUMMIT



By **Christophe Logette**, Director of Cedre, **Camille Lacroix**, Aquatic Litter Monitoring and Studies Department Manager and **Stéphane Le Floch**, Research Department Manager, Cedre.

The One Ocean Summit was held in Brest from 9th to 11th February 2022, within the framework of the French presidency of the Council of the European Union. It brought together some forty countries and major players in the maritime world. It was brought to a close by French President Emmanuel Macron who emphasised the importance of taking action to preserve our oceans. The themes addressed were the protection of marine ecosystems, ocean governance, the fight against climate change and pollution response.

On 9th and 10th February 2022, Cedre took part in this major event. Cedre was notably involved

in the "Blue Hotspot", during which it presented the future challenges of spill response in relation to shipping incidents, drawing on the recent example of the fire onboard and subsequent sinking of the container ship *X-Press Pearl* in Sri Lanka. In addition, Cedre was present on site at the event alongside the *Campus mondial de la mer* and Brest's maritime stakeholders to present its spill response and plastic pollution mitigation activities. We also took part in a panel session on solutions to marine pollution, alongside IRD and Quiet-Oceans. This session was filmed and can be watched on YouTube. ■



^ Panel session on the theme "What solutions to marine pollution?"

## VISITS TO Cedre DURING THE ONE OCEAN SUMMIT

By **Christophe Logette**, Director of Cedre.

During the One Ocean Summit, Cedre received several delegations for a tour of its facilities. We had the honour and pleasure of welcoming Vice-Admiral Boidevezi, Maritime Prefect for the Mediterranean, and Mr Kitack Lim, Secretary General of the International Maritime Organization (IMO), who was accompanied by Ms Geneviève Jean-Van Rossum, French Ambassador to IMO. This opportunity was taken to present Cedre's various missions and on-site facilities. Equipment demonstrations and experimental tests were also organised. The French Navy's Centre of Practical Expertise in Pollution Response (CEPPOL) was invited to deploy a spill response boom in Cedre's deep-water test tank. ■



^ Visit from Mr Kitack Lim, Secretary-General of IMO and Ms Jean-Van Rossum, Ambassador of France to IMO

## FOST VISITS Cedre

By **Natalie Monvoisin**, Training and Studies Department Manager and **Mikaël Laurent**, engineer, Cedre.

In March 2022, Abdallah Boulhassi, Director of FOST (Fast Oil Spill Team) and his successor, Mr Gregory Hallin, came to Cedre to hold discussions with our team. The main objectives of this visit were to present our respective management teams, Cedre's activities and

past and future collaboration efforts between our two organisations.

This visit also offered the opportunity to thank Abdallah Bouhlassi for our 8 years of cooperation, during which we were able to cooperate in the

field in the event of spills, both in France and internationally, and to perform trials, equipment tests and analyses on the behaviour of new fuels. We were also keen to work together on contingency planning and training to offer joint actions in relation to response preparedness. We would like to thank Mr Bouhlassi for his trust in Cedre and for his great professionalism. We are confident that he will share his energy and enthusiasm with his friends and family and wish him every success in the many projects he is passionate about!

We would also like to extend a warm welcome to Mr Hallin who took the helm at FOST on 1st March, and is consequently also in charge of the TotalEnergies expertise centre, its response team and the oil spill response equipment stockpile based in Vitrolles. A new contact for Cedre and already new prospects for our teams! ■



^ From left to right: Mr Logette, Director of Cedre, Ms Monvoisin, Studies and Training Department Manager at Cedre, Mr Boulhassi, former Director of FOST, Mr Hallin, new Director of FOST, and Mr Laurent, engineer at Cedre

## THE MAR-ICE NETWORK

By **Anne Le Roux**, Emergency Response Coordinator at Cedre.

The MAR-ICE network provides a service offered by the European Maritime Safety Agency (EMSA) to Member States of the European Union and the European Free Trade Association (EFTA) as well as to candidate countries for accession to the EU. It provides technical advice in the event of pollution (or the risk of pollution) by chemicals (in bulk or packaged) at sea.

Two levels of assistance are available: level 1 offers remote assistance while level 2 offers on-site assistance by a chemical industry expert at the incident command centre of the affected country.

To provide this service, a Memorandum of Understanding was signed in 2008 between EMSA, the European Chemical Industry Council (Cefic) and Cedre.

Since 2008, Cedre has been the unique emergency contact point for this network. Level 1 assistance is provided from our premises, based on the MAR-CIS infosheets specifically produced by EMSA, but also on Cedre's expertise and the numerous databases to which it has access. Cedre can also draw upon the ICE network of chemical industry representatives, created and coordinated by Cefic. The members of the ICE network also provide level 2 support.

The advice includes information on the behaviour and hazards of chemicals, operations to be implemented, precautions to be taken and priority actions. The product's behaviour may be modelled.

The MAR-ICE network is generally activated once or twice a year for real incidents, and much more regularly for exercises (6 times in 2021, for

example), and also trains twice a year through tests conducted by Cedre for the chemical industry. Virtual information sessions on the service are also offered to Member States. ■



## Cedre INFORMATION DAY

By Nicolas Tamic, Deputy Director of Cedre.

Cedre's 26th Information Day, held on 29th March, addressed the theme of the consideration of environmental impacts. This virtual event was attended by 130 participants, including 25 listening in English. The programme covered a wide range of topics, from prevention to compensation, operational response, remediation and post-spill environmental monitoring.

To illustrate these topics, Cedre called upon key players working in these fields. The French Ministry of Ecological Transition and the Ministry of the Sea addressed topics including the industrial risk management policy, French,

European and international regulations, the polluter pays principle, the concept of ecological damage and its compensation. DREAL PACA illustrated these elements by presenting the concept of ICPEs (facilities classified for environmental protection), from the application phase up to their control. IPIECA then spoke about how the oil industry is integrating environmental protection into its contingency plans and the United Nations explained the role of a United Nations authority in relation to the assistance provided by the international community in the event of a spill. The measurement and monitoring of impacts were addressed by UBO and Cedre, and illustrated by



^ Theme of the Information Day

LPO. Finally, the IOPC Funds rounded off the day by addressing the international compensation process. ■

## VISIT FROM SGMER AND THE DIRECTOR OF WATER AND BIODIVERSITY

By Nicolas Tamic, Deputy Director of Cedre.

On 11th May, Cedre welcomed Denis Robin, Secretary-General for the Sea and Olivier Thibaut, Director of the Water and Biodiversity Directorate (DEB) at the Ministry of Ecological Transition and Territorial Cohesion (MTE). They were accompanied by Admiral Olivier Lebas, Maritime Prefect for the Atlantic. Cedre presented its organisation, missions and facilities. At a time when Cedre was actively consulting its partners via a strategy survey designed to guide its actions over the next five years, this visit was a timely opportunity to discuss the initial conclusions of this survey.



^ Group photo during the visit from the Secretary-General for the Sea and the DEB



^ Demonstration of a skimmer in Cedre's showroom

Prior to this visit, on 20th and 21st April, Clémence Corbeau, project officer at DEB, travelled to Brest for a two-day visit to find out more about Cedre and to study the multi-year agreement between the ministry and Cedre.

As MTE is one of Cedre's main funders, it was important to ensure that the main focuses of this agreement were consistent with the environmental issues which guide the association's action. The five areas covered

by the agreement were thus reviewed: Cooperation and response - Knowledge and expertise - Response preparedness - Information dissemination - Aquatic litter. This latter issue was presented on site on the Crozon peninsula in order to illustrate the field protocols for counting and characterising the litter that washes up on the shoreline. ■

## Creation of a training course on “Oil spill response in ports”

By **Maryline Porhel**, engineer in the Studies and Training Department, Cedre.

Both seaports and inland ports—whether commercial ports, fishing harbours, marinas, cruise or military ports—are at risk of spills that can affect their shore-based areas and infrastructures (quays and terminals) or their water basins, temporarily disrupting their operations. Aware of the importance of training and often motivated by environmental programmes, charters and accreditations, ports are keen to integrate spill response preparedness into their incident management system. Port staff and managers are thus showing heightened expectations in the field of spill response.

In order to meet to this need, Cedre has developed a specific 2-day training course for ports, consisting of a majority of practical exercises. This course is intended for the different operators in the sector mobilised in the event of

pollution (port staff, fire brigades and naval fire-fighters, local authorities and administrations, industry, Navy personnel, etc.) and aims to offer the keys to mitigating spills and implementing an effective response appropriate to the port environment.

Cedre therefore acquired the necessary response equipment and installed a port module, consisting of floating pontoons, a rainwater drainage network and a fuelling station, in one of its water basins.

The first edition of this course took place on Tuesday 21st and Wednesday 22nd June 2022 at Cedre in Brest. ■



^ Containing and recovering diesel at Cedre's port facility

## Creation of a practical training course for personnel mobilised on the shoreline in an oil spill emergency

By **Maryline Porhel**, engineer in the Studies and Training Department, Cedre.

Recent cases of pollution in inland waters, numerous port incidents, and the most recent spills near the coast of Corsica and the Mediterranean (*Ulysses/CSL Virginia*) have highlighted the need for technical training for personnel mobilised in an emergency following a spill affecting the coastline and the importance of mutual knowledge of the players involved and the organisation. This is evidenced by the increasing number of requests for training at our facilities received from fire brigades and civil protection units, who are anxious to provide their response teams with practical know-how.

In response to this need, Cedre has developed a new 2.5-day training course, mainly composed of practical exercises, to give personnel mobilised on the shoreline in an oil spill emergency the opportunity to gain hands-on experience.



^ Cleaning pebbles contaminated with heavy fuel oil (flushing technique)

During this course, key response players (civil protection, fire brigade and marine fire-fighters, marine pollution correspondents, local authorities, administrations, etc.) will learn about the first-line response measures to be implemented in the event of an oil spill affecting the coastline, both in terms of equipment and organisation, while fostering synergies between the different operators involved.

The first edition of this course will be run from Tuesday 8th to Thursday 10th November 2022 at Cedre in Brest.

The course will end with a practical exercise, based on a spill scenario, in which trainees will autonomously put into practice the knowledge acquired. ■

## Theory and practical training for offshore wind energy providers

By **Pierre Parenthoine**, engineer in the Studies and Training Department, Cedre.

A number of the subcontractors working on the development of the Banc de Guérande wind farm (PBG Saint-Nazaire), aware of the risks of oil spills during the wind farm construction phase, called upon Cedre to provide spill response training in English on its premises in early April 2022.

This training was compliant with the bunkering instruction issued by SGMer and followed on from auditing services provided by Cedre for some of these companies operating within the wind farm. It also aimed to provide participants with an opportunity to discuss the organisational and operational recommendations for spill response during the phases when power is temporarily supplied to the wind turbines by generators.

A one-day theory and practical training course was thus run for a dozen or so trainees. The course aimed to upgrade the skills of these

operators who were keen to be better prepared to deal with possible incidents.

The goal was to raise awareness of oil spill response among these key players.



▲ Laying booms and sorbents

Following theory lessons on the behaviour of the oil handled at the offshore wind farm and on spill response techniques, practical sessions were run at Cedre's technical facilities,

giving trainees the opportunity to get to grips with response equipment in real conditions. Through exercises simulating light oil spills, the ten trainees had the chance to familiarise themselves with the initial response measures and equipment to be used in the event of a spill.

This was a first for our team and it proved to be thoroughly successful according to the feedback from our trainees!

It is due to be followed up by further actions; our teams are already working on a standard training course for MRE and offshore wind energy players. ■

## Sea and shoreline response training in English

By **Loïc Harang**, engineer in the Studies and Training Department, Cedre.

Cedre's "Oil spill response at sea and on the shoreline" course is internationally recognised as a high-quality training programme. The course was designed for staff of administrations, local authorities, industry and shipping companies and is open to anyone seeking training in oil spill response.

By the end of the course, trainees have concrete knowledge of response strategies, techniques and equipment, and are capable of defining response tactics and operational procedures. With support from experts, some trainees can even participate in the drafting of oil spill contingency plans.

This course has attracted considerable attention internationally, so much so that it is now also run as a standard course in English. This is a first

for Cedre; while it has already been organised abroad, this is the first time that this course has been run in a foreign language at Cedre's premises.

From 11th to 15th April, six representatives of the UK Maritime and Coastguard Agency and one representative of the TotalEnergies group came to Cedre to take this course in English. Following theory lectures on oil and spill response preparedness, the trainees were able to handle different equipment such as booms and skimmers. They also carried out a clean-up operation using various techniques. The training courses run at Cedre's facilities provide a concrete approach as the exercises involve the release of real oil. ■

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ABOUT TRAINING  
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▲ Deploying an inflatable boom at Cedre's facilities





^ From left to right: Mr Doll, former Director of Cedre, Mr Logette, new Director of Cedre and Mr Cuillandre, President of Cedre

## NEW DIRECTOR



Stéphane Doll

After serving as Director since 2016, Stéphane Doll left Cedre this year. Mr Doll began his career in the French Navy. He held a number of positions related to spill response, in particular as captain of the tug *Rari* aboard which he played an active role in pollution response operations following the sinking of the *Erika*, then later as Deputy Director of CEPPOL.

In 2008, he was recruited by the Piriou group before going on to join Cedre in March 2016. Under his management, Cedre was involved in a number of spills that attracted considerable media attention, in particular the flooding in Seine-et-Marne in 2016, the collision between the *CSL Virginia* and the *Ulysse* off Corsica in 2018, the sinking of the *Grande America*, the fire at the Lubrizol plant in Rouen in 2019, the grounding of the *MV Wakashio* in Mauritius in 2020 and the sinking of the *X-Press Pearl* in Sri Lanka in 2021.

Cedre wishes him fair winds and following seas in his retirement. ■



Christophe Logette

By decision of Cedre's Board of Governors, Christophe Logette was appointed as Director of Cedre.

Mr Logette has a Master's degree in law, a postgraduate degree in business management and a Master's degree in defence and geostrategy. He spent the majority of his career with the French Navy, serving as a chief commissioner before joining Cedre. His postings have taken him to Brest, the Paris region, Djibouti, French Polynesia, the West Indies and the UK.

Throughout his career, he has built solid experience in relation to the French State's action at sea, a field in which he worked for many years, both in mainland and overseas France. He also served as Chief of the State Action at Sea Division in the French West Indies, then as Chief of the State Action at Sea Division for the Maritime Prefecture for the Atlantic, during the period marked by the headline-making sinking of the *Grande America* in the Bay of Biscay. He has been the Director of Cedre since 17th January 2022. ■

## NEW HORIZONS



Corinne Caroff

The end of 2021 was marked by the retirement of Corinne Caroff after nearly thirty years at Cedre. Corinne was in charge of technical and operational documentation, as well as technology intelligence. She was responsible for managing, updating and maintaining the documentation database which comprises over 10,000 documentary references. Corinne produced preliminary bibliographies prior to all the projects conducted by Cedre, a fundamental starting point for all studies. She also played a scientific mediation role by organising visits for groups of pupils and students to present Cedre's activities and facilities.

Corinne also played an important part in internal communications by providing input to Cedre's monthly internal newsletter, Canal 1010. Having joined Cedre in 1992, Corinne will leave all our staff with fond memories of an ever-cheerful colleague with a strong sense of service. ■



Claudine Guézennec

Claudine served as executive assistant to Cedre's Director since 1986. After 35 years devoted to the organisation's smooth running, providing organisational support to the Director, Claudine Guézennec left Cedre on 31st May 2021 for a well-earned, active retirement. In addition to her tasks as an assistant, including the management of incoming and outgoing mail, schedule management and administrative management of Cedre's activities, Claudine had the weighty responsibility of organising meetings of the Board of Governors and Annual General Meetings, pivotal events as they set out the association's organisation and funding.

During her 35 years with Cedre, Claudine worked alongside four successive Directors: Marthe Melguen, Michel Girin, Gilbert Le Lann and Stéphane Doll. She can now enjoy new horizons and spend more time with her loved ones. ■



Loïc Kerambrun

Loïc Kerambrun, Scientific Coordinator, took his retirement at the end of June 2021. With a doctorate in marine geography, Loïc held various positions of responsibility in different departments at Cedre, in which he was involved in impact studies, assessments of response techniques and equipment, training actions, drafting of contingency plans and operational guides as well as field missions, through which he becomes a recognised specialist in shoreline response. Through his involvement in European working groups in charge of assessing and characterising marine litter, Loïc was naturally chosen to lead the preparatory phase for the development of the Aquatic Litter Monitoring and Studies Department. This new department was created on 1st January 2021 in order to provide the European Union with the necessary data to establish Community regulations aimed at reducing plastic pollution in coastal areas.

We wish him a retirement as active as his years at Cedre! ■

**NEW PUBLICATIONS**



**“Shoreline clean-up” operational guide**  
*Not currently available in English (French only)*

The operational guide on oiled shoreline clean-up outlines Cedre's knowledge acquired through the different studies and experiments conducted since its creation, as well as during real spills in France and abroad. The guide is divided into 6 parts:

- generalities (“what you need to know”) about the environment (relevant environmental processes and factors and the resulting classification), the spill (the evolution, behaviour and impact of different oils on the shoreline) and the general framework of the response (its phases, organisation and the decision-making process);
- response itself (“what to do”), in which the different

response techniques are presented (protection and clean-up);

- selection criteria, installation limitations and procedures;
- clean-up site management;
- information sheets on the different techniques to be implemented during the different response phases, including prior protection measures and clean-up techniques;
- further information. ■

**“Waste Management” operational guide**  
*Not currently available in English (French only)*

Cedre has recently released a new version of its operational guide on oil spill waste management, replacing the 2004 version. This fully revised guide takes into account changes in standards, products and practices, and expands the scope to include chemical spills, inland waters and smaller incidents.

This operational guide is intended for response managers as well as operators. It aims to provide the information required for initial emergency decision-making and to

put forward best practices. It also highlights difficulties related to the different stages of waste management: collection on the water and on land, transfer, storage and treatment.

The waste management phase is often the longest and most costly operation after a major oil or chemical spill. Good choices made as early as possible, or even before an incident occurs, will help to control the situation. ■



**Sea and Shoreline Technical Newsletter n° 51**  
*Not currently available in English (French only)*

Our biannual “Sea & Shoreline” and “Inland Waters” Technical Newsletters, available in both French and English, are a gold mine of information. These publications offer a summary of our technology intelligence activity on past and recent accidental pollution in marine and inland waters. The latest newsletter to have been released is the Sea and

Shoreline Technical Newsletter n° 51. It reports on spill response strategies and recent developments in terms of response equipment and techniques. See all our Technical Newsletters on our website in Resources > Publications > Technical Newsletters. ■

**2021 Annual Report**  
*French only*

The latest annual report is available online and can be posted out upon request. It comprises textes, figures and images presenting each of Cedre's departments, namely Emergency Response, Research, Studies and Training, Analysis and Resources, Information, and Aquatic Litter Monitoring and Studies. This report provides an exhaustive review of our activities and results. ■



ALL OUR PUBLICATIONS CAN BE DOWNLOADED FOR FREE, BOTH IN FRENCH AND ENGLISH from our website

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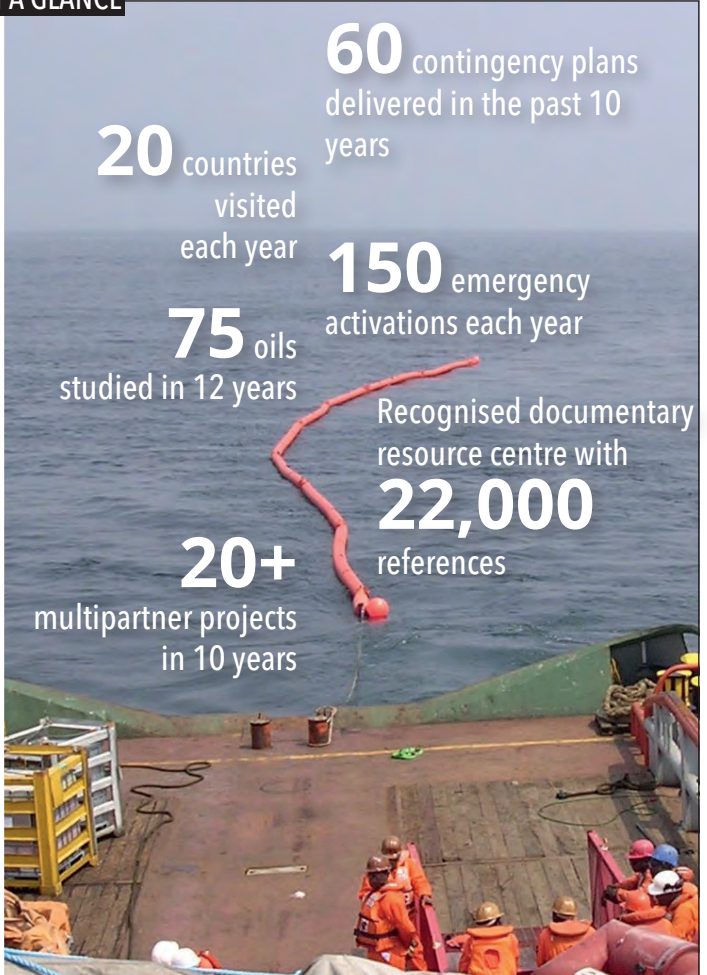


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