User Manual

By AGM

This document is part of the SAR report, and is intended for use by users of the system.

Table of Contents:

Aims of the System

SAR is a program designed for search managers of land-based searches.

This program will record information about regions of the area being searched (Areas), the search and rescue units (SRUs) you have available to you, where these units are allocated, and for how long.

The system is designed not only to keep track of your SRUs, but also to recommend allocations to you. As the user of the system you have complete control over the search and may reject the systems suggestions. Asking for the systems suggests will cause your results to be replace, so make sure you save them first ! (You can then reload your preferred allocation, or adjust what the system recommends).

The systems suggestion are designed to maximise your chance of finding the missing person / object. It does this by trying to create “optimal” allocations. That is, an allocation that uses your SRUs to there maximum efficiency. While not always optimal (finding optimal allocations is not possible in a reasonable amount of time), the systems recommendations are fairly good, and a good basis for you to start from.

Good luck !

- The AGM Team.

Starting the program

Starting Up – Windows

From the start menu, select MSDOS prompt.
Now follow the instructions listed under “starting up – Dos”

Starting Up - Dos

Change to the correct drive
eg C:\> **d:**
now: D:\>

Change to the directory where the program is kept (listed as “SAR” below).
eg D:\> **Cd d:\SAR**
now: D:\SAR>

Type the command to start the program
eg for interactive mode, with no files auto loaded: D:\SAR> **sar.exe**

For help on more advanced option (eg to run under different modes) see the “Advanced Features” section of this document

Starting Up - Linux

Change to the correct directory
eg [user@/home] **cd /usr/bin/sar**

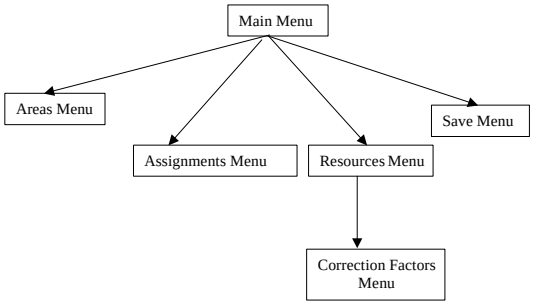
[user@/usr/bin/sar] $ **./allocate**

For help on more advanced option (eg to run under different modes) see the “Advanced Features” section of this document

Navigating the System

The system is accessed via text-based menus, under either; Dos, Windows or Linux. These menus should look the same under any of the three systems.

Navigation Map



Operating specific comments

Scrolling on data screens
Under Linux you have the ability to scroll up and down. Under windows and dos this does not exist. In stead, please use the “pause” key (top right of the key board) when viewing large lists of data.

General

The menu option “0” (zero) is used to exit back to a higher level menu. On the main menu this will exit the system.

Features Included

The Main Menu

```
*********************************
***    Search and Rescue 2001     ***
***              Main Menu              ***
*********************************

[1] Resource Properties
[2] Save Project
[3] Map Area Properties
[4] Assignment Adjustments
[5] View Current Resource Assignments
[6] Request Resource Allocation Advice
[7] Update POAs using current Resource Allocation

[0] Exit
Please enter an option :
```

Navigation
Press 1 to go to the Resources Menu
Press 2 to go to Save Menu
Press 3 to go to the Areas Menu
Press 0 to exit the program (You may want to save first !)

Resources Menu (Select 1 on the main menu to get here)

```
*********************************
***      Search and Rescue 2001   ***
***             Resource Menu         ***
*********************************

[1] Enter a new SRU
[2] Load SRUs from a file
[3] Delete an SRU
[4] Delete all current SRUs
[5] Modify details of an SRU
[6] View details of an SRU
[7] View details of all SRUs
[8] Adjust correction factors

[0] Back to Main Menu
Please enter an option :
```

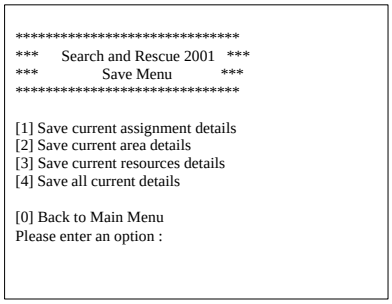
Enter a new SRU	- Manual Entry, you type in the details
Load SRUs from a file	- Load a *.res file
Delete an SRU	- This ask for an SRU number, then removes it
Delete all current SRUs	- This empties your SRU resource pool
Modify details of an SRU	- This allows you to change an existing SRU
View details of an SRU	- This shows all details on an SRU
View details of all SRUs	- This shows summary details of all SRUs
Adjust correction factors	- SRUs work better or worse depending on the type of area you send them to. This information is stored in the correction factors. Alter this information here.

A resource contain the following information:
Resource Num, Name, POD, ESW [in m], V [in m per Sec], Hours Available, (corr table)

Example:
1, Fast, 55.50, 200.00, 200.10, 30, ((55/2/5.500) (58/3/8.000))

You will need this information in order to create a resource.

Save Menu (To get here, select 2 from the main menu)



Save current assignment details - Saves a *.alo file containing the current allocations
If is useful if you want to save, adjust and then be able to revert back to the original if you desire.

Save current area details - Saves a *.are file containing the current areas
This includes the current probability that the person is in each area. This saves the state of the search at this point in time.

Save current resources details - Saves a *.res file containing the current SRUs
This saves the current resource pool

Save all current details - Saves all of the above as *.dat files.

This is useful as a means of backing up the system. If you are using a laptop, use this option before changing batteries, then reload these files.
(See recovering from backup in common tasks)

Tips on Saving: You should save…

- After making changes (particularly to allocations)
- Before running the suggest allocations function.
- On battery low on a laptop
- Regularly as a precaution

Area Menu (you can get here by selecting 3 from the main menu)

```
*******************************
***    Search and Rescue 2001   ***
***            Area Menu            ***
*******************************

[1] Modify an Area
[2] Add a new Area
[3] Delete an Area
[4] View an Area
[5] View all Areas
[6] Load Areas from file
[7] Delete ALL Areas

[0] Back to Main Menu
Please enter an option :
```

Modify an Area	- Modify existing area details. Use this to take into account changes due to the season (if using an old map), or to account for clues by reducing / increasing the probabilities.
Add a new Area	- Manual Entry, you type in the details
Delete an Area	- Asks for an area number then removes this
View an Area	- Asks for an area then shows all the details
View all Areas	- Shows summary details for all areas
Load Areas from file	- Use this to load a map once the program is running. eg on start up, or to recover from a battery change / power failure or computer crash.
Delete ALL Areas	- This removes all areas. The program will not be able to run allocations until a new set of areas is loaded from a file or added manually.

An area corresponds to a search region on your map. This program is limited to rectangular shaped areas.

An area contains the following information:
Number, center, Polygon, Travel Time, Altitude, Terrain, Vegetation, POA

Exmaple:
1, (1005/0995),((1000/1000)(1000/0990)(1010/0990)(1010/1000)),0, 0,34,3,3.23

You will need to know this information in order to create an area

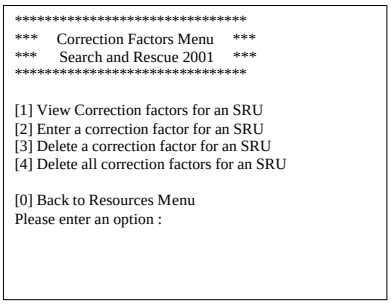
Assignment Features (get here by selecting 4 from the main menu)

```
*******************************
***     Search and Rescue 2001   ***
***          Assignment Menu      ***
*******************************

[1] Add Assignment
[2] Delete Assignment
[3] Load Assignments from file

[0] Back to Main Menu
Please enter an option :
```

Add Assignment	- Add an assignment manually
Delete Assignment	- Remove an assignment
Load Assignments from file	- Load an assignment allocation file (*.alo) Use this to revert to your saved allocations, after the system recommends an allocation you disagree with.

NB: You can save the current set of assignment before you alter it.
After using this menu, you should save, just in case you ask the system to suggest assignment later on.
See Save menu above for different options on saving.

Correction Factors Menu (You can get here by selecting 8 on the resources menu)



View Correction factors for an SRU	- View the different types of Terrain and Vegetation that this SRU either works better or worse at.
Enter a correction factor for an SRU	- Enter a correction factor for a type of Terrain and Vegetation for a particular SRU
Delete a correction factor for an SRU	- Remove a correction factor from a specified SRU
Delete all correction factors for an SRU	- Remove Correction factors for this SRU, this make the SRU act the same under all conditions.

Correction factors are in the format:
`((terrain/vegetation/factor))`

```
Example:
((55/2/5.5))
```

Terrain is an integer 1 to 100 and matches the terrain found in areas
Vegetation is 1, 2 or 3
Factor is a decimal number 0.0 to 10.0

Usage: If the resource is assigned to an area with a terrain and vegetation matching one of its correction factors, its effectiveness (POD) is increased by multiplying it by the factor.

Common Tasks

This section is designed to give you enough worked examples to get you up and running with the system. There are many more features in the system, and once you are comfortable with the basics, you should have a look at these.

Loading files

Load Area File

1. Select 3 from the main menu to access the area menu
2. Select 6 from the area menu to load file
3. Enter the file name when prompted (eg test_a.are)
4. Any area error will be displayed on the screen and added to the error.log file (see the section on the error.log file in this document for more details)
5. Enter 0 to exit the area menu

Load Resource File

1. Select “1” from the main menu to access the resources menu
2. Select “2” from the resources menu to load a resources file
3. Enter the file name when prompted (eg test_a.res)
4. Any warning will be displayed on the screen and written to the error.log file (see error.log section of this document for more details)
5. enter 0 to exit the resources menu

Loading the Allocations File

1. Select “4” from the main menu to access the Assignment menu
2. Select “3” from the assignment menu to load assignment
3. Enter the filename (eg. Test_a.alo)
6. Any warning will be displayed on the screen and written to the error.log file (see error.log section of this document for more details)
7. Enter 0 to exit the Assignment menu
8. Enter 0 to return to the main menu

Saving files

1. From the main menu “2”
2. Select the save option you want, enter file name
3. select 0 to return to main menu

Viewing Areas

1. From the main menu select 3
2. From the Area Menu select 5
3. Use the pause button on the key board to control scrolling data
4. Select 0 to return to the main menu

Viewing Resources

1. Select 1 on the main menu to access the resources menu

2. Select 7 on the resources menu
3. Use the pause key under dos to control scrolling
4. select 0 to return to the main menu

Viewing Allocations

1. Select 5 from the main Menu

Get Recommendations

1. Select 6 from the main Menu

Recovering from Saved Files

See Loading

Running with current allocations

1. Select 7 from the main menu

Adding an assignment

1. Select 4 from the main menu to access the Assignments menu
2. Select 1 to add
3. Fill in the required details
4. select 0 to return to the main menu

Deleting an Assignment

1. Select 4 from the main menu to access the Assignments menu
2. Select 2 to delete, and when prompted enter the resource number

Advanced features

The program can be run in a number of different modes, these include interactive (which you have been using so far) and various batch modes.

Auto - Take area and resource files and calculate assignments
Advice - Take area and resource files and calculate assignments
Run - Take area, resource and assignments files and update POA

You can also specify area, resource or allocation file to use from the Linux or Dos command line.

Eg *allocate –Asome.are* loads the
allocate –Rsome.res loads the file some.res as a resource file.
allocate –Ssome.alo loads the file some.alo as an assignment file.

Or combinations of these.
Eg *allocate –Ssome.alo Rsome.res*

The Error Log

The file error.log contains listings of all error messages given to the user. It also contains technical information on the errors, that can be used for maintenance.

Format:

```
**************************************************************************
Fri Jun 01 15:56:13 2001
**************************************************************************

User msg
File test_a.alo line 8 -  There is no SRU with Resource Number 2.  Assignment could
not be added.
Comment msg
SearchManager::LoadAssignments() - data[0] does not contain a valid Resource
Number.
```

Comment Message is for development / maintenance. As a user you can mostly ignore these, unless reporting a bug.

Common Error Messages

This section contains a list of errors you may encounter if you have invalid data in your files.

Area Errors

File test_a.are line 14 - Area Number -3 is not between -2 and 100 or is 0. Area ignored.

File test_a.are line 27 - Polygon boundaries ((1000/1000)(1000/0990)(1010/0990)) are invalid. Area ignored.

File test_a.are line36 - Travel Time -1 is not between 0 and 2147483647. Area ignored.

File test_a.are line 39 - Travel time 0.5 is not a valid integer. Area ignored.

File test_a.are line 44 - Altitude -66.54 is not a valid integer. Area ignored.

File test_a.are line50 - Terrain -1 is not between 1 and 100. Area ignored.

File test_a.are line 52 - Terrain 44.5 is not a valid integer. Area ignored.

File test_a.are line 53 - Terrain a is not a valid integer. Area ignored.

File test_a.are line61 - Vegetation 0 is not between 1 and 3. Area ignored.

File test_a.are line 63 - Vegetation 1.5 is not a valid integer. Area ignored.

Resources Errors

File testaloc.res line 7 - Duplicate correction factors specified for terrain = 55 and vegetation = 2. Second correction factor ignored.

File test_a.alo line 12 - There is no SRU with Resource Number 0. Assignment could not be added.

File test_a.alo line 15 - SRU 2 does not have sufficient Resource-hours remaining to accept Assignment. Assignment could not be added.

File test_a.alo line 17 - There is no Area with Area Number 3. Assignment could not be added.

File test_a.alo line 21 - Resource Hours -31 is not positive. Assignment could not be added.

Allocation Errors

File test_a.alo line 8 - There is no SRU with Resource Number 2. Assignment could not be added.

Frequently Asked Questions

Q: When I list areas or resources, they always scroll off the screen. How do I stop this ?
A: Use the pause key (top right of the key board) to pause the screen. Press any key to un-pause