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.

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.

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.

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 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.