U.S. Coast Guard SAR

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UN/USA SARSAT Training
Miami Beach, FL  Jan 2009
Overview

- U.S. SAR System
- U.S. Coast Guard SAR
- U.S.C.G. RCC Functions & Operations
- Coordination with other countries
  - International Cospas-Sarsat Program
  - Amver
- SAR Incidents and Statistics
- SARSAT Projects
United States SAR system
United States SAR System:

United States:
National SAR Committee (NSARC)

Member Agencies

• Department of Defense
• Department of Interior
• Department of Commerce
• Department of Transportation
• Federal Communications Commission
• National Aeronautics and Space Administration
• Department of Homeland Security (2007)

Coast Guard Chairs the Committee!
Two Primary Documents

1. National Search and Rescue Plan of the United States
   - 19-Page Plan: for “...coordinating search and rescue (SAR) services to meet domestic needs and international commitments.”

2. National SAR Supplement (NSS) to the IAMSAR Manual
   - Implements the Nat’l SAR Plan
   - Provides guidance to federal agencies in support of the IAMSAR Manual and the IMO/ICAO SAR conventions.
National SAR Plan and USCG Addendum

National SAR Plan
Appendix A

U. S. COAST GUARD ADDENDUM
TO THE
UNITED STATES
NATIONAL SEARCH AND RESCUE SUPPLEMENT (NSS)
IN THE
International Aeronautical and Maritime Search and Rescue Manual (IAMSAR)

USCG Addendum to the NSS

• Provides detailed guidance and policy on how the Coast Guard will conduct SAR
U.S. Coast Guard SAR
• Save Lives and Property at Sea
  • Authority to conduct SAR missions is contained in Title 14, Sections 2, 88, and 141 of the U.S. Code.
  • The code states that the Coast Guard *shall* develop, establish, maintain and operate SAR facilities.
  • and *may* render aid to distressed persons and protect and save property on and under the high seas.
  • Coast Guard performance of SAR is essentially permissive in nature.
  • Search and Rescue activity may be considered a mandated function, but no specific level of performance has been cited under the legislative authority.
Four general objectives provide direction for the SAR Program:

- Minimize loss of life, injury, and property loss and damage in the maritime environment;
- Minimize crew risk during SAR missions;
- Optimize use of resources in conducting SAR;
- Maintain a world leadership position in maritime SAR.
United States Coast Guard: Recognized SAR Coordinator for all other United States aeronautical and maritime SRRs. This includes the State of Hawaii as well as waters over which the United States has jurisdiction, such as navigable waters of the United States.
U.S. SRR: divided into Coast Guard Districts

U.S. MARITIME REGION (USCG)
U.S. INLAND REGION (USAF)
CANADIAN SRR

AFRCC
Tyndall AFB
Coast Guard Districts...
Districts are divided into Sectors...
U.S.C.G. RCC Functions & Operations

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U.S.C.G. RCCs Response

- International SAR: District RCC
- Local SAR: Sector

D1 RCC, Boston, MA
U.S.C.G. RCCs Response

D14 JRCC, Honolulu, Hawaii
**Typical SAR Scenario**

- **SHIP IN DISTRESS**
- **DISTRESS CALL MADE ON CHANNEL 16**
- **ACKNOWLEDGMENT MADE**
- **URGENT MARINE INFORMATIONAL BROADCAST (UMIB) ISSUED**
- **ASSETS LAUNCH TO PROVIDE ASSISTANCE**
- **20-30 NM**
- **CH-16 Guard VHF-FM Channel Voice**
- **Sector Command Center**
- **Shore Stations**
- **SAR Station**
SAR Response Assets

- Coast Guard assets
  - Airborne
  - Afloat
SAR Response Assets cont.

- Other Federal, State, Local agencies
- Commercial services
- Volunteer agencies
- Fellow mariners (“Good Samaritans”)

[Images of boats and ships in the water]
SAROPS - SAROPS is an operational Mission Essential Application (MEA) that operates within the standard workstation environment to support the SAR community and overall Maritime Domain Awareness via a rich geographical display. Key features include search event modeling, display animation and optimized search plan determination as well as interface support for SARSAT. The SAROPS system consists of the C/JMTK based Mapping Framework custom extensions and spatial databases.
SAR Coordination With Other Countries
Coordination With Other Countries

- International Cospas-Sarsat Program
- Amver Program
These dots represent 6965 SARSAT alerts between 2001-2006 for distress, non-distress, undetermined, ceased/undetermined.

90% of EPIRB SAR Cases are within 20 NM of shoreline.
SARSAT Rescues in the U.S.

2008

Total: 283
Rescues at sea: 203 people
Aviation rescues: 12 people
PLB rescues: 68 people

SARSAT Rescues by the USCG

2008

Total: 226
Rescues at sea: 193 people
PLB rescues: 33 people
What is AMVER...

...Merchant Ships Coming to the Rescue
Automated Mutual assistance VEssel Reporting (AMVER) System

- AMVER is a computer-based vessel reporting system that exists to promote safety of life and property at sea.

- Over 3422 vessels voluntarily report their position to the USCG daily, ready to lend assistance in an emergency.

- AMVER information is used to assist SAR Coordinators to locate assistance for maritime emergencies anywhere in the world.
Amver participation is:

- Voluntary to all merchant ships
- Open to vessels of ALL nations
- Free to all RCCs worldwide

Any Rescue Coordination Center can request a Surface Picture (SURPIC) from a USCG RCC for vessels in any geographic region.

For more info contact:
AMVER Maritime Relations
U.S. Coast Guard
Battery Park Building
1 South Street
New York, NY 10004

www.amver.com
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SAR Incidents and Statistics
An “Average Day” in the U.S. Coast Guard:

On an average day, the Coast Guard:

- Conducts 109 Search and Rescue Cases
- Saves 10 lives
- Assists 192 people in distress
- Protects $2,791,841 in property
## USCG SAR Statistics:

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<th>2008</th>
<th>2007</th>
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USCG SARSAT Projects

- Termination of 121.5 MHz Satellite Monitoring
- EPIRB False Activation Mitigation Project
- Next generation SARSAT = Distress Alerting Satellite System (DASS)
- AIS as a replacement for the 121.5 homer in EPIRBs
- 406 MHz Direction Finding Equipment
- …and much, much more!
The Problem

- When initially developed, the electronic signal from a factory EPIRB or ELT emanated at 75 milliwatts on the 121.5 frequency. The electronic detection equipment installed on CG aircraft at that time was sufficient to detect this signal.

- However, the FCC subsequently mandated that the power be reduced to 25 milliwatts on the 121.5 MHz homing signal due to interference at the higher power on aircraft emergency frequencies.

- Unless in very close proximity (less than 5 NM), this lower 25 milliwatt power falls below the threshold of effective detection with the legacy CG aircraft DF equipment.

- This DF equipment never had the capability of detecting a 406 MHz signal.
The USCG 406 MHz DF Capabilities

The Coast Guard Solution

- The USCG is in the process of equipping their search aircraft with 406 MHz homing capability.
USCG 406 DF Successes to Date

40 LIVES SAVED OR ASSISTED

Jun 2005: Locked on at 90 NM from 17,000’ (2 lives saved)
Dec 2005: Locked on at 102 NM from 21,000’ (2 lives saved)

Mar 2007: Locked on at 62 NM from 8,000’ (3 lives assisted); F/V Bandit II.
Apr 2007: Locked on at 15 NM from 10,000’ (2 lives saved); S/V Paradox.
Jun 2007: Locked on at 85 NM from 10,000’ (5 lives assisted)
20 Dec 07: HU-25 Locked on at 150 NM from 25,000’ (2 lives saved); F/V Silver Wings.

04 Mar 08: HU-25 Locked on at 70 NM from 7500’; (2 lives saved); S/V Air Pirate
26 May 08: HU-25 Locked on at 68 NM from 5500’; (3 lives saved). F/V Dona Maria;
15 Jun 08: HU-25 Locked on at 110 NM from 12,000’; (2 lives asst) P/C On Trial;
30 Jun 08: HU-25 Locked on at 98 NM from 14,500’; (1 life asst) S/V Patriot;
USCG 406 DF Successes to Date

12 Aug 08: C-130 Locked on at 98 NM from 15,500’; F/V Lady Chul; (5 lives saved).
08 Sep 08: HU-25 Locked on at 30 NM from 5000’; no distress; abandoned shoreline EPIRB.
19 Sep 08: HU-25 Locked on at 23 NM from 1500’; F/V Cajun Gator; (3 lives asst).
24 Oct 08: HU-25 Locked on at 62 NM from 9500’; F/V Rio Panuco; (3 lives assisted).

22 Oct 08: C-130 Locked on at 94 NM from 22,000’; F/V Katmai; (4 lives saved).

09 Nov 08: HU-25 Locked on at 137 NM from 17,000’; S/V Symphonie I; (2 Lives Saved).
19 Nov 08: HU-25 Locked on at 100 NM from FL 210; no distress; Sailing Yacht Signe.

12 Dec 08: HU-25 Locked on at 100 NM from 10,000’; rec’d GPS position fm EPIRB @ 50 NM; no distress; F/V Pandora II.

27 Dec 08: C-130 Locked on at 160 NM from 17,500’; no distress; M/V Kite.
These dots represent 6965 EPIRB hits between 2001-2006 for distress, non-distress, undetermined, ceased/ undetermined.

G-RPR: “90% of EPIRB SAR Cases are within 20 NM of shoreline.”
USCG 406 DF Capabilities

Becker Portable 406 MHz Direction Finder
Any Questions???

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Visit Our Website! http://www.uscg.mil/hq/cg5/cg534