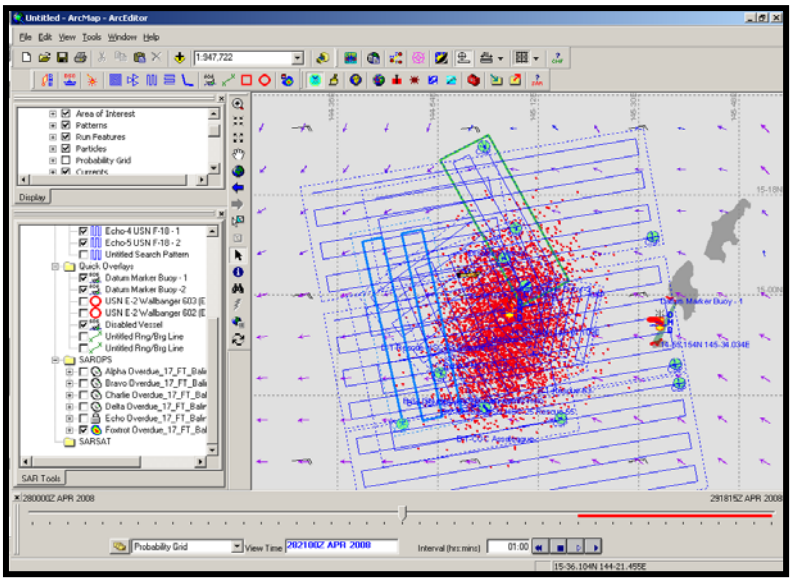
INFORMATION IS RELEASABLE TO FOREIGN NATIONALS

Search and Rescue Optimal Planning System (SAROPS)

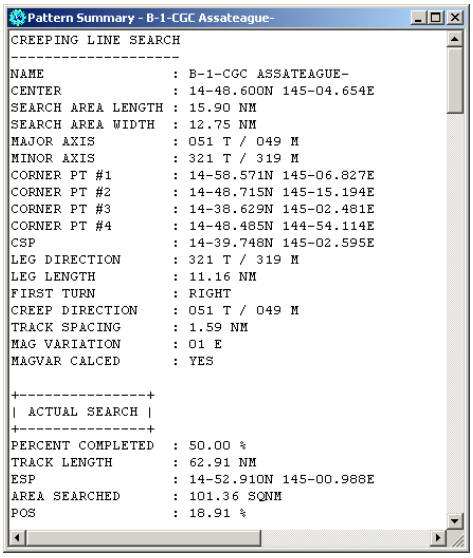


SAROPS is written as a series of extensions to ESRI's ArcGIS 9.2 (COTS, not part of the SAROPS distribution). SAROPS makes requests to and receives from an Environmental Data Sever (EDS) real-time gridded environmental products. SAROPS also allows manual inputs of winds and currents input via a 'sketch' tool using objective analysis techniques. SAROPS uses the latest drift algorithms to project the drift of the survivors and craft.

SAROPS is the software used by the U.S. Coast Guard for Maritime Search Planning. SAROPS is a Monte Carlo based system that uses thousands of simulated particles generated by user inputs in a wizard based Graphical User Interface. SAROPS has the ability to handle multiple scenarios and search object types; model pre-distress motion and hazards; and account for the affects of previous searches.

Search Rescue Unit (SRU) allocation is automated in SAROPS by maximizing Probability of Success (POS). Each SRU gets a recommended search pattern that accounts for the relative motion between the SRU and the drifting particles. This is done by using the Probability of Detection as function Lateral Range to update the probability of detection for each particle.

Search pattern summaries are available in several formats. Search effectiveness reports are also generated. There are capabilities for exporting and importing SAROPS case files



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Pattern Summary - B-1-CGC Assateague-
CREEPING LINE SEARCH
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NAME                : B-1-CGC ASSATEAGUE-
CENTER              : 14-48.600N 145-04.654E
SEARCH AREA LENGTH  : 15.90 NM
SEARCH AREA WIDTH   : 12.75 NM
MAJOR AXIS          : 051 T / 049 M
MINOR AXIS          : 321 T / 319 M
CORNER PT #1        : 14-58.571N 145-06.827E
CORNER PT #2        : 14-48.715N 145-15.194E
CORNER PT #3        : 14-38.629N 145-02.481E
CORNER PT #4        : 14-48.485N 144-54.114E
CSP                 : 14-39.748N 145-02.595E
LEG DIRECTION       : 321 T / 319 M
LEG LENGTH          : 11.16 NM
FIRST TURN          : RIGHT
CREEP DIRECTION     : 051 T / 049 M
TRACK SPACING       : 1.59 NM
MAG VARIATION       : 01 E
MAGVAR CALCED       : YES

+---------------+
| ACTUAL SEARCH |
+---------------+
PERCENT COMPLETED   : 50.00 %
TRACK LENGTH        : 62.91 NM
ESP                 : 14-52.910N 145-00.988E
AREA SEARCHED       : 101.36 SQNM
POS                 : 18.91 %
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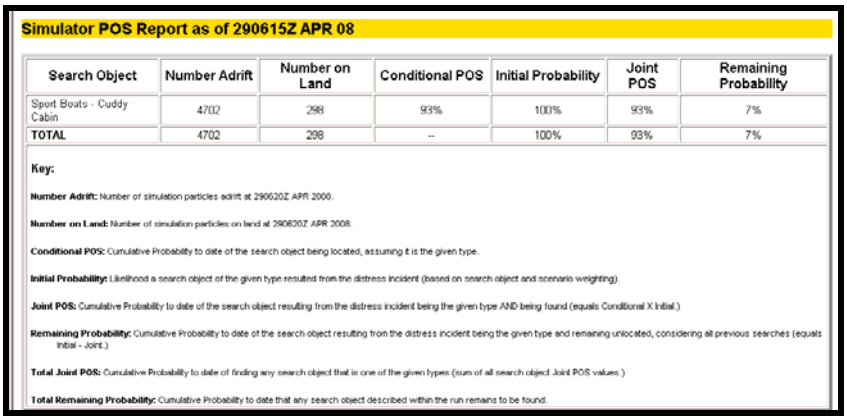

Simulator POS Report as of 290615Z APR 08

Search Object	Number Adrift	Number on Land	Conditional POS	Initial Probability	Joint POS	Remaining Probability
Sport Boats - Cuddy Cabin	4702	298	93%	100%	93%	7%
TOTAL	4702	298	--	100%	93%	7%

Key:

Number Adrift: Number of simulation particles adrift at 290620Z APR 2008.

Number on Land: Number of simulation particles on land at 290620Z APR 2008.

Conditional POS: Cumulative Probability to date of the search object being located, assuming it is the given type.

Initial Probability: Likelihood a search object of the given type resulted from the distress incident (based on search object and scenario weighting).

Joint POS: Cumulative Probability to date of the search object resulting from the distress incident being the given type AND being found (equals Conditional X Initial.)

Remaining Probability: Cumulative Probability to date of the search object resulting from the distress incident being the given type and remaining unlocated, considering all previous searches (equals Initial - Joint.)

Total Joint POS: Cumulative Probability to date of finding any search object that is one of the given types (sum of all search object Joint POS values.)

Total Remaining Probability: Cumulative Probability to date that any search object described within the run remains to be found.

HARDWARE REQUIREMENTS:

A computer system is required with sufficient capacity to house and effectively run both the base graphical user interface and SAROPS software. The hardware is dependent on the configuration chosen by each nation for the use of SAROPS. SAROPS can be housed locally in standalone configuration or by a using a remote sever application. Computer system specifications for selected configurations will be provided by the US Coast Guard.

Basic hardware requirements must be satisfactory for operating ESRI ArcMap; this will also be satisfactory for operating SAROPS. ESRI advises Hardware Requirements as follows:

CPU Speed: 1.6 GHz recommended or higher.
Processor: Intel Core Duo, Intel Pentium or Intel Xeon Processors.
Memory/RAM: 1 GB minimum, 2 GB recommended or higher (If using the ArcSDE Personal Edition for Microsoft SQL Server Express software, 2 GB of RAM is required.).
Display Properties: Greater than 256 color depth.
Screen Resolution: 1024 x 768 recommended or higher at Normal size (96dpi).
Swap Space: Determined by the operating system, 500 MB minimum.
Disk Space: 1.2 GB.
Disk Space Requirements: In addition, up to 50 MB of disk space may be needed in the Windows System directory (typically C:\Windows\System32). You can view the disk space requirement for each of the 9.2 components in the Setup program.

SOFTWARE REQUIREMENTS:

System and common software. Must have at minimum the computer operating system installed; Microsoft Windows XP with SP2. Internet Explorer 6 or above is also required; this typically is included if the computer has Windows XP with SP2. For standalone PC's the operating system software frequently comes packaged with the hardware and preloaded.

ESRI ArcGIS software. ArcGIS software is required as the Geographic Information System base on which SAROPS runs as an extension. This software is available commercially and must be purchased by international partners. The current specific software includes:

1) ArcGIS 9.2 with ArcGIS SP4. May be ArcEditor install (ArcInfo is a higher requirement).
   Microsoft VISTA users: REQUIRES ArcGIS 9.2 SP4 minimum.
2) Military Analyst for 9.2 with MA 9.2 SP1
3) MOLE TM 9.2 (optional but recommended).

Environmental Data Server. SAROPS was designed to effectively use higher resolution gridded environmental data products to provide superior accuracy in search object drift. To make use of these products an Environmental Data Server (EDS) is needed. EDS is software that requires a hardware platform; this may be the same as the platform for SAROPS if sufficient capacity is available on that hardware. This software is available commercially and may be purchased by international partners. Two options for an EDS service are available:

1) Nations may choose to develop their own EDS; either with their own resources or with Applied Science Associates (ASA), the contractor that developed the U.S. Coast Guard EDS. EDS operation requires a significant amount of IT infrastructure, follow-on maintenance and updates.
2) Nations may choose to contract for EDS data through a subscription service to an EDS maintained by a commercial source such as ASA.

SUPPORT

The USCG will maintain a help desk on technical issues and SAROPS issues. Callers must speak English. Support may also be obtained from commercial sources.

SOFTWARE UPGRADES

Software upgrades which occur semi-annually will be covered for a 5-year period.

TRAINING REQUIREMENTS:

Purchase of the SAROPS software must be scheduled in conjunction with SAROPS training through the Search Coordination and Planning with SAROPS Mobile Training Team (MTT), which provides training and installation.