



U.S. AIR FORCE



SAR BASICS – SAR FROM A FEDERAL PERSPECTIVE

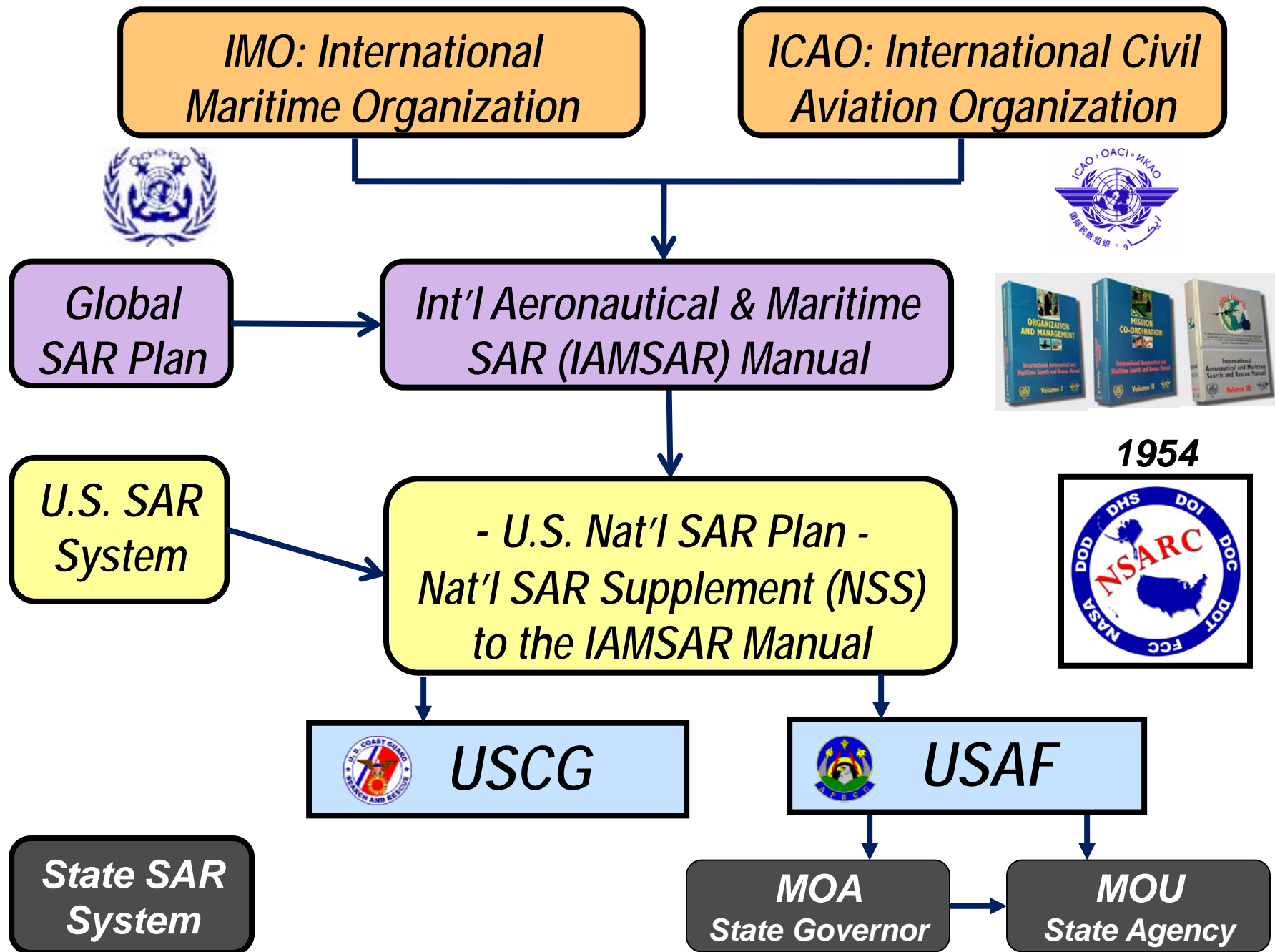


“That Others May Live”

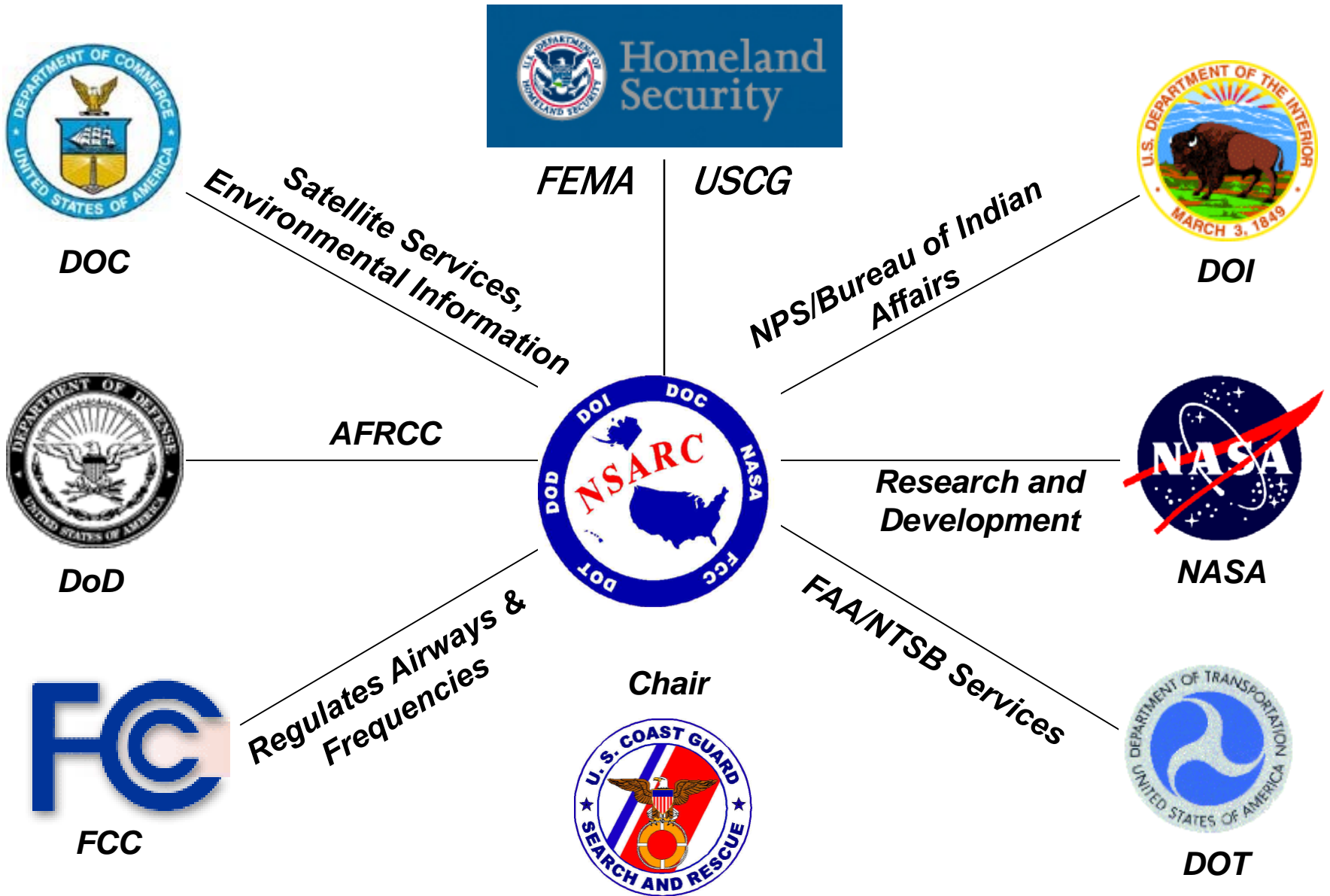


U.S. AIR FORCE





FEDERAL SAR AUTHORITY – NATIONAL SEARCH AND RESCUE COMMITTEE





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NATIONAL SAR RESPONSIBILITIES



**MEMORANDUM
OF
AGREEMENT
BETWEEN
1AF/CC
AND
STATE
GOVERNORS**

**MEMORANDUM
OF
UNDERSTANDING
BETWEEN
AFRCC/CC
AND
STATE
SAR AGENCY**

- Legal Agreement between **SAR Coordinator** and each **State Governor**
- Operational document between **AFRCC/CC** & each **State SAR agency**
(Dictates day-to-day CONUS SAR Operations)



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GOVERNOR

STATE HIGHWAY PATROL

US MILITARY / JOC

CIVIL AIR PATROL

***WHO'S
RESPONSIBLE FOR
SAR IN YOUR STATE?***

DIV OF EMERGENCY MANAGEMENT

LOCAL / COUNTY SHERIFF

DEPT OF AERONAUTICS



U.S. AIR FORCE

SAR RESPONSIBILITY



PRIMARY

ASSISTING

MILITARY ACFT

AFRCC

STATE

CIVIL ACFT

INTRASTATE

STATE

AFRCC

INTERSTATE

AFRCC

STATE

AIR CARRIER

AFRCC

STATE

INTERNATIONAL

AFRCC

STATE

MISSION OF NATIONAL INTEREST

AFRCC

STATE

GROUND SEARCH

STATE

AFRCC



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AFRCC MISSION STATEMENT



***CONTINUOUSLY BUILDING A COORDINATED
SEARCH AND RESCUE NETWORK
ENSURING TIMELY, EFFECTIVE
LIFESAVING OPERATIONS
WHENEVER AND WHEREVER
NEEDED***

- COOPERATION***
- COORDINATION***
- EDUCATION***



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AFRCC CHARTER



- **Area of Responsibility**
 - **Coordinate federal inland commercial, military, and interstate aeronautical SAR in the contiguous U.S.**
 - **Manage all inland beacon searches**
 - **Assist states with non-aircraft missions**

- **States retain responsibility for SAR within their sovereign boundaries until they become overwhelmed or require specialized equipment**
 - **Requests for federal resources are made by the state SAR Coordinator to the AFRCC**

- **Validate requests / broker for federal assistance**
 - **Save life, limb, eyesight, or prevent undue suffering**
 - **“Ask, don’t task” - no tasking authority**



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CHAIN OF COMMAND



*CONUS SAR
Coordinator*



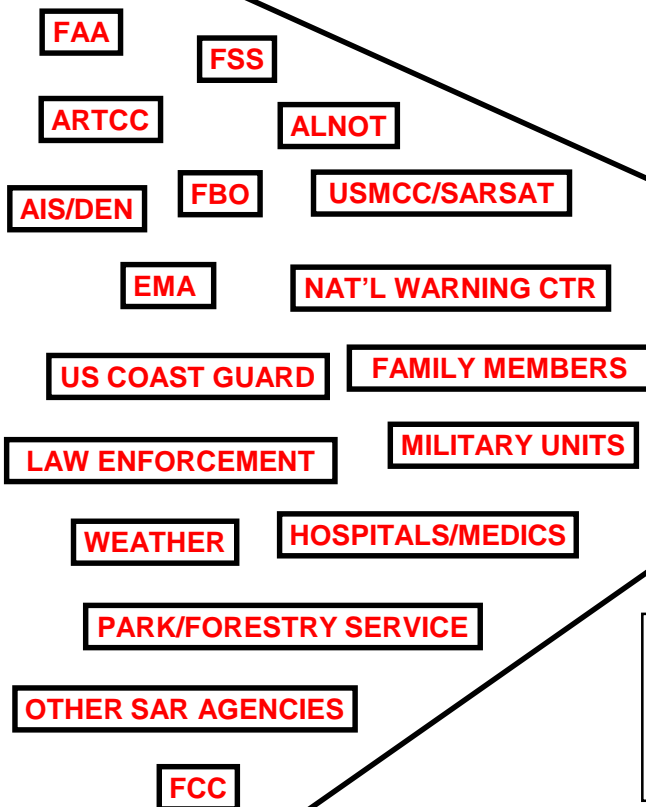


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AFRCC NOTIFICATIONS



M
E
A
N
S



AFRCC
CONTROLLER



ENDS

RIGHT INFORMATION
RIGHT RESPONDER
RIGHT TIME

GOAL = SAVE LIVES!



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AFRCC CIVIL SAR



Event / Notification

Non-Aircraft /
Missing Person(s)
Report

Aircraft /
Federal Aviation
Administration (FAA)
Alert Notification (ALNOT)

Distress Beacons /
COSPAS/SARSAT
System

Other Rescue
Coordination Centers
(RCCs)

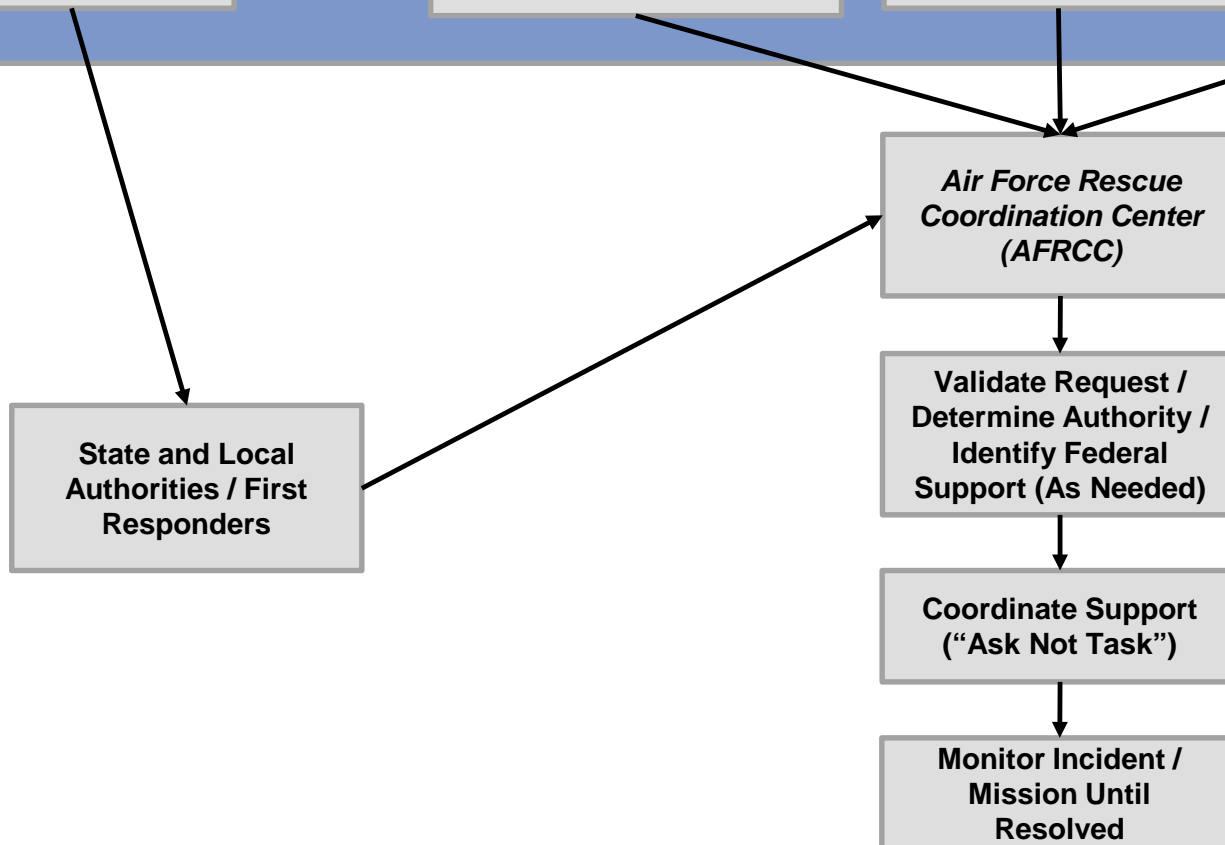
*Air Force Rescue
Coordination Center
(AFRCC)*

Validate Request /
Determine Authority /
Identify Federal
Support (As Needed)

Coordinate Support
("Ask Not Task")

Monitor Incident /
Mission Until
Resolved

State and Local
Authorities / First
Responders





U.S. AIR FORCE

2016 MISSION ACTIVITY



Busiest RCC in the World!!

**~90% SOLVED
WITHOUT
FEDERAL RESOURCES
COMMITTED**

**7870
INCIDENTS**

22/DAY

AFRCC

**1 LIFE
EVERY
DAYS**

**970
MISSIONS**

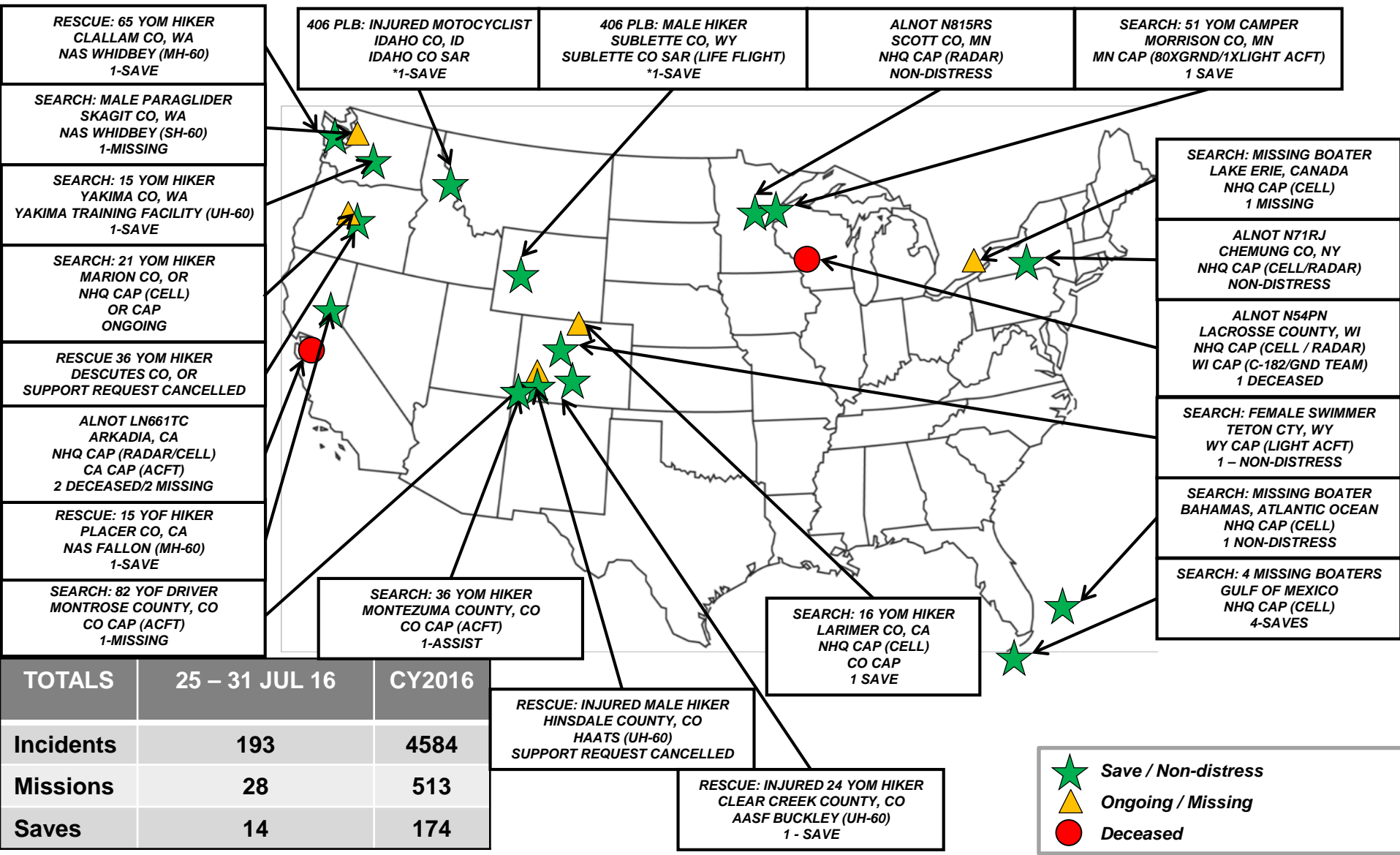
3/DAY

**355
SAVES**

**OVER 16,700 SAVES SINCE
ACTIVATION IN 1974**

UNCLASSIFIED

AFRCC WEEKLY SUMMARY





Units > AFRCC



Air Force Rescue Coordination Center

As the United States' inland search and rescue coordinator, the Air Force Rescue Coordination Center serves as the single agency responsible for coordinating on-land federal SAR activities in the 48 contiguous United States, Mexico and Canada.

The AFRCC operates 24 hours a day, seven days a week. The center directly ties in to the Federal Aviation Administration's alerting system and the U.S. Mission Control Center. In addition to the Search and Rescue Satellite Aided Tracking information, the AFRCC computer system contains resource files that list federal and state organizations, which can conduct or assist in SAR efforts throughout North America.

<http://www.1af.acc.af.mil/units/afrccl/>



AFRCC -- General Information

Fact Sheet
Commander's Biography
Points of Contact

AFRCC SAR Links

NOAA Sarsat
USCG Office of Search and Rescue
NASA SAR Mission Manager
Headquarters Civil Air Patrol
National Association for Search and Rescue (NASAR)
Federal Emergency Management Agency (FEMA)
Mountain Rescue Association
American Red Cross
Rescue Net



AFRCC -- Operations

SAR School
Basic Inland SAR Course
BISC FY12 schedule
BISC FY13 schedule
SAR Agencies

Beacon Information

Preventing False Alarms
121.5/243.0 Phase Out
US National Personal Locator Beacon Program
406 Mhz

Annual Reports
Crash Locator Databases

Inside AFNORTH

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ACC Headlines

77th WPS celebrates two decades of excellence

Program gives green light to healthy living

Dyess builds foreign connection

Airmen save drowning man

Photos: PJs remain combat ready at the range

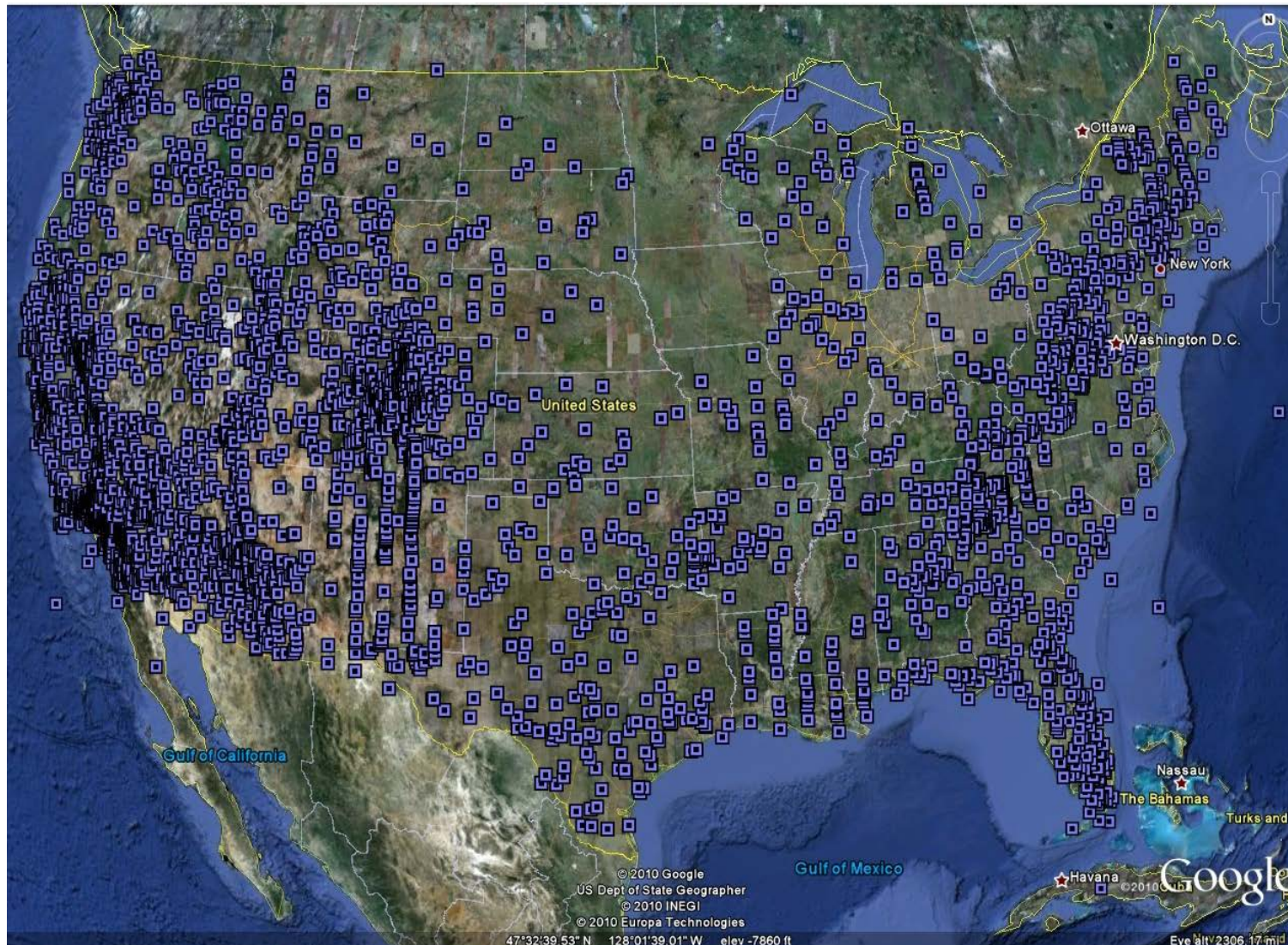
Airmen of the 55th Rescue Squadron return home

Military members receive joint tactical training



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CRASH LOCATOR DATABASE





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CIVIL AIR PATROL – USAF AUXILIARY





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FEDERAL ASSETS



Army



Marines



Air Force



USCG



Navy





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LOCAL / VOLUNTEER ASSETS



MOUNTAIN RESCUE

SAR DOGS



MOUNTED SAR



MANTRACKERS



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RADAR DATA SOURCES



1. National Track Analysis Program – FAA

- Primarily uses long-range radars
- Limitations:
 - ATC priorities/availability
 - Traffic volume / terrain
 - Transponder

2. Event Analysis – USAF

- RADES (Radar Evaluation Squadron) – Hill AFB, UT
 - FAA and Military/National Radar

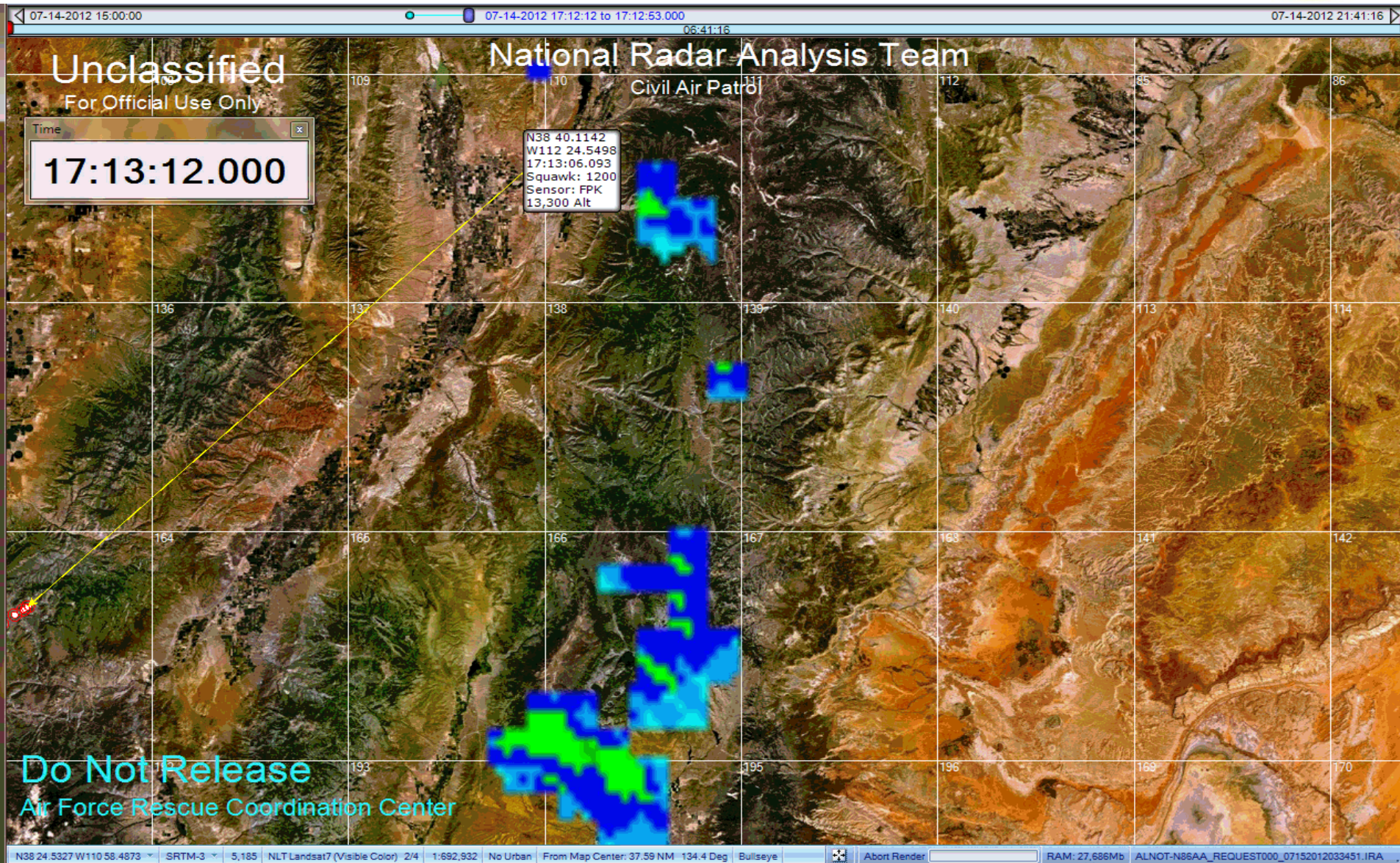
3. CAP – NRAT (National Radar Analysis Team)

- CAP members trained in Radar Forensics
 - Also use FAA and Military/National Radar



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RADAR FORENSICS





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RADAR FORENSICS



National Radar Analysis Team
Civil Air Patrol

18:20:26

Alias: N4386F
N34 48 08.25
W086 49 47.67
07-08-2012
18:20:20.980
Squawk: 7156
Sensor: QPC
8,000 Alt
140.5 Knots
260.9 Heading

Reported Crash Site

UOX, UNIVERSITY-OXFORD
07-08-2012 21:20:08.382

FOR OFFICIAL USE ONLY



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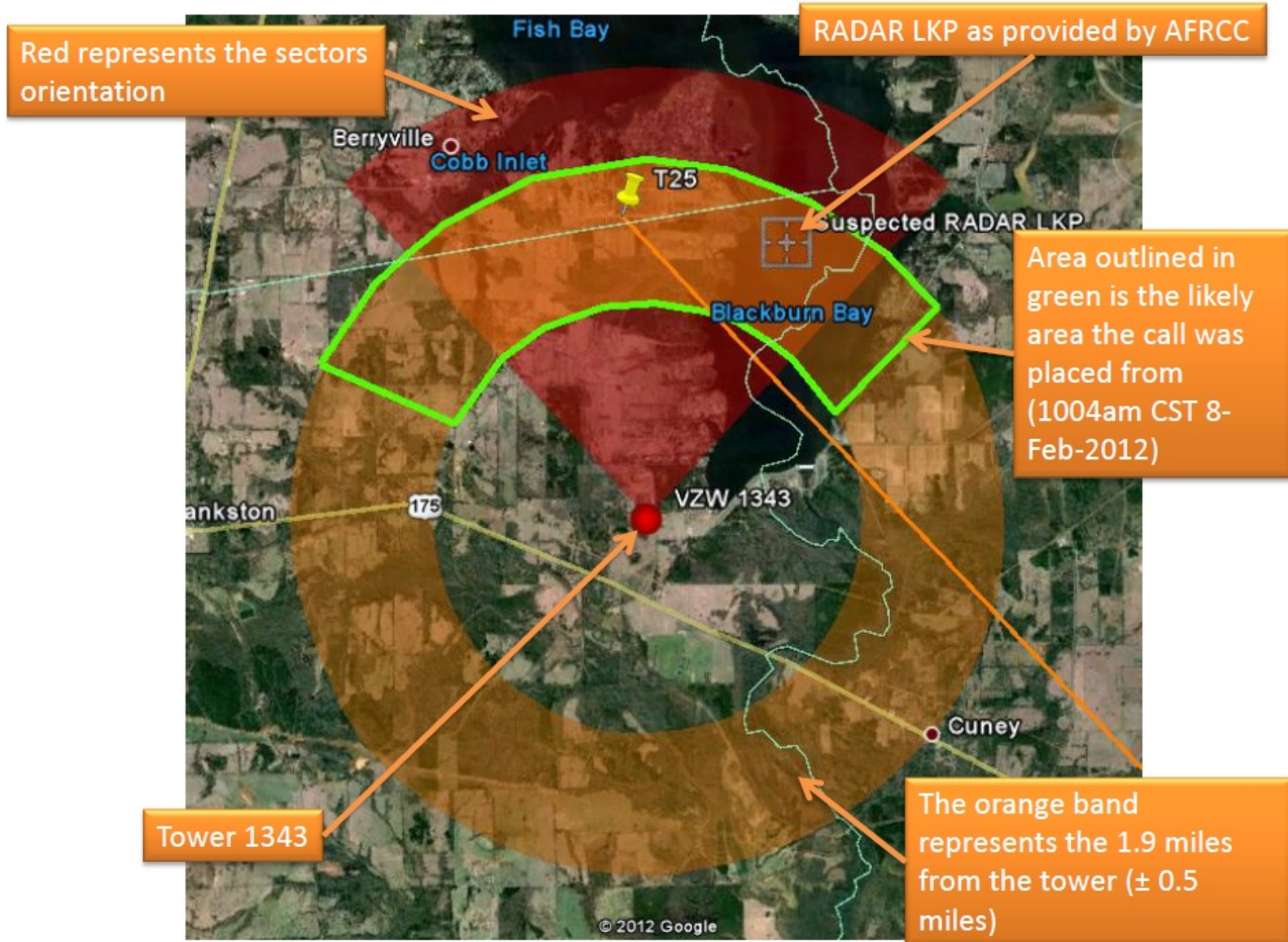
RADAR FORENSICS





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CELL PHONE FORENSICS





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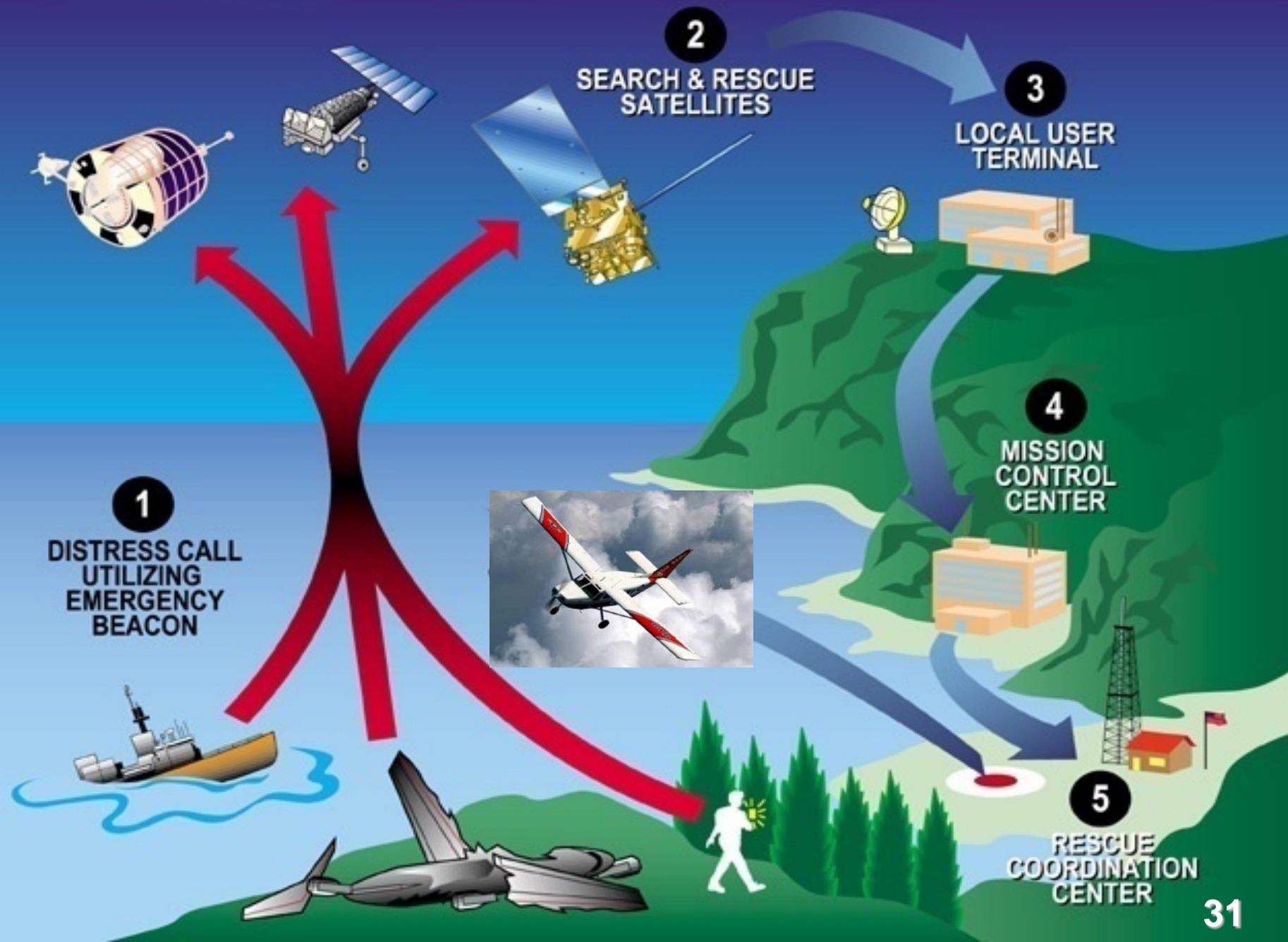


BEACON SOURCES



- **Space-Based Reports**
- **Airborne Reports**
- **Ground Reports**

COSPAS-SARSAT System Overview





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SPACE SEGMENT



3 Types of Satellites:

- **Polar Operational Environmental Satellites (POES) (Polar Orbit)**
 - **520 miles**
- **Geostationary Orbiting Search And Rescue (GOES)**
 - **22K miles**
- **Mid-Earth Orbiting Satellite (MEOSAR)**
 - **SAR-GPS / Galileo / Glonass**
 - **11.5K miles**





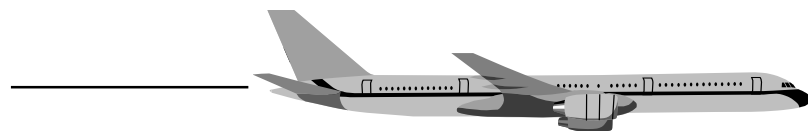
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AIRBORNE REPORTS



ELT Report to AFRCC

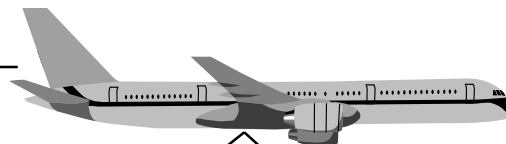
1. Time First Heard
2. Strongest Point
3. Time Last Heard
4. Altitude



FL 39000

ARTCC collects ELT reports & forwards them to the AFRCC

FL 10000



522 Mile Diameter



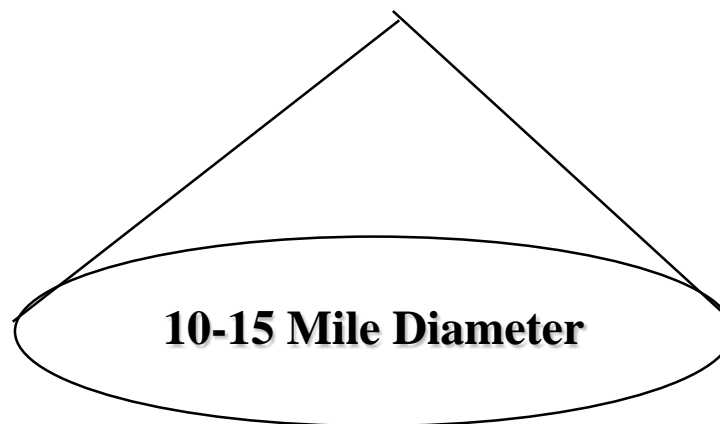
264 Mile Diameter





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GROUND REPORTS





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AIRCRAFT DATA



WHEN IS AN AIRCRAFT OVERDUE?





FAA NOTICES



When is an aircraft overdue?

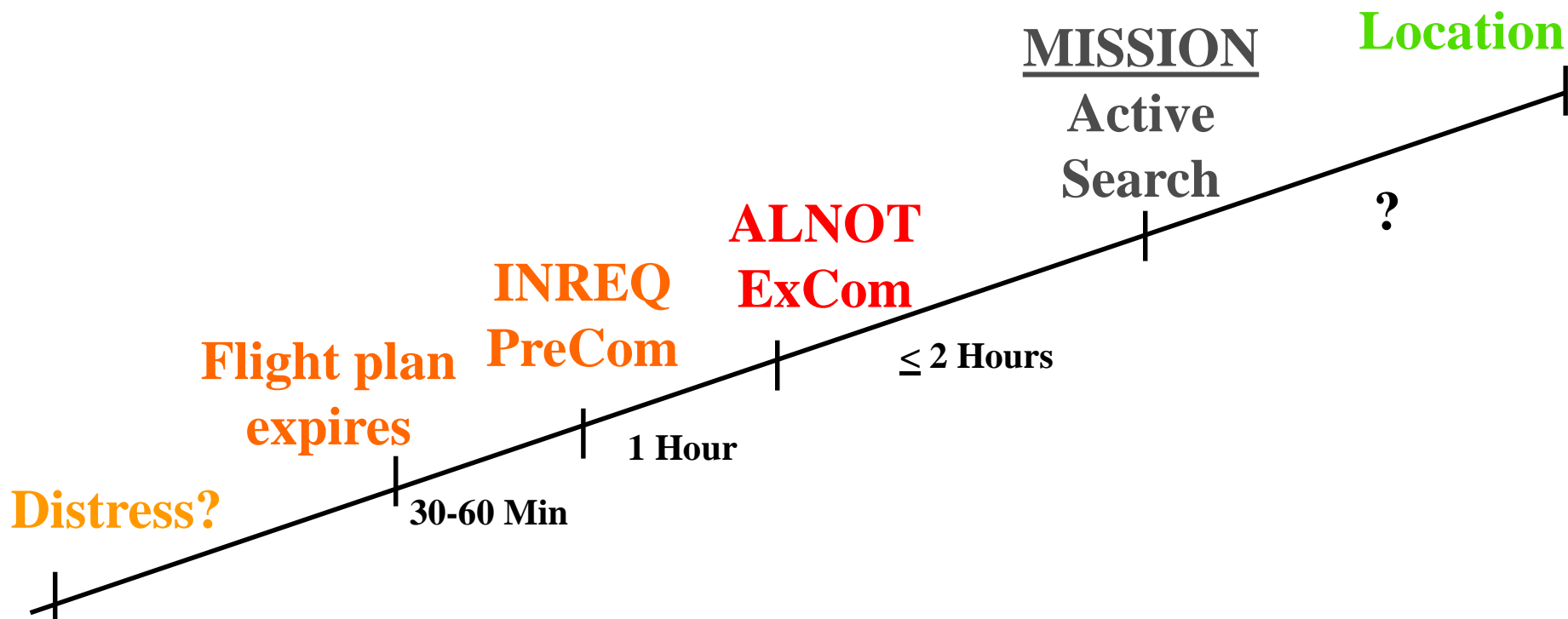
- **IFR** – No comms with pilot and 30 minutes have passed since ETA or last reporting point
- **VFR** – No comms with pilot and 30 minutes have passed since ETA
- **No Flight Plan** – Reliable source reports aircraft is 1 hour overdue at destination

83% of general aviation aircraft fly without a flight plan



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TIMELINE REVIEW





AVERAGE NOTIFICATION TIMELINE



	TOTAL MISSIONS	LKP TO NOTIFICATION	RCC NOTIFICATION TO LOCATION	LKP TO LOCATION
NO FLIGHT PLAN	24	15.55	47.02	62.57
VFR FLIGHT PLAN	22	3.86	14.27	18.13
IFR FLIGHT PLAN	33	1.07	10.47	11.54

***SOURCE: AFRCC AIRCRAFT MISSIONS**



SURVIVAL STATISTICS

(FROM AFRCC RECORDS)



Out of 100 Crash Victims

35 Survive the Crash

21 are Injured

- 4 Survivors after 24 hours

14 are Uninjured

- 7 Survivors after 3 days

***CHANCES OF SURVIVAL RAPIDLY DECREASE
AFTER DAY 3!***



MISSION OPERATIONS



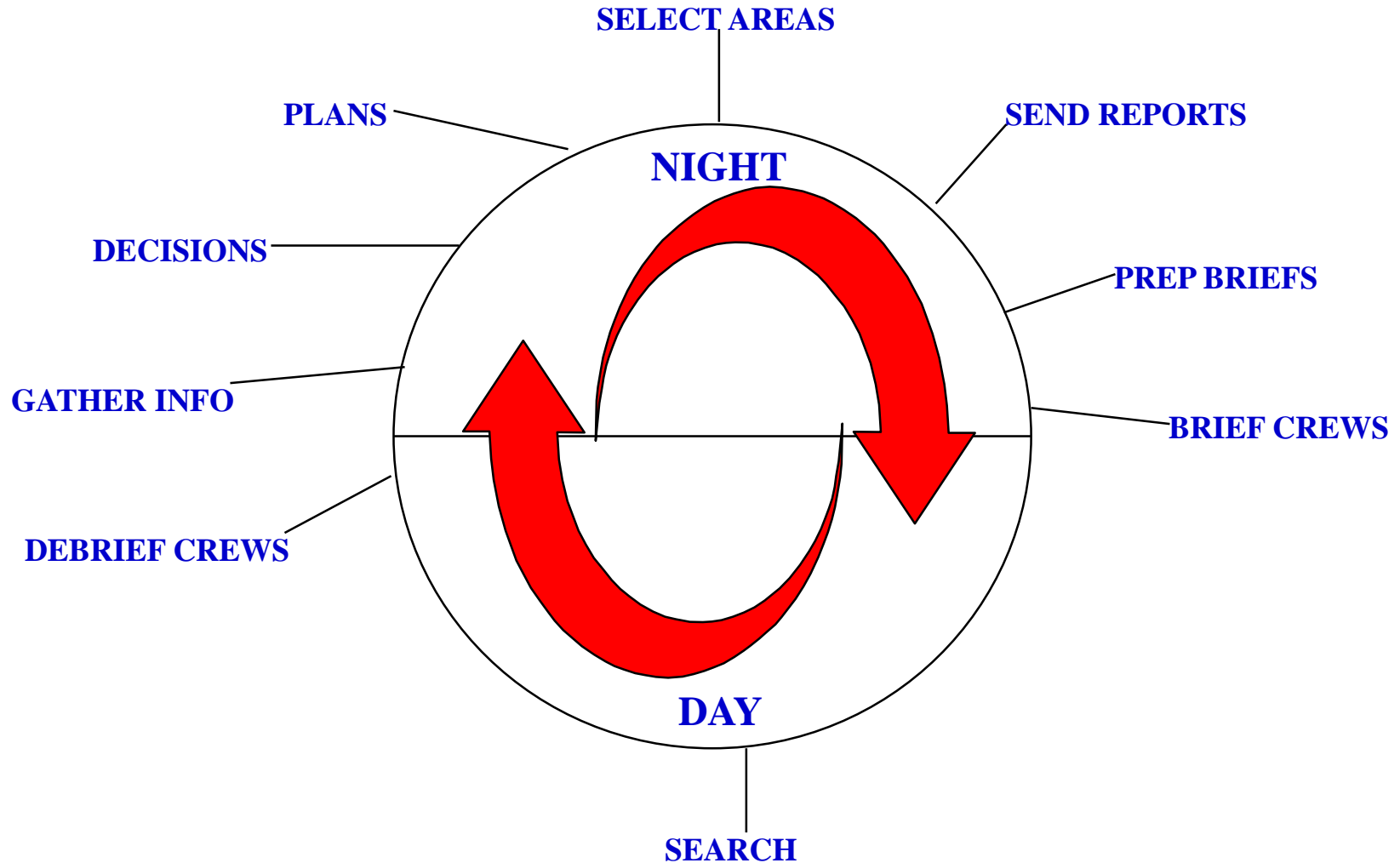
SEARCH THEORY





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SEARCH CYCLE





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