

Training on Search And Rescue (SAR)

Planning and coordination SAR operations

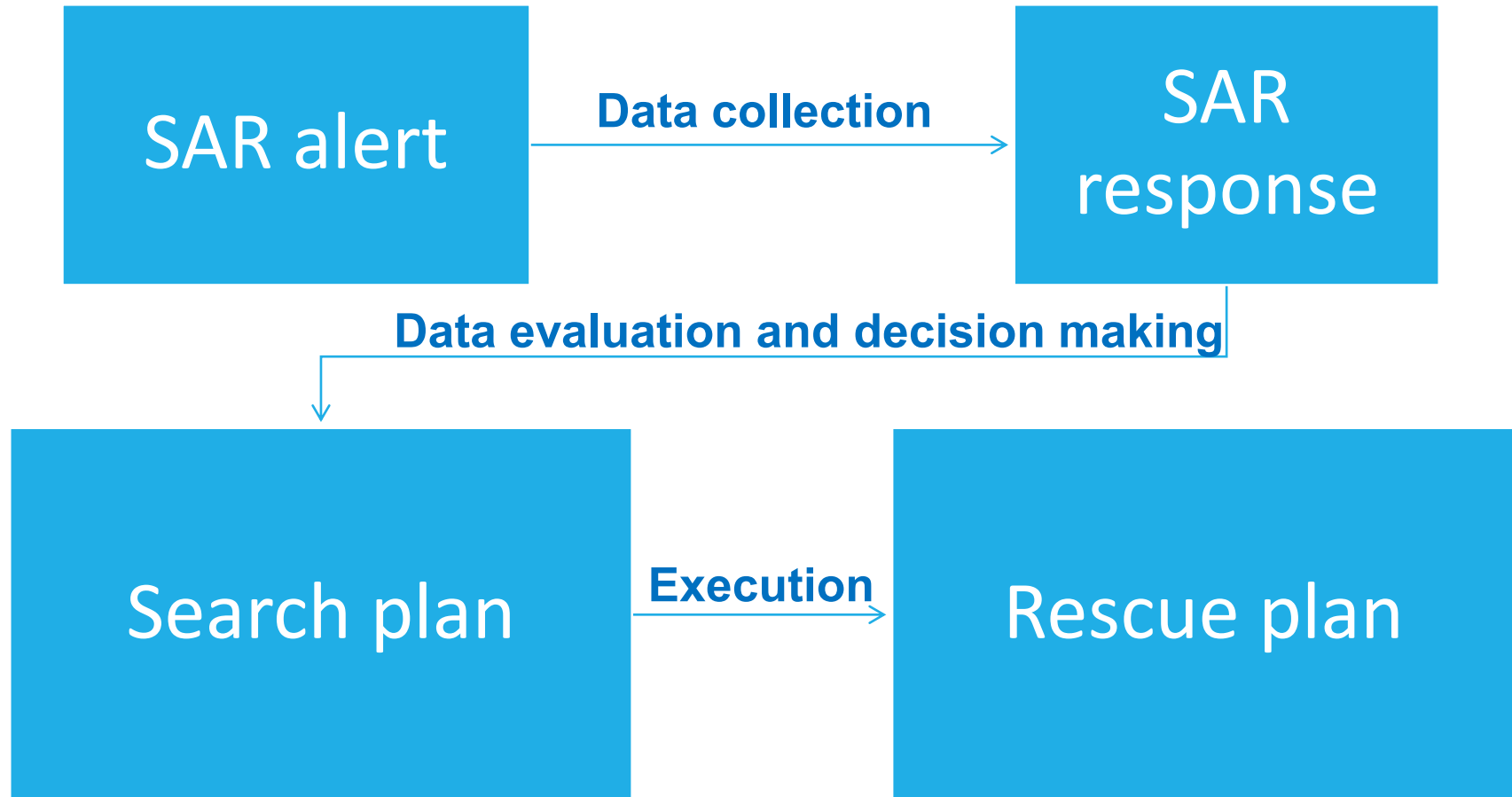
/ SAFEMED IV Project



Project funded
by the European Union

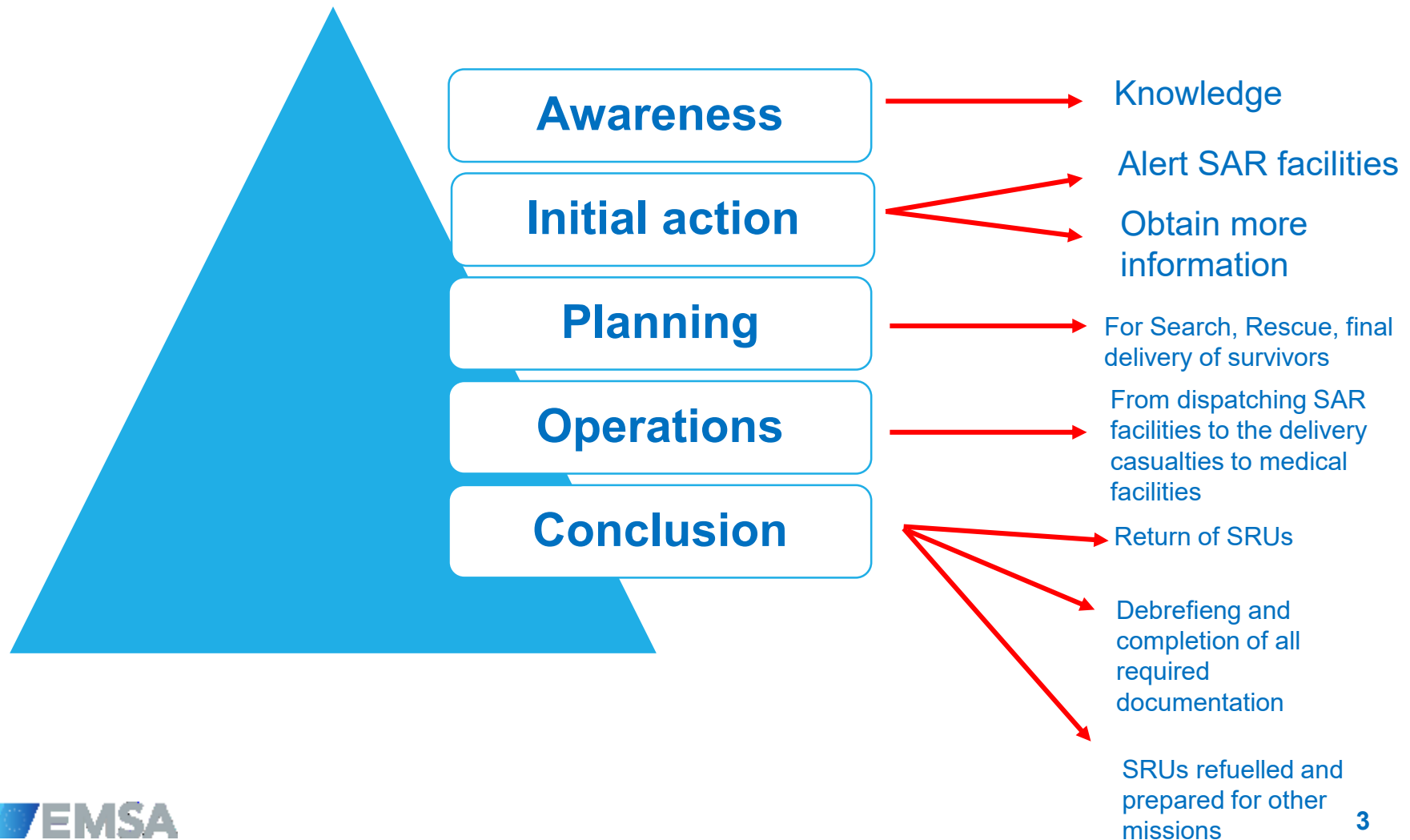


EMERGING AND PLANNING PHASE





SAR Stages



SAR alert

1st STAGE

Awareness

Who can activate the SAR System?

All subjects public or private, that having news of a vessel or person in distress at sea has the obligation to immediately inform the maritime SAR organization, providing the immediate rescue as possible, according Hamburg Convention of 1979 and national laws

WAYS OF ACTIVATION





Initial
actions

2nd STAGE

Request and collect information

Event evaluation

Classification of the emergency

Communications

Actions to take





Collection of the information

THE 7 PARTS OF THE INFORMATION (MINIMUM):

1. Position and time of incident
2. Type and nature of incident
3. Number and conditions of the persons involved
4. Description of the craft
5. Assistance required
6. Meteorological conditions in the area
7. Information/details of the caller

MORE INFORMATION:

8. Last position report and method
9. Last contact time and frequency
10. Actions taken by which reports the alert
11.



1. Position and time of incident

2. Type and nature of incident
3. Number and conditions of the persons involved
4. Description of the craft
5. Assistance required
6. Meteorological conditions in the area
7. Information/details of the caller

- Position given by the distressed craft;
- Position reported by other crafts;
- Presumed position from planned voyage;
- Position provided by automatic alert systems;
- Position obtained from traffic monitoring systems.

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1. Position and time of incident
 2. Type and nature of incident
 3. Number and conditions of the persons involved
 4. **Description of the craft**
 5. Assistance required
 6. Meteorological conditions in the area
 7. Information/details of the caller
- Type of vessel
 - Colour
 - Dimensions
 - Communication capability
 - Safety equipment on board

1. Position and time of incident
2. Type and nature of incident
3. Number and conditions of the persons involved
4. Description of the craft
- 5. Assistance required**
6. Meteorological conditions in the area
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1. Position and time of incident
2. Type and nature of incident
3. Number and conditions of the persons involved
4. Description of the craft
5. Assistance required
6. Meteorological conditions in the area
- 7. Information/details of the caller**
 - Name
 - Address
 - Telephone number
 - Place
 - Information about the role of the caller



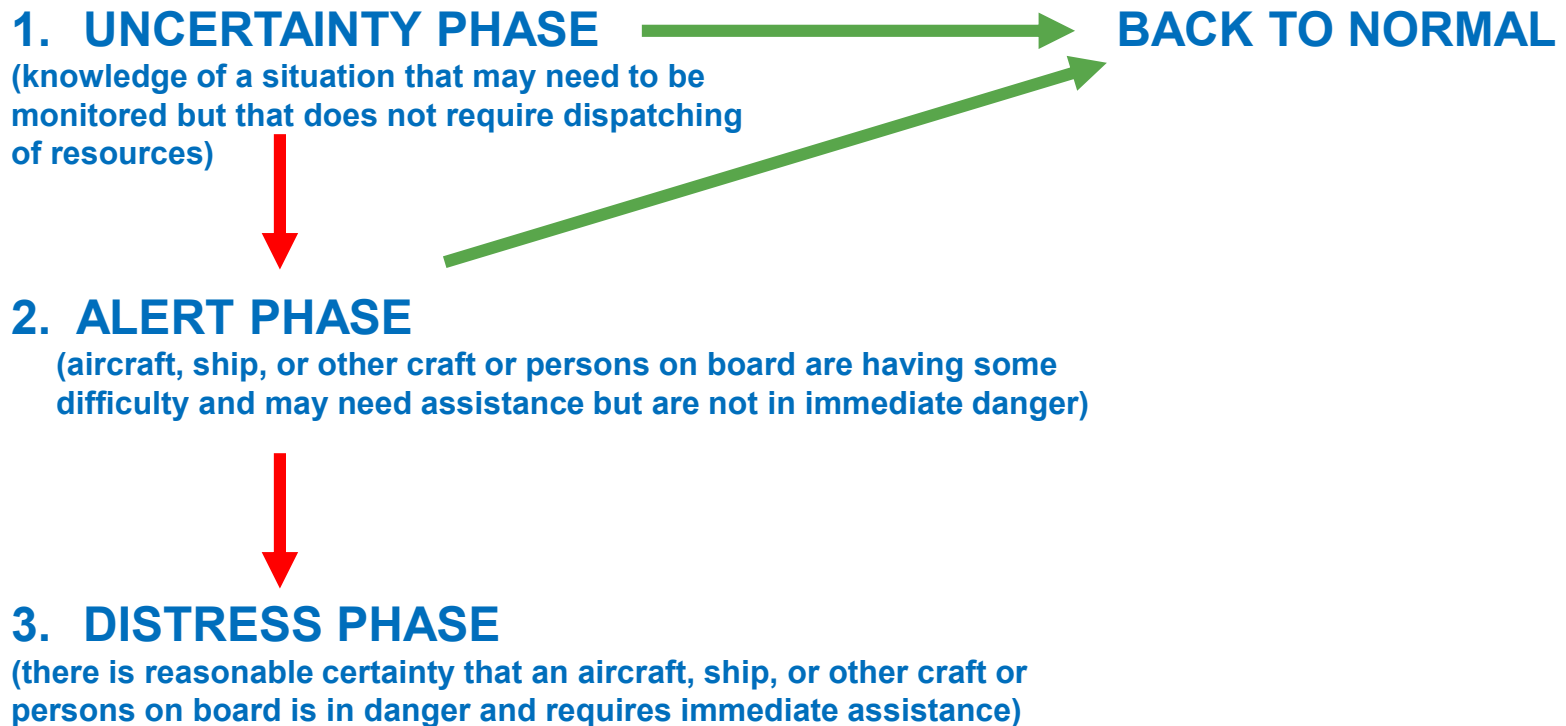
Event evaluation

THE 10 PARTS OF THE EVALUATION (MINIMUM):

- Type and severity of accident
- Position of accident
- Urgency of the intervention
- Meteorological condition in the area
- Morphology of the area
- Risks of the mission
- Resources available
- Extension of the operations
- Habits of the subject
- Reliability



EMERGENCY PHASES (level of concern for the safety of persons or craft which may be in danger)





EMERGENCY PHASES AND ACTIONS TO TAKE

1. UNCERTAINTY PHASE



- Search/annotate/maintain the information/communication;
- Assessing whether necessary a notice to mariners;
- Perform preliminary communication;
- Debriefing.

2. ALERT PHASE



- Search/annotate/maintain the information/communications;
- Assessing whether necessary a notice to mariners;
- Alerting search and rescue units;
- Perform extensive communication;
- Evaluate whether proceed with the search and rescue operations if deemed necessary;
- Debriefing.

3. DISTRESS PHASE



- Search/annotate/maintain the information/communications;
- Assessing whether necessary a notice to mariners;
- Sending search and rescue units and adopt the search plan;
- Perform extensive communication;
- Alert other SAR resources
- Debriefing.

SEARCH PLANNING: SEARCH PATTERNS

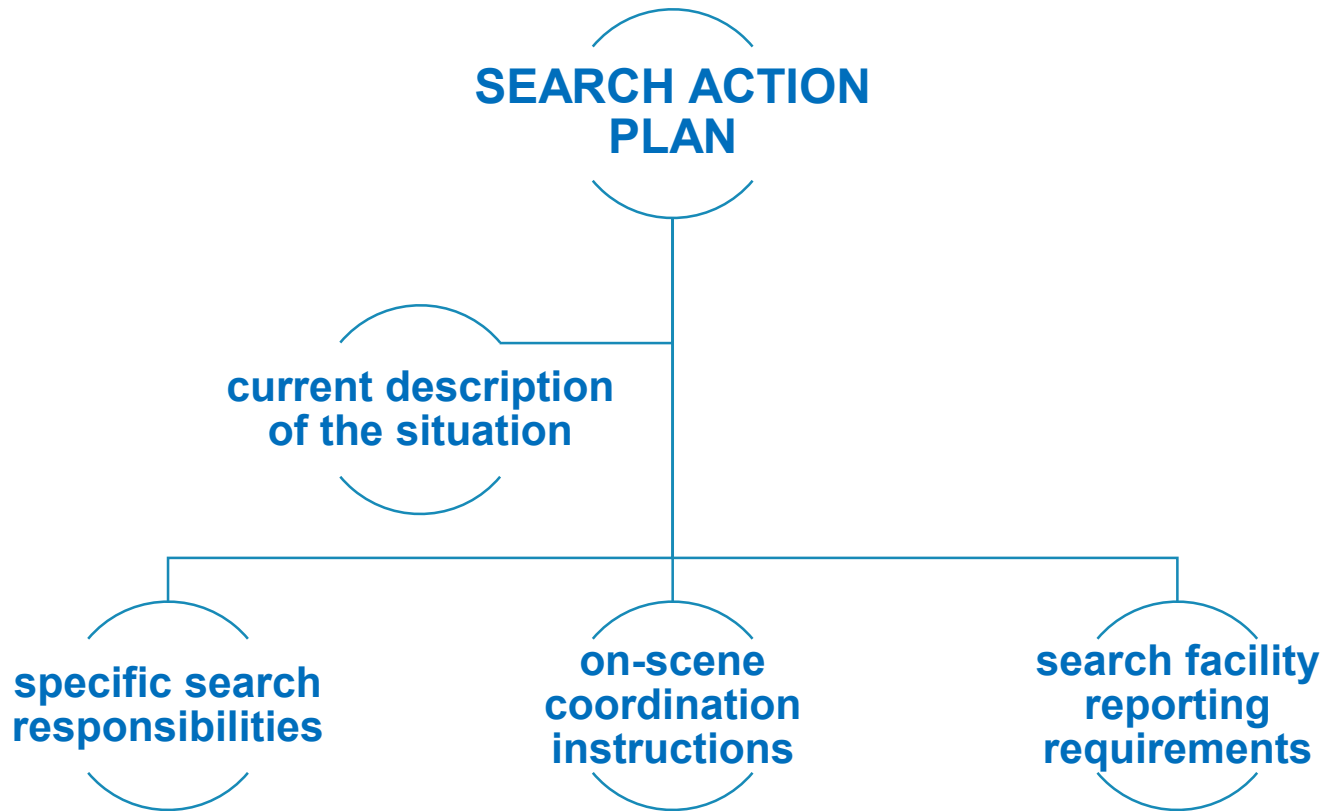


The search object is not fixed like the bottom of the sea but is drifting and you need to estimate its location

MEANING

- estimating the distress incident location and probable error of that location
- estimating the survivors' post-distress movements and probable error of that estimate;
- using these results to estimate the most probable location (datum) of survivors and the uncertainty (probable error of position) about that location;
- defining search sub-areas and **search patterns** for assignment to specific search facilities

SEARCH PLANNING: SEARCH PATTERNS



SEARCH PLANNING: SEARCH PATTERNS



IT IS FUNDAMENTAL TO USE THE RIGHT PATTERN

PS Parallel Search

VS Sector Search

CS Creeping line Search

SS Expanding Square Search

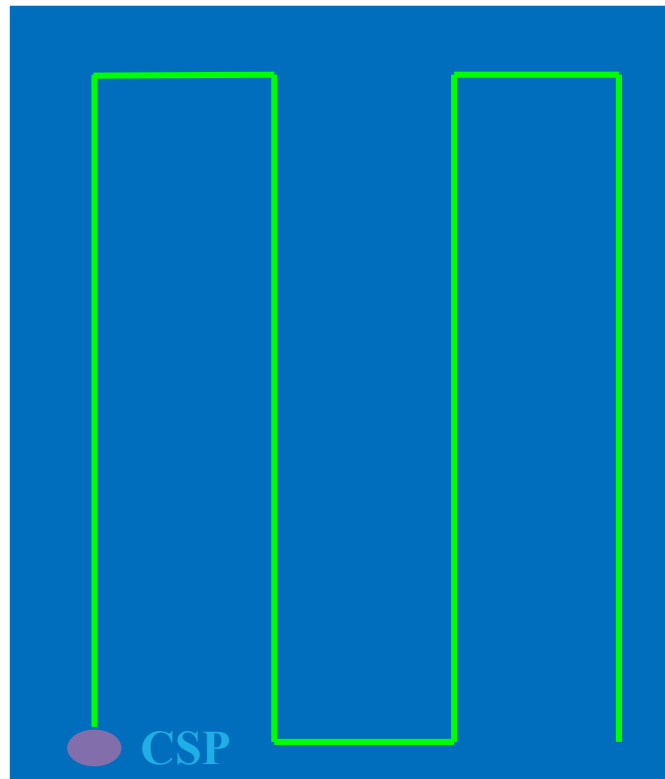
TS Track Line search

PS Parallel Search

- Used to search a large area when survivor location is uncertain
- Most effective over water or flat terrain.
- Usually used when a large search area must be divided into sub-areas for assignment to individual search facilities on-scene at the same time.
- The commence search point is in one corner of the sub-area, one-half track space inside the rectangle from each of the two sides forming the corner.
- Search legs are parallel to each other and to the long sides of the sub-area.

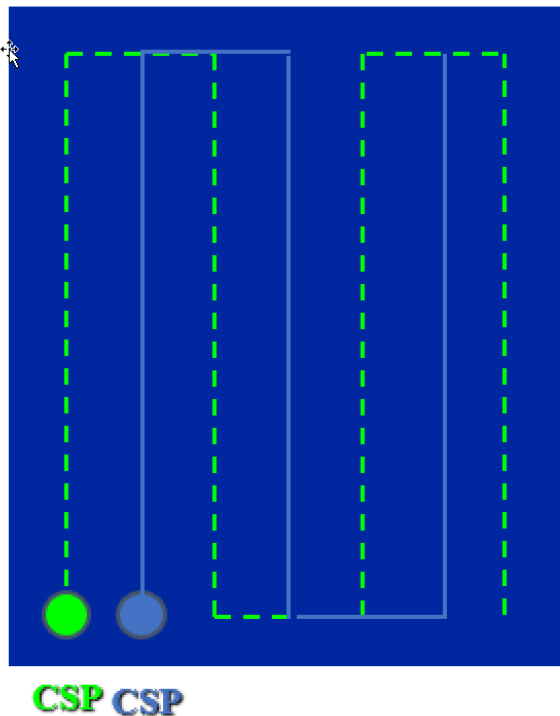
PARALLEL
SEARCH SINGLE
UNIT

Commence
Search Point
(CSP)

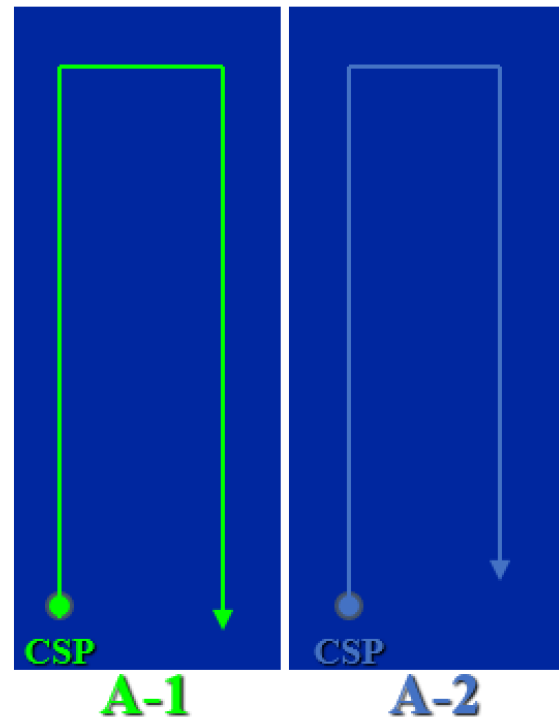




PARALLEL SEARCH MULTI-UNIT



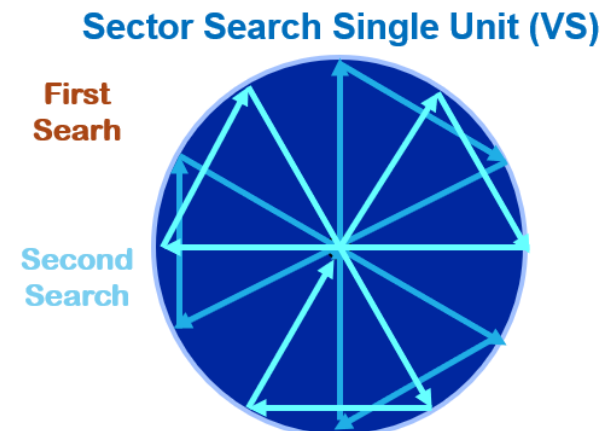
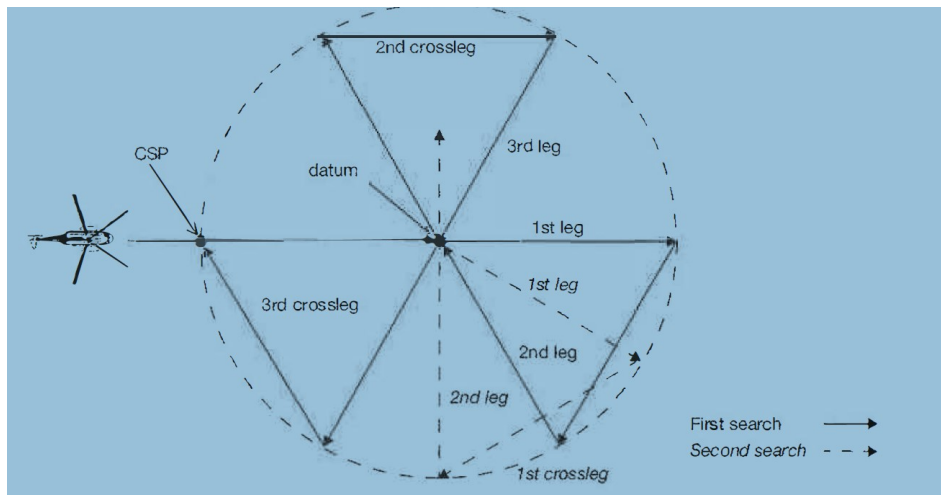
PARALLEL SEARCH MULTI-UNIT



Separating the
areas is safer for
the simultaneous
use of more
airplanes

VS Sector Search

- Most effective when the position of the search object is accurately known and the search area is small.
- Used to search a circular area centered on a datum point.
- Due to the small area involved, this procedure must not be used simultaneously by multiple aircraft at similar altitudes or by multiple vessels.
- An aircraft and a vessel may be used together to perform independent sector searches of the same area.
- II CSP is on the datum
- The first leg is set with current
- The turns are right hand 120 degrees



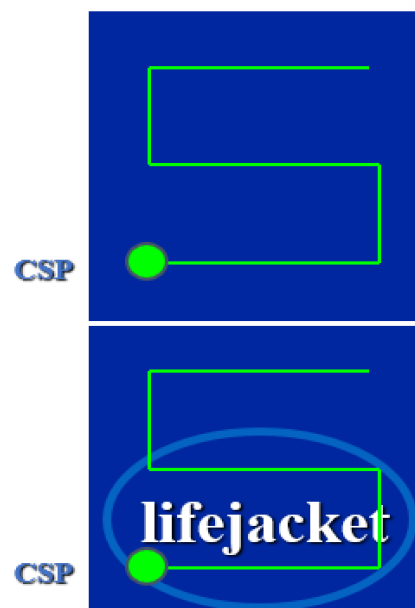
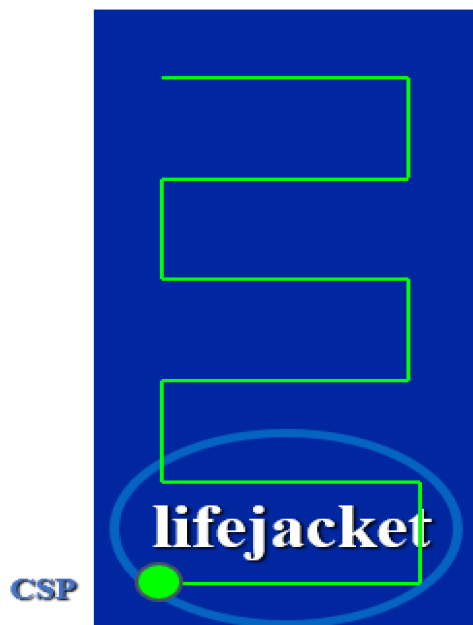
CS Creeping line Search



CREEPING LINE SEARCH SINGLE UNIT

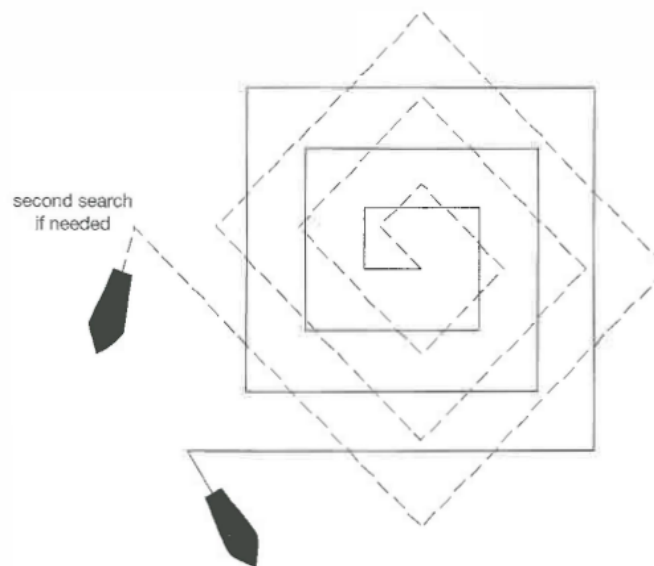
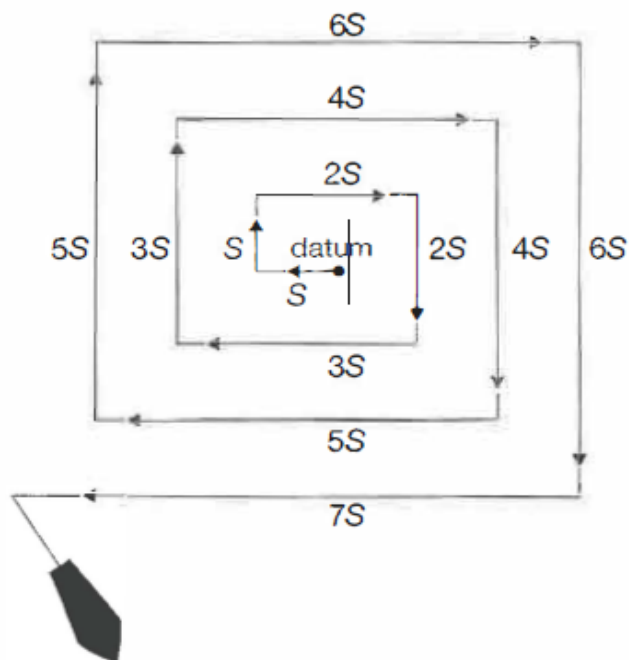
Can be coordinated (aircraft/ship):
the aircraft does most of the searching,
while the ship steams along a course at a
speed as directed by the OSC so that the
aircraft can use it as a navigational
checkpoint.

MULTI-UNIT CREEPING LINE SEARCH WITH 2 SEPARATED AREAS (CS)



SS Expanding Square Search

- Most effective when the location of the search object is known within relatively close limits.
- The commence search point is always the datum position.
- Often appropriate for vessels or small boats to use when searching for persons in the water or other search objects with little or no leeway.
- Due to the small area involved, this procedure must not be used simultaneously by multiple aircraft at similar altitudes or by multiple vessels.
- Accurate navigation is required; the first leg is usually oriented directly into the wind to minimize navigational errors.
- It is difficult for fixed-wing aircraft to fly legs close to datum if swept (S) is less than 2 NM.



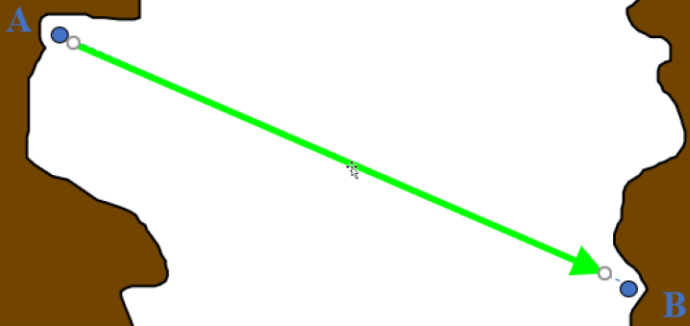
TS TRACKLINE SEARCH

- Normally used when an aircraft or vessel has disappeared without a trace along a known route
- Often used as initial search effort due to ease of planning and implementation
- Consists of a rapid and reasonably thorough search along intended route of the distressed craft.
- Search may be along one side of the track line and return in the opposite direction on the other side (TSR).
- Search may be along the intended track and once on each side, then search facility continues on its way and does not return (TSN).
- Aircraft are frequently used for TS due to their high speed.

SEARCH PATTERNS

TRACKLINE SEARCH

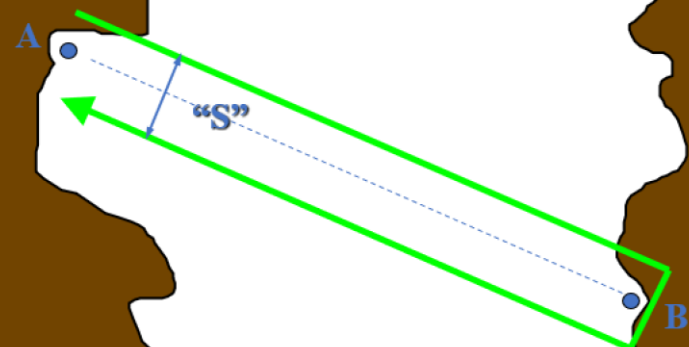
Trackline Search Non-return
(TSN)



SEARCH PATTERNS

TRACKLINE SEARCH

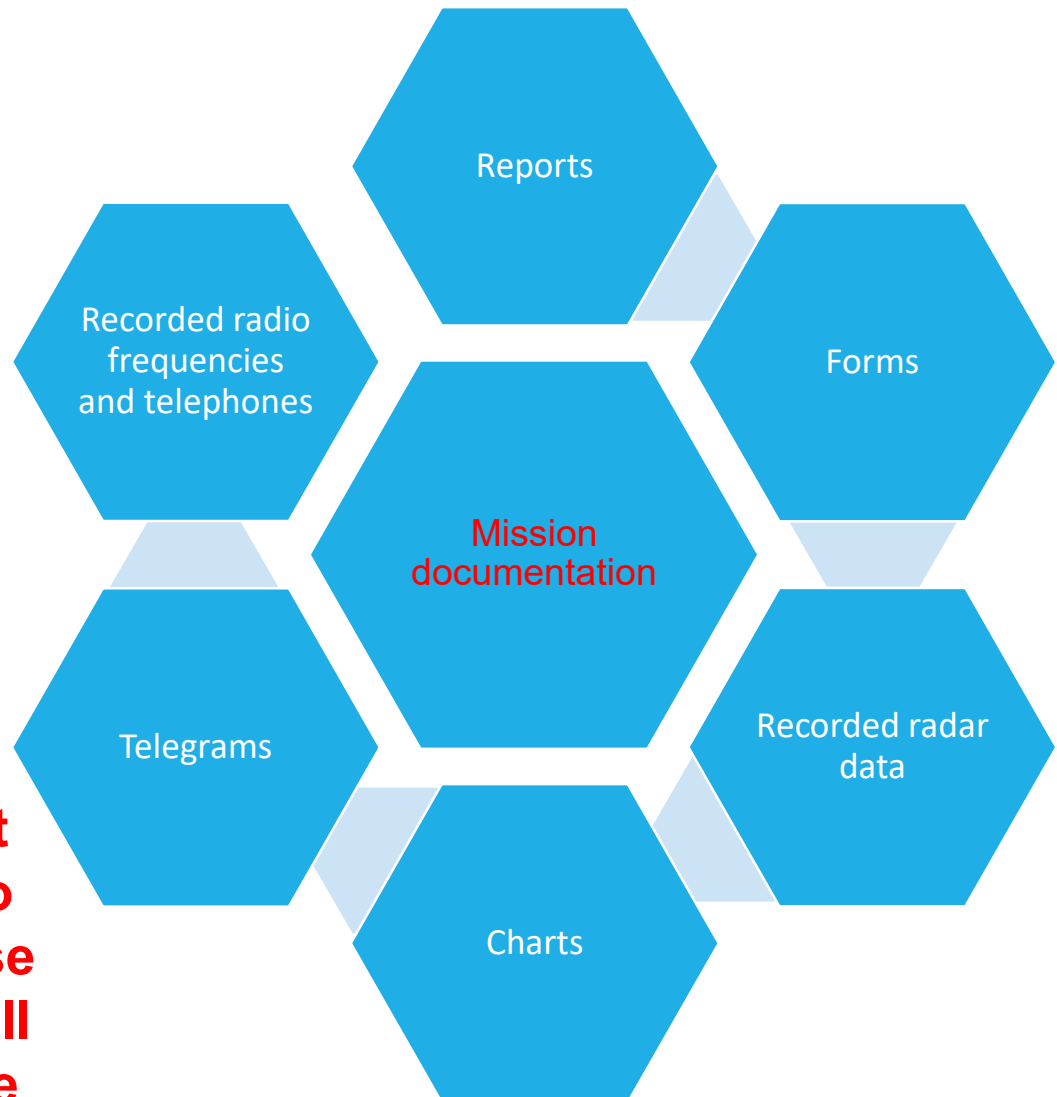
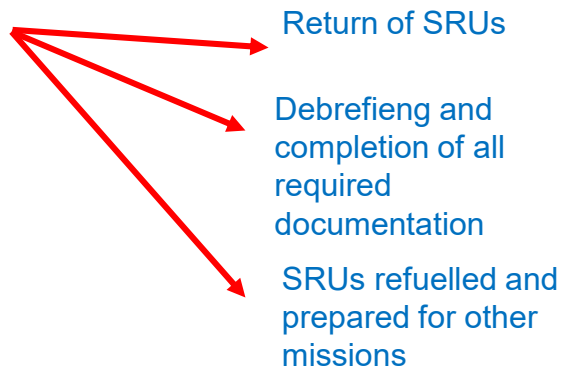
Trackline Search Return
(TSR)



These are the most common but further are described in the IAMSAR Manual vol. 2 Chapter 5 «Search techniques and operations»



CONCLUSION OF THE OPERATIONS



Sufficient information must be recorded and retained to completely re-create the case and show the rationale for all decisions at some later date



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