



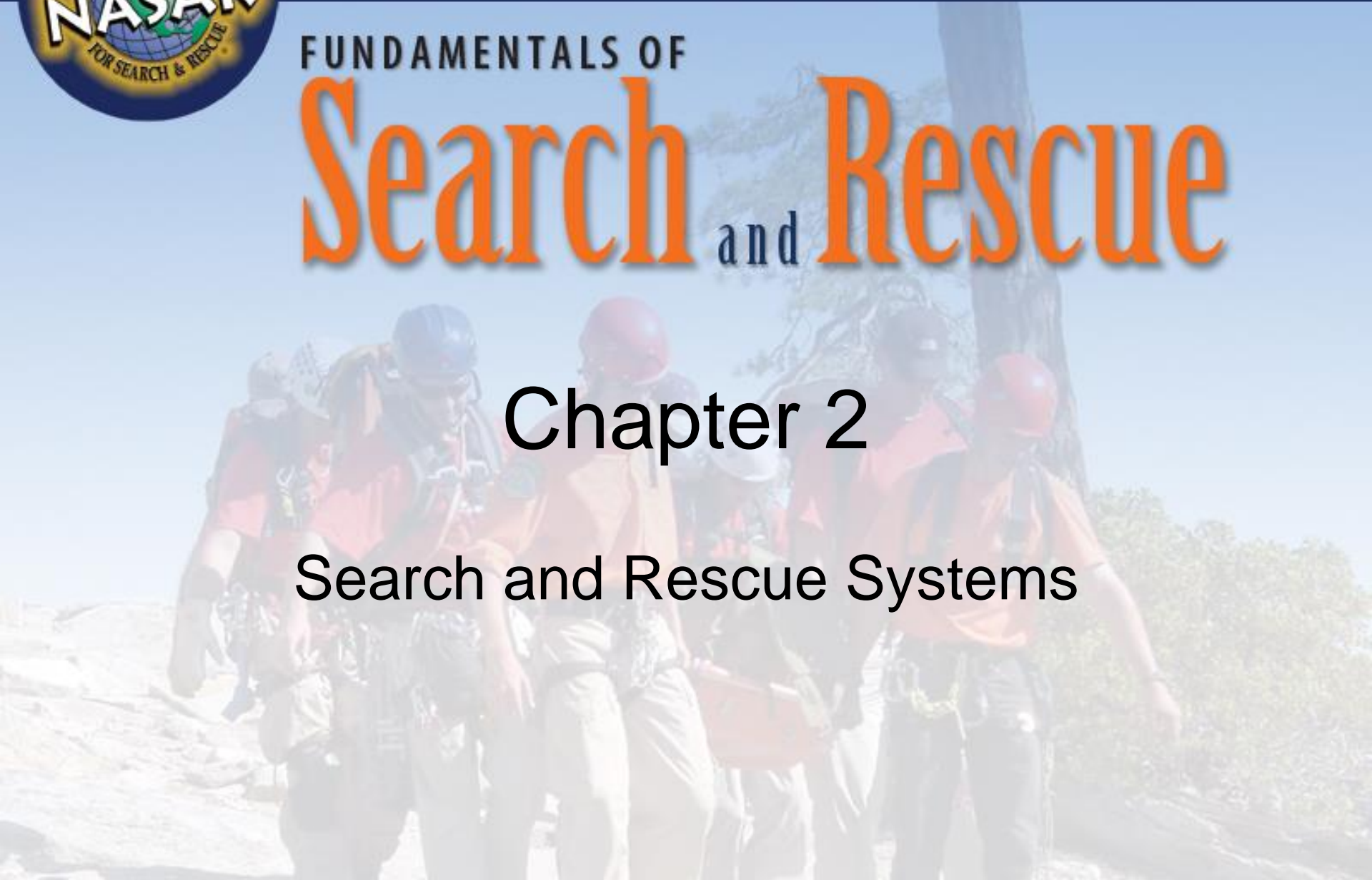
National Association for Search and Rescue

FUNDAMENTALS OF

Search and Rescue

Chapter 2

Search and Rescue Systems





Objectives (1 of 4)

- As they relate to SAR in the United States, describe the general roles of:
 - National SAR Committee (NSARC)
 - National SAR Plan
 - National SAR Supplement to the IAMSAR Manual



Objectives (2 of 4)

- Describe five elements of the COSPAS-SARSAT system and the role an alerting personal locator beacon (PLB) plays in this system.
- Demonstrate an understanding of the phrase, “All SAR is local.”



Objectives (3 of 4)

- List the major responsibilities for search and rescue for the following:
 - Federal SAR Authorities
 - State SAR Authorities
 - Local SAR Authorities



Objectives (4 of 4)

- Describe the general operational capabilities of a FEMA Urban SAR Task Force.
- Describe three criteria for triggering an AMBER alert according to the National Center for Missing & Exploited Children.
- Describe three steps a parent or childcare provider should take when a child is missing.



The Global SAR System

- ICAO and IMO globally coordinate SAR services.
 - Effective, integrated, worldwide system
 - Keeps services available wherever people travel
 - *International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual*
 - Globe divided into SAR regions with rescue coordination centers



International Stages of SAR Operations (1 of 2)

- Five stages of a SAR operation:
 - Awareness
 - Initial action
 - Uncertainty phase
 - Alert phase
 - Distress phase
 - Planning
 - Computer or manual methods of operational planning



International Stages of SAR Operations (2 of 2)

- Operation
 - Finding, assisting, and rescuing
- Conclusion
 - No one in distress
 - Search and rescue is concluded.
 - Search called off
- Often these actions are performed simultaneously or in a different order.



International Agreements (1 of 2)

- Written agreements between countries
- Rules that require countries to provide SAR coordination and services
- In United States, National Search and Rescue Committee (NSARC)
 - U.S. *National SAR Plan*
 - U.S. *National SAR Supplement to the IAMSAR Manual*



International Agreements (2 of 2)

- Airborne
 - Commercial aircraft on international routes under positive control
 - Domestic aircraft and general aviation aircraft may not be under positive control.
 - Emergency locator transmitters (ELTs) carried on most aircraft



The IAMSAR Manual

- Sponsored by IMO and ICAO
- Primary guidance for federal conduct of civil SAR
- Three volumes:
 - Volume 1, Organization and Management
 - Volume 2, Mission Co-ordination
 - Volume 3, Mobile Facilities



COSPAS-SARSAT

- International humanitarian SAR system: Uses satellites to detect/locate emergency beacons
- SARSAT: Developed jointly by USA, Canada, and France
- COSPAS: Developed by Russia
- In 1979, the four countries united to create COSPAS-SARSAT.

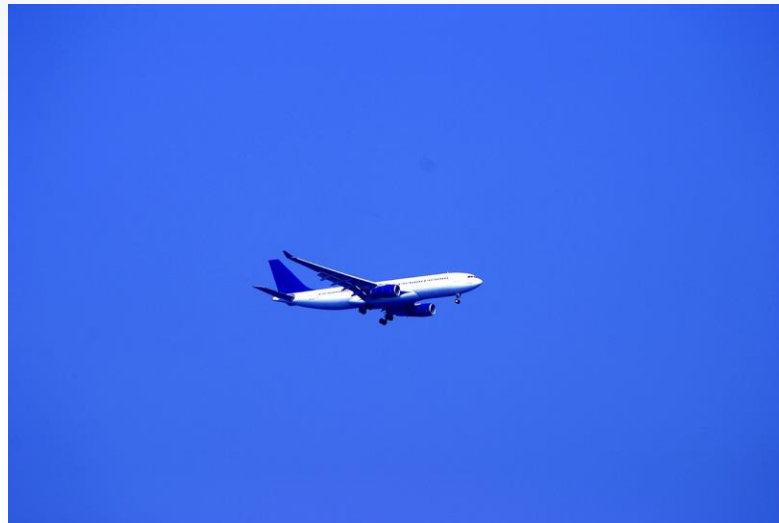


Elements of COSPAS-SARSAT

- Satellite network—Receives beacon alert and relays to LUT
- Local User Terminal (LUT)—Calculates beacon position and transmits to MCC
- Mission Control Center (MCC)—Transmits beacon position and identifying data to RCC
- Rescue Coordination Center (RCC)—Coordinates response activities

Distress Radio Beacons

- Three types:
 - EPIRBs for maritime use
 - ELTs for aviation use
 - PLBs for individuals and land-based applications





Emergency Position Indicating Radio Beacon (EPIRB)

- Maritime applications
- Two types:
 - Transmits analog signal on 121.5 MHz
 - Transmits digital identification code on 406 MHz and a low-power “homing” signal on 121.5 MHz
- All activate when submerged in water.



Emergency Locator Transmitter (ELT)

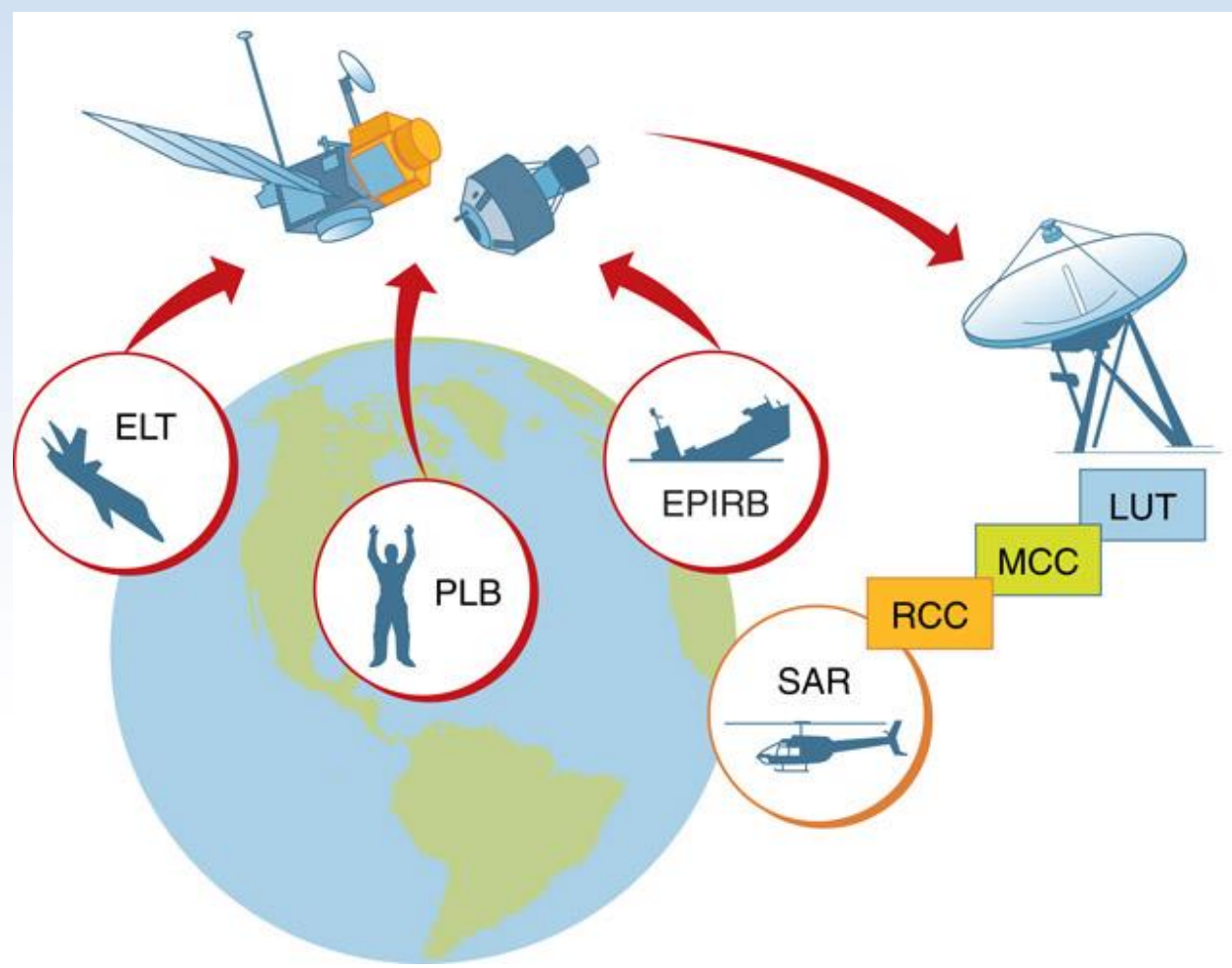
- First emergency beacons developed
- Required on most aircraft
- Use on 121.5 MHz to alert aircraft flying overhead
- “G” switch activates upon sudden impact
- Newer 406 MHz version
- Aircraft operators have option to choose version.



Personal Locator Beacon (PLB)

- Carried by individual and activated manually
- 406 MHz with low-power homing beacon at 121.5 MHz
- Authorized for use in United States July 1, 2003
- Tested in Alaska prior to U.S. legalization

Elements of COSPAS-SARSAT





SAR in the United States

- The United States National Search and Rescue Plan (NSP)
 - Provides guidance to signatory federal agencies
 - Coordinates civil SAR services to meet domestic and international needs
 - NSARC oversees NSP.



Official Observer Status

- National Association for Search and Rescue (NASAR)
- National Institute of Urban Search and Rescue (NIUSR)





Member agencies

- Department of Defense—USAF
- Department of Interior—NPS
- Department of Commerce—NOAA
- Department of Transportation
- Department of Homeland Security—USCG
- Federal Communications Commission (FCC)
- National Aeronautics and Space Administration (NASA)



National SAR Plan

- Member agencies of NSARC are signatories to the plan.
- IAMSAR and NSP define SAR Regions.
- In the United States, two types of SRR:
 - Maritime
 - Aeronautical



SAR Authorities

- Local
- State
- Federal



Local SAR Authorities

- The first line of defense in emergency and disaster situations
- “All SAR is local.”



State SAR Authorities

- Emergency management



Federal SAR Authorities

- Official SAR coordinators
 - Air Force Rescue Coordination Center (AFRCC)
 - U.S. Pacific Command—Alaskan aeronautical SRR
 - U.S. Coast Guard (USCG)



Other Federal SAR Authorities

- National Park Service—SAR and emergency services within U.S. national park system
- Department of Homeland Security
 - National Incident Management System (NIMS)
 - National Response Plan (NRP)
 - Federal Response Plan (FRP)
 - Urban Search and Rescue (US&R) Task Force



AMBER Alerts

- AMBER Alert Criteria
 - Law enforcement confirms a child has been abducted.
 - Law enforcement believes the child is in serious danger.
 - Descriptive information about child, abductor, vehicle available for broadcast



When a Child Goes Missing (1 of 2)

- Immediately search the house, store, or area where child disappeared.
- Call law enforcement if you cannot find the child.
- Put an employee or other responsible party at each store exit immediately.
- Be prepared to provide detailed identifying information on child.



When a Child Goes Missing (2 of 2)

- Teach children what to do when lost:
 - Hug-a-Tree
 - Find an employee or police officer
- For more advice, call National Center for Missing & Exploited Children.

