INTERNATIONAL COSPAS-SARSAT PROGRAMME

COSPAS SARSAT

Information Bulletin

ISSUE 21

FEBRUARY 2009

1 FEBRUARY 2009 : FAREWELL TO 121.5 MHz

ARE YOU READY? On 1 February 2009, the Cospas-Sarsat satellites ceased processing distress signals from 121.5 MHz beacons. In October 2000, Cospas-Sarsat announced plans to terminate satellite processing of 121.5 and 243 MHz distress signals. While excellent progress has been made in regulating this change around the world and the 406 MHz beacon population is rapidly increasing (see story below), several hundred thousand 121.5 MHz beacons may still be in operation. In Australia alone, the Australian Maritime Safety Authority (AMSA) estimates that as many as 35,000 121.5 MHz beacons could remain in operation. Worldwide, an estimated 400,000 beacons, were still in use at the end of 2007.

Image courtesy of the New Zealand SAR Secretariat

While the Cospas-Sarsat satellites no longer detect the 121.5 MHz distress signals, low-flying aircraft still receive the 121.5 MHz transmissions. It is important that pilots again institute the practice of monitoring the 121.5 MHz frequency for distress signals as thousands of 121.5 MHz beacons remain deployed after the satellite processing cut off date.

It is also important that old 121.5 MHz beacons be disposed of properly. The recommended practice is to remove the battery before disposing of the beacon, in accordance with the manufacturer's instructions.

The newer digital 406 MHz beacons offer many advantages over the older, analogue 121.5 MHz beacons. They transmit a much stronger signal and are more verifiable and traceable. 406 MHz distress signals can be accurately located within a matter of minutes. Each 406 MHz beacon has a unique identifier encoded within its signal. If the beacon has been registered, rescue centres can quickly confirm that the distress is real, who they are looking for and where they should look. This means a search can be launched even before a final distress location has been determined. Position accuracy in 406 MHz beacons yields a search area less than 5 km in radius, which decreases the amount of time SAR teams must search. This adds up to significant time savings, a major advantage over the older 121.5 MHz technology.

NOW IS THE TIME TO SWITCH TO 406!

Record Growth of the 406 MHz Beacon Population

At the end of each year, Cospas-Sarsat surveys 406 MHz beacon manufacturers and requests past year production data for the purpose of estimating the 406 MHz beacon population. This information is essential for effective management of the 406 MHz frequency band.

Significant growth of the 406 MHz beacon population was expected in 2007 in response to the announced termination of the processing of 121.5 and 243 MHz signals by the Cospas-Sarsat LEOSAR system. However, the magnitude of the rise in pro-

(story continued on p. 2)

INSIDE THIS ISSUE:

POINTS OF INTEREST

- In 2007, Cospas-Sarsat alert data assisted in 562 distress incidents in which 2,386 persons were rescued.
- Since September 1982, the Cospas-Sarsat System has provided assistance in rescuing almost 25,000 persons in about 6,800 SAR events.
- The 406 MHz beacon population was 600,000 at the end of 2007, up 21 % from 2006.

Beacon Population *(story continued from p. 1)*

duction exceeded the most optimistic expectations, with 128,000 beacons of all categories manufactured in 2007 representing an increase of 50% over the 2006 production figures. Taking into account the estimated number of older beacons replaced during the year, the population at the end of 2007 was estimated at over 600,000 beacons worldwide, 21% more than at the end of 2006 (see figure at right). These are unprecedented and remarkable figures. All categories of beacons enjoyed significant increases in production.

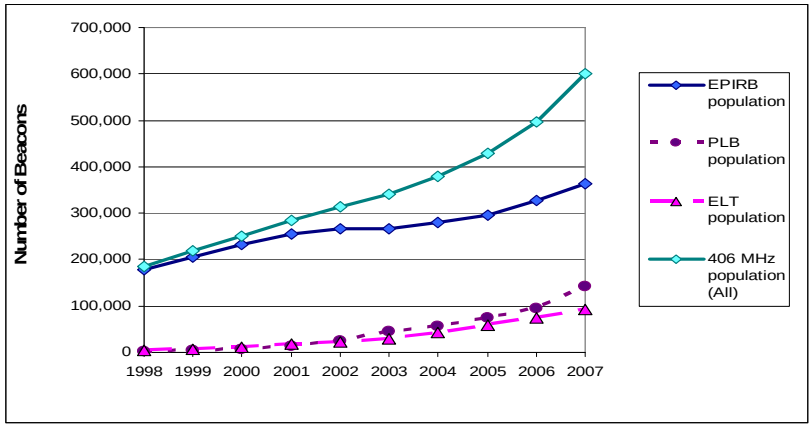
In 2007, a large majority of general aviation ELTs were still of the analogue 121.5 MHz type. Because of the announced phase-out of satellite processing at 121.5 MHz, a growth in the production of aircraft ELTs was expected. The 2007 production growth figure of plus 40%, is in line with this expectation. However, even if the rise in production was found to continue in 2008, it would probably be insufficient to provide for the replacement of all 121.5 MHz ELTs before February 2009.

Most striking was the jump in Personal Locator Beacon (PLB) production, an increase of 125% over 2006, with almost 50,000 beacons produced in 2007. Two factors may provide possible explanations: the use of PLBs in all environments, in the air, on water and on land, combined with decreasing prices, and the emergence of large government programmes for military applications.

The growth of maritime EPIRB production, a more modest 20%, could also be a result of the 121.5 MHz phase-out, as many pleasure craft in Australia and New Zealand had to be re-equipped by law with 406 MHz EPIRB types before February 2009. Nevertheless, in 2007 EPIRBs remained the largest production count with almost 60,000 new beacons reported by manufacturers.

Although data collection is yet to be completed, the signs are that the production of 406 MHz beacons of all categories continued to increase in 2008 and remain high in 2009. This is, no doubt, the consequence of the 1 February 2009 deadline for termination of 121.5/243 MHz processing by Cospas-Sarsat, and greater beacon affordability. The transition to 406 MHz is well advanced in many countries, but far from being complete in others. It will feed a demand for 406 MHz beacons for the years to come. However, the growth also occurred in non regulated markets, e.g. pleasure craft, and in new governmental applications which will ultimately lead to an expansion of the 406 MHz beacon market beyond the limits of the direct replacement of 121.5/243 MHz beacons. This evolution clearly reflects the fact that the 406 MHz system enjoys a high level of confidence among users and SAR authorities and the support of many Administrations who have issued regulations to mandate the carriage of 406 MHz beacons onboard aircraft and boats.

Estimated 406 MHz Beacon Population at the end of 2007



New Beacon Test Facility

In October 2008, the Cospas-Sarsat Council confirmed the acceptance of ***Eurofins PS GmbH***, located in Reichenwalde, near Berlin, Germany, for the purpose of testing 406 MHz beacons for Cospas-Sarsat type approval. This acceptance allows Eurofins PS to perform the full range of type approval testing in accordance with the Cospas-Sarsat Standard and prepare reports for consideration by the Cospas-Sarsat Secretariat. Contact details of all test facilities accepted by Cospas-Sarsat for type approval testing

Peter Howe: The Loss of a Friend

On Friday 7 November 2008 Peter Howe passed away peacefully at home surrounded by his family. Peter will always be remembered by his family and Cospas-Sarsat friends for his easy smile, his great sense of humour, his kindness and quiet strength in the face of adversity.

From 2002 to 2004, Peter was Canada's Representative to the International Cospas-Sarsat Programme, and Chair of the Council in 2003. During his tenure he made immeasurable contributions to the Programme, including playing a leading role establishing the Programme and the Secretariat as a new international organisation in Canada. With Peter's help, the arrangements made with both the federal government of Canada and provincial government of Quebec allowed the Secretariat of the Programme to move to Montreal in August 2005. He will be sadly missed.

Cospas-Sarsat News

CSC-41 Meeting Biarritz, France
October 2008

South Central DDR Meeting
Maspalomas, Spain, April 2008

CSC-41 Meeting Biarritz, France
October 2008

Central DDR Meeting
Tromsoe, Norway, March 2008

South West Pacific DDR Meeting
Fremantle, Australia, September 2008

2009 Events Diary

Western DDR
(Miami, USA)
14 – 16 January

UN / USA
Training Workshop
(Miami, USA)
19 – 23 January

EWG-1 – Performance Indicators for the Strategic Plan
(Savannah, USA)
9 – 13 February

Central DDR
(Bari, Italy)
3 – 5 March

EWG-2 – MEOSAR
(Montreal, Canada)
9 – 13 March

South Central DDR
(Maspalomas, Spain)
31 March – 2 April

Closed Council 42
(Montreal, Canada)
22 – 24 April

NOAA
Beacon Manufacturers Workshop
(St. Petersburg, USA)
8 May

Joint Committee 23
(Cape Town, South Africa)
16 – 23 June

Closed Council 43
(Montreal, Canada)
22 – 23 October

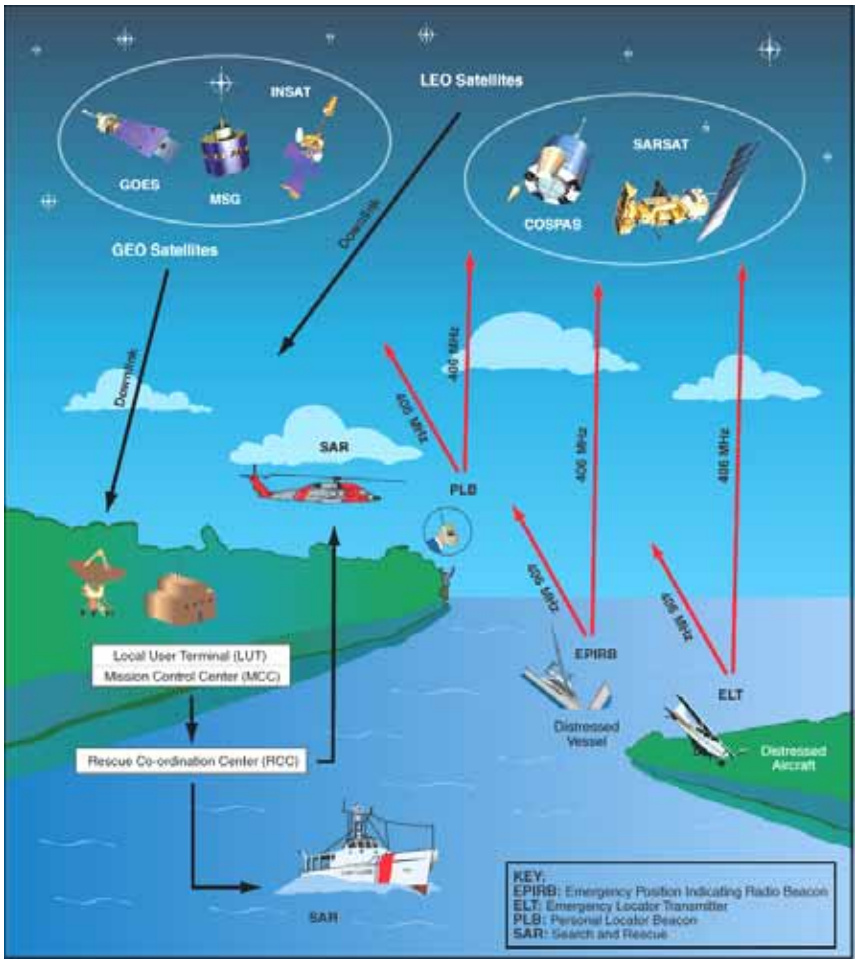
Open Council 43
(Montreal, Canada)
26 – 29 October

How Does the Cospas-Sarsat System Work?

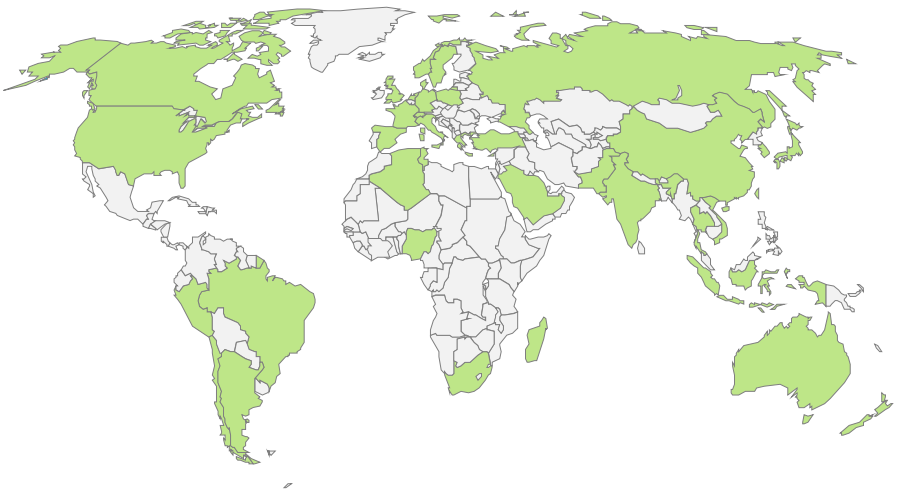
The Cospas-Sarsat System provides distress alert and location information to search and rescue (SAR) services throughout the world for maritime, aviation and land users in distress. The System is comprised of:

- satellites in low-altitude Earth orbit (LEOSAR) and geostationary orbit (GEOSAR) that process and / or relay signals transmitted by distress beacons;
- ground receiving stations called local user terminals (LUTs) which process the satellite signals to locate the beacon; and
- mission control centres (MCCs) that provide the distress alert information to SAR authorities.

The Cospas-Sarsat System detects distress beacons that operate at 406 MHz. Satellite processing of old analogue technology beacons that transmit at 121.5 MHz ended on 1 February 2009.



2008 PARTICIPATING COUNTRIES AND ORGANISATIONS



Algeria	Netherlands
Argentina	New Zealand
Australia	Nigeria
Brazil	Norway
Canada	Pakistan
Chile	Peru
China (P.R.)	Poland
Cyprus	Russia
Denmark	Saudi Arabia
France	Singapore
Germany	South Africa
Greece	Spain
Hong Kong	Sweden
India	Switzerland
Indonesia	Thailand
Italy	Tunisia
ITDC	Turkey
Japan	UK
Korea (R. of)	USA
Madagascar	Vietnam

Cospas-Sarsat distress alert and location data are provided to national SAR authorities worldwide, with no discrimination, independent of the participation of countries in the management of the Programme.

Cospas-Sarsat Long-Term Planning

As the famous New York Yankees baseball player Yogi Berra once said, "If you don't know where you are going, you are certain to end up somewhere else." And with that profound thought in mind, Cospas-Sarsat began the process of creating a strategic plan to guide the next era of development of the Programme.

The Cospas-Sarsat Strategic Plan

The strategic planning effort began with looking at where Cospas-Sarsat is now, where Participants want to be in twenty years, and mapping a plan to maintain and consistently improve System capabilities and operations. Five strategic goals were identified, namely that Cospas-Sarsat should strive to achieve:

- Continuous and effective System operation,
- A comprehensive management structure to support System evolution and ensure Programme continuity,
- Worldwide support for the Programme,
- Participants, users and customers that use and operate the System to its full potential, and
- A robust industrial base to support System operations.

Each of these goals is supported by a short and long-term action plan, available in document C/S P.016 "Cospas-Sarsat Strategic Plan".

By approving the Strategic Plan, the Council has inherently made a long-term commitment to maintaining a robust space and ground segment, essential to the timely and accurate location of distress alerts worldwide.

The Future: MEOSAR

The performance of the System will be further enhanced with the planned integration of the Medium-altitude Earth-Orbiting Search and Rescue (MEOSAR) satellite system. According to current plans, initial operational capability could be achieved in the 2013 to 2015 time-frame. Full operational capability of the MEOSAR system will require installation of a number of ground receiving and processing stations (MEOLUTs) around the world to ensure global MEOSAR coverage. A tentative schedule of the deployment of the satellite constellations which will constitute the MEOSAR space segment, i.e. the USA DASS system onboard GPS satellites, the Russian SAR/Glonass system and the EU SAR/Galileo system, can be found in document C/S R.012 "Cospas-Sarsat 406 MHz MEOSAR Implementation Plan".

While MEOSAR is envisaged to provide improved alert detection and processing capabilities, the Strategic Plan calls for the continued provision of LEOSAR and GEOSAR space and ground segment capabilities well into the MEOSAR era.

The Strategic Plan also invites Participants to consider new or revised specifications and type approval standards for beacons operating with the MEOSAR system to provide new capabilities and/or allow lower beacon costs.

As a Persian proverb says, thinking well is wise; planning well, wiser; but doing well is the wisest and best of all. In developing and approving the Strategic Plan, the International Cospas-Sarsat Programme is well on the way to ensuring its robust future.

Cospas-Sarsat System Status

As at February 2009, the Cospas-Sarsat System comprised:

- **5 LEOSAR satellites in low-altitude polar orbits (from 700 to 1,000 km);**
- **5 GEOSAR satellites;**
- **45 LUTs receiving signals transmitted by LEOSAR satellites;**
- **19 LUTs receiving signals transmitted by GEOSAR satellites;**
- **29 Mission Control Centres for distributing distress alerts to SAR services; and**
- **More than 600,000 406 MHz beacons.**

Rescue Coordination Centre Handbook (C/S G .007) Now Available Online!

This new Cospas-Sarsat publication, developed in cooperation with Australia (RCC Australia pictured right), has been hailed by the IMO/ICAO Joint Working Group on Search and Rescue as "a valuable addition to the list of documents required to be held by Rescue Coordination Centres." Get your copy now! Document C/S G.007 is available free online at www.cospas-sarsat.org.

1 Canadian Arctic Fishing Vessel (48° 33' N 052° 24' W)

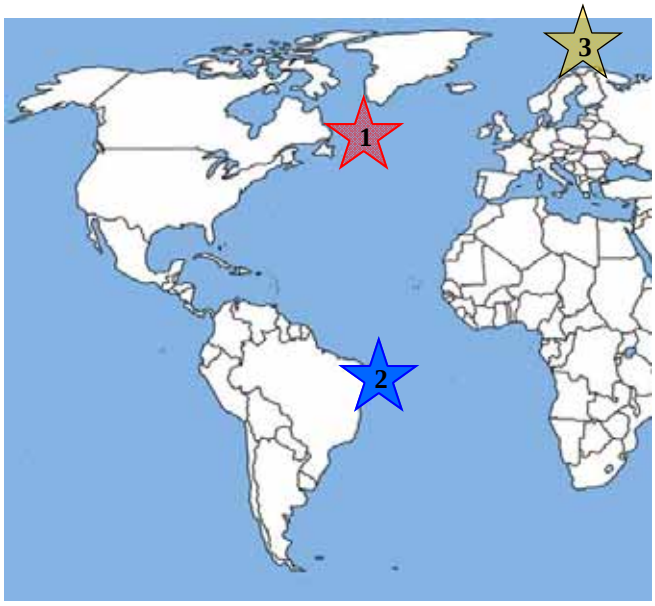
At approximately 11:42 Newfoundland time on 14 April 2008, JRCC Halifax was made aware of the detection of an unregistered Canadian 406 MHz EPIRB. One position was off the east coast of Newfoundland, with a mirror position in James Bay area. Since the James Bay area was frozen, search efforts were concentrated off Newfoundland, where there was an active fishing fleet.

A Canadian Coast Guard ship and a Canadian Forces Cormorant helicopter were tasked to proceed to the area to investigate. Fishing vessels in the area were contacted to assist. One hour later, a commercial aircraft flying high overhead reported hearing a weak 121.5 MHz signal. At 13:00, CMCC provided a resolved position approximately 20 nm east of the original position. Resources were re-tasked to the new position.

Upon arrival on scene, the fishing vessel ***Lacey May*** was found, one nautical mile away from the resolved position. The vessel was engulfed in flames, and her crew of five sailors were standing on a nearby ice flow, EPIRB in hand.

A fire had started in the engine room and the Captain ordered evacuation before any voice radio distress could be sent. The Cormorant hoisted the uninjured sailors off the ice flow and proceeded to Gander, 90 nautical miles away, approximately six hours after they activated their EPIRB.

Capt. Marco Plasse, RCC controller at Halifax JRCC said, "Thank you to Cospas-Sarsat. Had the EPIRB been registered, we would have known the name of the vessel and confirmed that it was indeed located off the coast of Newfoundland. Also, maybe the company or nearby vessels would have known the vessel's whereabouts. A few minutes can make a big difference when you are in frigid water."



2 Brazilian Rowing Boat (02° 42' N 027° 15' W)

On 14 April 2008 Jose Toledo Piza, 50-year old Brazilian sailor, began a solo voyage in a 7 meter rowing boat, intending to travel from Dakar, Senegal to Natal, Brazil across the Atlantic Ocean. However, on 16 May, weather conditions caused his boat ***Oceanite*** to capsize, which resulted in Mr Toledo Piza breaking his left arm and several ribs. At 11:15 UTC he used a satellite phone to contact the MRCC Brazil via his support team in France. At the ARCC Atlantic, the operators kept in touch with the sailor, calling him every 15 minutes to support and give him strength and focus. Meantime, a C-130 Hercules, a Navy patrol boat and two other merchant vessels were paged.

It wasn't until he was instructed to find and manually activate his 406 MHz EPIRB that his location could be determined. The first signal was immediately captured by GEOLUT Recife at 14:03 UTC from an EPIRB with French country code. At 15:26 UTC the signal was acquired by LEOLUT Recife, and a second satellite pass confirmed his position as 2º 42' 30" N / 027º15'14"W, some 40 nm beyond Brazilian SRR in the SPMCC service area, around 710 nm away from Brazilian coast.

On the same day at 23:30 UTC, the merchant vessel ***Kyla***, who had been tasked to the SAR operation, rescued the sailor and carried him to São Pedro e São Paulo Archipelago, where he received medical assistance. Finally, a Navy patrol vessel brought Mr Toledo Piza and his boat back to Brazil, arriving at Natal on 21 May at 12:30 UTC, where he met and expressed his gratitude to the RCC personnel involved in

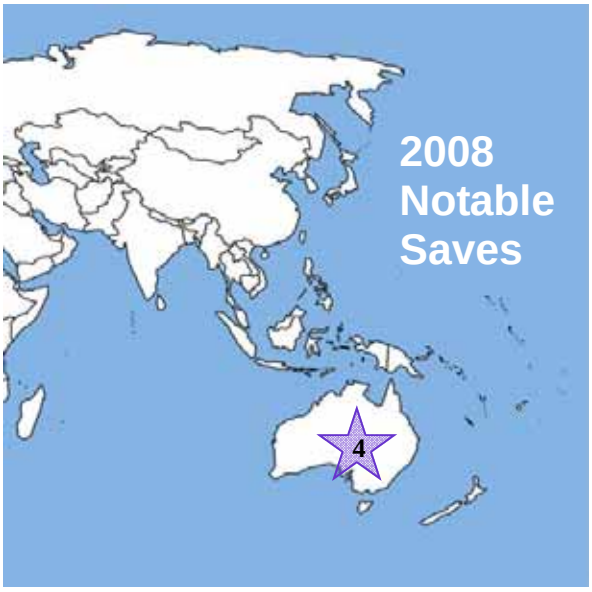
3 Brothers Survive Fall Through Ice (79° 35' N 14° 00' E)


Photo credit Linda Bakken

Brothers Sølve and Bård Pettersen, aged 18 and 21 had been spending the winter hunting in the most northerly reaches of Norway's Arctic archipelago of Svalbard. On 27 March they set off on a ski trip, following the coast when their ordeal began. Their dogs, fastened to the brothers' belts, caught the scent of a polar bear and went after it, dragging the brothers out on to the ice, according to Petter Braaten of the Svalbard sheriff's office.

The ice farther out in the fjord was too thin to support the weight of the boys and the dogs. It cracked, and all the dogs and the two brothers landed in the icy seawater.

"Sølve and Bård got themselves up on the ice again," Braaten said, "but Bård jumped back in the water to retrieve his backpack, which held an emergency transmitter." Unfortunately, they couldn't reach the dogs, and all five drowned in the Arctic waters.



The brothers activated their PLB, which provided the first and only distress alert for this incident. The brothers made it back to the hut, which was still warm. Both suffered serious frostbite, however, with the outdoor temperature at minus 20°C. Rescue crews arrived about 90 minutes after their PLB was activated and the boys were taken first to hospital in Longyearbyen and then to Bodø on the mainland for treatment. "That they survived the drama at all is due to the excellent operation of the Cospas-Sarsat System," said Tore Wangsfjord of the Norwegian JRCC at Bodø.

4 Australian Aircraft Mayday Call Located (20° 28' S 139° 26' E)

At 09:17 on 17 July 2008, a Piper Navajo (PA31) declared a mayday while on a flight to Mount Isa, a mining town in central Queensland, Australia. RCC Australia responded by diverting aircraft of opportunity to the scene but the position given was inaccurate and a search ensued. The pilot was badly injured in the crash landing and was unconscious for about 30 minutes, however, on regaining consciousness, was able to return a call left on his mobile phone by the RCC. Unsure of his position and in considerable pain from a broken leg and back injuries, the pilot was unable to reach his 406 MHz PLB or first aid kit. He had been dislodged from the pilot's seat and partially wedged in the seat one row back. He also reported he could hear fuel leaking and that the aircraft master switch was still on.

With tension high and the crashed aircraft covered in fine red dust which made it difficult to see, search aircraft were unable to locate the crash site. After encouragement from the RCC, the injured pilot was finally able to reach and activate his 406 MHz PLB. A light helicopter heard the signal and, with deft use of aural homing and terrain shielding, commenced a search in the vicinity. The injured pilot heard the helicopter nearby but said it was heading away, whereupon the RCC guided it back to the scene. Simultaneously, a Cospas-Sarsat satellite detected the 406 MHz PLB (non GPS type) at the crash position and the aircraft was subsequently located.

A paramedic was rushed to the scene and the injured pilot was taken by ground ambulance to Mount Isa Hospital where he was treated.

Cospas-Sarsat Operations: What's New?

Panama-Coded Beacons Now in the IBRD

Ship at Miraflores Locks enters the Panama Canal

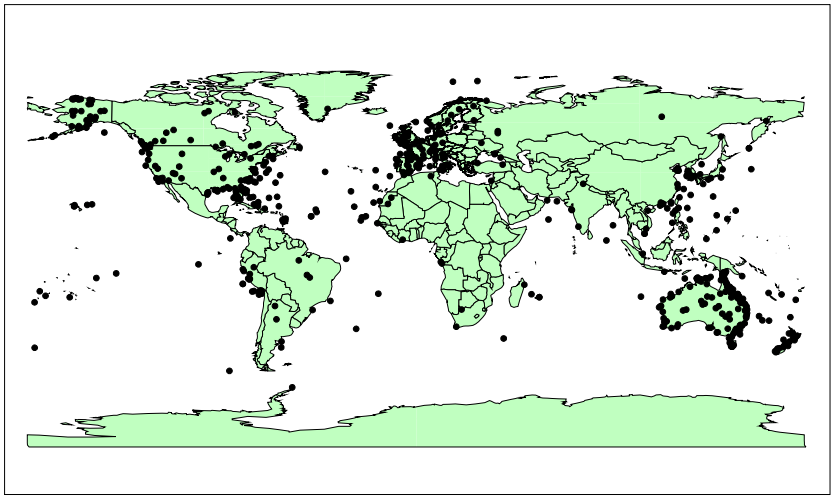
Cospas-Sarsat Participating countries usually operate their own 406 MHz beacon register, but this is not always the case for all countries. Panama has one of the largest ship registries in the world, using ten ITU country codes. It is of the utmost importance to SAR authorities to have access to registration data for Panama-coded beacons.

Thus, in December 2007 the Cospas-Sarsat Council invited the Secretariat to meet with the Panama Civil Aviation Authority and the Panama Maritime Authority to introduce the possibility of using the International Beacon Registration Database (IBRD) established by Cospas-Sarsat in 2006. It was with enthusiasm that the Panamanian aeronautical and maritime authorities agreed to allow Panama-coded beacons to be registered by beacon owners directly in the IBRD.

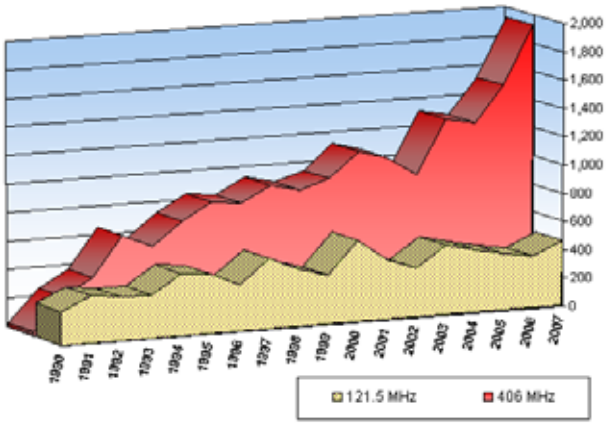
As at January 2009, there were over 850 Panama-coded beacons registered in the IBRD, as well as beacons from 73 other Administrations, for a total of over 10,000 beacon registration records available to SAR authorities.

System Use Statistics

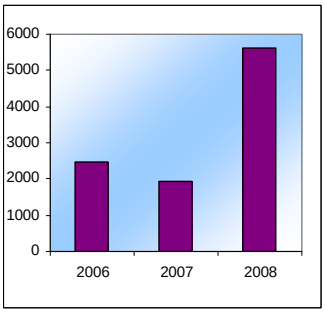
The figures below show the distribution of 2007 SAR events assisted by Cospas-Sarsat data and the evolution of use of the System since 1990. Since the beginning of its operation in September 1982 through the end of 2007, Cospas-Sarsat provided alerts that assisted in the rescue of almost 25,000 persons in about 6,800 SAR events.



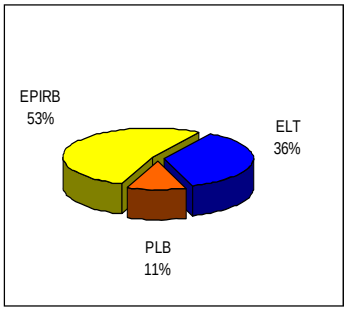
Geographic Distribution of SAR Events for which Cospas-Sarsat Data was Used in 2007



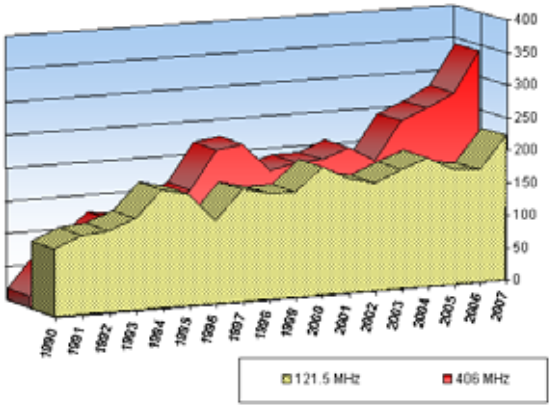
Persons Rescued with the Assistance of Cospas-Sarsat



Number of New Beacon Registrations in IBRD (per year)



IBRD Registrations: Beacon Types



SAR Events Assisted by Cospas-Sarsat

Monitoring the Performance of ELTs: 2003 - 2008

By Maj M.G. Newbold

With transition to the 406 MHz fast approaching, Canadian Aviation and SAR authorities have been working to prepare new regulations. To better understand the performance of ELTs, the National Search and Rescue Secretariat and Defence Research Canada with he support of CAE Canada have undertaken a study of the issue.

Preliminary results are providing good insight. 121.5 MHz ELTs (including both TSO C91 and C91a compliant ELT installations) performed as expected in 74% of aircraft incidents analysed during the study. The ELT false alert rate remained between 88 and 94%, as expected, with great success demonstrated in resolving 406 MHz events without having to commit valuable flying resources.

Data continues to be gathered on the performance of the growing population of 406 MHz ELTs in Canada. The measured effectiveness of 121.5 MHz ELTs was in line with the 1990 NASA study which projected that second generation 121.5 MHz ELTs would have a success rate of 73%, and 406 MHz ELTs would have a success rate of 83%. There is no reason to believe that 406 MHz ELTs will not achieve this improved rate. These results could be even more positive if education and awareness campaigns are used to resolve human factors issues, which currently account for more than 11% of ELT failures. A better understanding is anticipated in the near future as the Transportation Safety Board has undertaken an in-depth study of ELT performance.

Maj M.G. Newbold is a Senior Analyst at the Canadian Search and Rescue Secretariat in Ottawa

MSG-1 Back in Service

The MSG-1 satellite, operated by Eumetsat, the European meteorological satellite organisation, was launched in August 2002 and provided the GEOSAR mission coverage at 0° longitude until 2006, when it was replaced by the MSG-2 satellite. The GEOSAR mission on MSG-1, now at 9.5° E, was reactivated on 11 August 2008, bringing the total number of GEOSAR satellites in operation to five.

Continuous Ground Segment Monitoring under the New Cospas-Sarsat QMS

Cospas-Sarsat undertook an exciting step forward with the approval of the Quality Management System (QMS) and the associated monitoring scheme in October 2008. The independent System monitoring and assessment process, a vital part of the QMS, will provide daily information on the accuracy and availability of data from all LEOLUTs.

The data collection and performance assessment will be conducted daily and separately for each satellite and LUT combination, with initial implementation and results expected in April 2009. Assessment results will be posted on the Cospas-Sarsat website. Changes of status for any satellite / LUT combination will be preceded by warnings sent to the ground segment provider. Further details of the monitoring scheme can be found in document C/S A.003, available on the Cospas-Sarsat website. The Quality Manual, new document C/S P.015, is also available at www.cospas-sarsat.org.

Beacon Owner Guidelines for the Operation of 406 MHz Beacons

In order to ensure proper operation in the event of a distress, beacon owners should be aware of some responsibilities they hold. On purchasing a beacon, beacon owners should:

- ensure that their beacon satisfies their specific needs;
- register their beacon with the appropriate national authority or in the International 406 MHz Beacon Registration Database (www.406registration.com);
- become aware of any required maintenance procedures for their beacon;
- learn how to use the beacon in an emergency; and
- understand the self-test features of their beacon.

Self-Test Capability

406 MHz beacons are designed with a self-test capability for evaluating key performance characteristics. Initiating the beacon self-test function will not generate a distress alert in the Cospas-Sarsat System. However, it will use some of the beacon's limited battery power and should only be used in accordance with the beacon manufacturer's guidance. In case of any doubt regarding the beacon's self-test mode, the manufacturer should be contacted before a self-test is attempted. Contact details for manufacturers of type approved 406 MHz beacons can be found on the Cospas-Sarsat website under the "Beacons" tab.

Inadvertent Alerts

If a beacon is inadvertently activated, the beacon should be immediately turned off. The supporting Cospas-Sarsat Mission Control Center should then be notified of the inadvertent activation in order to prevent unnecessary assignment of search and rescue resources. There is no penalty for inadvertent activation of a beacon if there is no malicious intent. MCC contact information is available in document C/S A.001 (Data Distribution Plan) Annex II / C, online at www.cospas-sarsat.org.

A Note from ICAO

The ICAO Secretariat has been very pleased that the strength of our association with the Cospas-Sarsat Secretariat has grown in intensity and accord over the past few years. This has been a positive aspect of the relocation of the Cospas-Sarsat offices from London, U.K., to Montreal, Canada. For ICAO and, indirectly, its Contracting States, to have ready access to Cospas-Sarsat expertise is a benefit that is well appreciated.

The various technical improvements that have characterised the evolution of the Cospas-Sarsat system have greatly reinforced the effectiveness of SAR as a safety net of last resort and, as a result, saved many lives at risk. At the same time, with the readier availability and increased affordability of alerting devices, the global lifesaving system is being seriously challenged by heightening expectations from ever greater numbers of the travelling and adventure-seeking public.

Global distress alert facilities are now available to anyone who buys a piece of signalling equipment at the local electronics store. In principle, no observer of this change in the scope of the SAR system could respond in any way but positively. Why shouldn't lay people benefit from the sophisticated tools of the professionals?

The realities of the SAR system require close evaluation in light of this unprecedented demand for services. The SAR service is not just technical but intensely human. Activating an emergency beacon not only energises a transmitter; it energises RCC staff, coordinators, air and sea crews and specialist rescue personnel. Indirectly, it impacts on administrators, government agencies and, not least, tax payers.

SAR actions require the application of knowledge by RCC personnel, dedication by crews, skills and bravery by rescue people and sometimes massive expenditure by governments. Prioritising demands upon the SAR service is essential as SAR resources are in short supply. With the advent of inexpensive personal locator beacons, there is prospect of exponential demand escalating beyond the capacity of providers.

Should a line be drawn on response? Should some system users be denied if they expose themselves to high risk? What minimum equipment and travelling precautions should users be required to provide? Should they be charged for SAR actions made necessary by wilful violation of regulations? Should SAR providers differentiate between distress calls from regulated transport carriers and weekend adventurers? These are some of the hard questions that confront SAR service providers and, at a higher level of system, regulators.

ICAO, in cooperation with IMO, Cospas-Sarsat, and many other agencies is consulting widely as we seek to develop performance-related provisions for carriage of beacons and, particularly, the highly affordable, commercially produced signalling units now available to the public. Many Contracting States are concerned about how best, if at all, “street smart” signalling units and their users can be integrated into sophisticated, high risk and expensive SAR systems. As always, it seems, the more profound SAR questions resolve to the human level!

Brian Day served as ICAO SAR Technical Officer for eight years and is now regularly retained by ICAO and other private and public SAR organisations as a specialist consultant.

A Note from IMO

The fifteenth meeting of the International Civil Aviation Organization / International Maritime Organization (ICAO/IMO) Joint Working Group (JWG) on the Harmonization of Aeronautical and Maritime Search and Rescue was held in Canberra, Australia, from 29 September to 3 October 2008.

Of particular concern to the JWG was the issue of non-responsive Rescue Coordination Centres (RCCs). Some RCCs and SAR Points of Contact (SPOCs) have a history of not responding to alerts in their SAR region. Cospas-Sarsat has no mandate to respond to SAR alerts and there is presently no option but to rely on the responsible SPOC to distribute alert messages appropriately. There is currently no procedure in place that allows a Cospas-Sarsat MCC, upon receiving no response from the responsible SPOC, to contact an alternative.

As a result of these discussions, the JWG recommended that IMO advise Cospas-Sarsat to make available reports on communication tests between SPOCs and MCCs. The JWG also recommended that IMO advise Cospas-Sarsat that, in the case of maritime emergencies, any MCC not able to deliver an alert to the responsible SPOC should consider forwarding the alert to an RCC in its own country. In the case of aeronautical emergencies, the JWG recommended that ICAO advise Cospas-Sarsat that the MCC should consider forwarding the alert to the control tower of an international airport in the country concerned.

These recommendations are presently under consideration within IMO and ICAO.

Hans van der Graaf is a Technical Officer in the Maritime Safety Division of IMO.

A Few Words from the 2008 Council Chair

Cospas-Sarsat is often presented as one of the best space projects with a humanitarian purpose, contributing to safety of life through exemplary international cooperation. Twenty-six years after the launch of the first satellite and the first saves, the original mission, i.e. to "provide accurate, timely and reliable distress alert and location data to help search and rescue authorities assist persons in distress", continues to be upheld.

The beginning of the year is traditionally the time for a review of progress accomplished: the Cospas-Sarsat community now includes 40 countries or organisations and the System has assisted in rescuing over 25,000 people.

Cospas-Sarsat, beyond remarkable technical achievements in space and on the ground by engineers and scientists, is primarily a human endeavour, continuously evolving to produce new developments and contributing to the rescue of more than 6 persons per day on average.

In October 2008, France hosted the 41st Session of the Cospas-Sarsat Council in Biarritz, known as "the queen of beaches and the beach of kings", and took this opportunity to mark the international achievements of the Programme. 150 delegates to the Council were invited to celebrate the 20th anniversary of the signing of the International Cospas-Sarsat Programme Agreement in Paris on 1st July 1988. The venue of the celebration was the prestigious "Hotel du Palais", the magnificent summer residence that Emperor Napoleon III built for his wife Eugenie. 2008 will also be remembered by the Cospas-Sarsat community for actions taken and decisions made to keep the System on the road to success: a Quality Management System was approved, the termination of 121.5 MHz satellite processing was confirmed and the Cospas-Sarsat Strategic Plan for the 2008-2028 period was approved, in line with the spirit of the founding Agreement (see page 5).

The successes of Cospas-Sarsat are numerous and significant. They are essentially to the credit of Administration and Secretariat personnel who daily manage System operations and the Programme. Forthcoming challenges are also numerous and important. The first one is to ensure the successful integration of future MEO constellations to further enhance performance with a single objective: to save human lives.

Michel Margery, French Cospas-Sarsat Representative and 2008 Council Chair

121.5 MHz Termination: A Necessary Transition

Daniel Levesque, Head, Cospas-Sarsat Secretariat

When the processing of 121.5 MHz signals by Cospas-Sarsat was switched off on 1 February 2009, a 27 year era of 121.5 MHz satellite alerting ended.

It all began at the end of the 1970's. The odds of it working were actually not very good as nothing equivalent had ever been attempted in terms of signal processing and satellite technology. To detect, in the ambient noise, a weak 121.5 MHz continuous, analogue signal relayed by satellite, analyse the time frequency domain and automatically recognize possible Doppler curves to locate the transmitter, was a real challenge. The source of the signal, the 121.5 MHz ELT, had been designed for detection by overflying aircraft; a signal far from ideal for the proposed satellite-based processing.

Pioneered by Canada, the satellite relay and ground processing of 121.5 MHz signals actually proved to be very successful and out of this experiment the operational Cospas-Sarsat System was born. Cospas-Sarsat could not, however, overcome the basic limitations of the weak analogue 121.5 MHz signal. For the promoters of the System, the logical next step was the 406 MHz digital system, which demonstrated far superior performance.

The higher cost of 406 MHz beacons was the price to pay for these obvious improvements. However, the 406 MHz ELTs currently on the market have little in common with 1970's ELTs. The casing, G-switch and installation onboard the aircraft are thoroughly specified and tested to ensure reliability. Each 406 MHz beacon is uniquely identified and can be detected and located anywhere on the globe, within minutes when in the footprint of a GEOSAR satellite. Moreover, the 406 MHz technology has significant potential for enhancement when used with the future MEOSAR system.

Many see the termination of 121.5 MHz satellite processing as a natural, unduly delayed event that relieves SAR authorities of too many false alerts and difficult searches. Others object to the higher cost of 406 MHz beacon installation onboard aircraft and what they perceive as the insufficient reliability of ELTs. Cospas-Sarsat Participants did their best to prepare for the transition to 406 MHz, giving nine years of advance notice and encouraging lower-cost beacon designs, without compromising performance or reliability. Aware that the debate is still ongoing in some user communities, particularly general aviation, and that many users have not yet transitioned to 406 MHz beacons, Cospas-Sarsat nevertheless firmly believes that its approach to the termination of the 121.5 MHz satellite system is a logical and required step towards building a better system.

With so many 121.5 MHz beacons still in use, efforts to speed the transition to 406 MHz must continue. This will be, undoubtedly, the highlight of 2009.

International Cospas-Sarsat Programme

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International Satellite System for Search and Rescue

Mission Statement

The International Cospas-Sarsat Programme provides accurate, timely and reliable distress alert and location data to help search and rescue authorities assist persons in distress.

Objective

The objective of the Cospas-Sarsat system is to reduce, as far as possible, delays in the provision of distress alerts to SAR services, and the time required to locate a distress and provide assistance, which have a direct impact on the probability of survival of the person in distress at sea or on land.

Strategy

To achieve this objective, Cospas-Sarsat Participants implement, maintain, coordinate and operate a satellite system capable of detecting distress alert transmissions from radiobeacons that comply with Cospas-Sarsat specifications and performance standards, and of determining their position anywhere on the globe. The distress alert and location data is provided by Cospas-Sarsat Participants to the responsible SAR services.

Cospas-Sarsat co-operates with the International Civil Aviation Organization, the International Maritime Organization, the International Telecommunication Union and other international organisations to ensure the compatibility of the Cospas-Sarsat distress alerting services with the needs, the standards and the applicable recommendations of the international community.

The Cospas-Sarsat satellite system was initially developed under a 1979 Memorandum of Understanding among Agencies of the former USSR, USA, Canada and France. The Cospas-Sarsat Low-altitude Earth Orbit (LEO) satellite system for search and rescue (LEOSAR) has been in operation since 1982 and was complemented in 1998 with geostationary satellites (GEOSAR).

Cospas-Sarsat provides global distress alerting free of charge to the user in distress. Participants include the 4 Parties to the International Cospas-Sarsat Programme Agreement (Canada, France, Russia and the USA), 25 Ground Segment Providers, 9 User States and 2 Organisations.

This document is available on the web at
www.cospas-sarsat.org/Documents/InformationBulletin.htm

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