

RECOMP II USERS' PROGRAM NO. 1086

PROGRAM TITLE: OPERATIONS RESEARCH SUBMARINE PROBLEM
PROGRAM CLASSIFICATION: General
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PURPOSE: To detect and identify submarines passing by
a barrier submarine without the barrier sub-
marine being detected.
DATE: 4 April 1962

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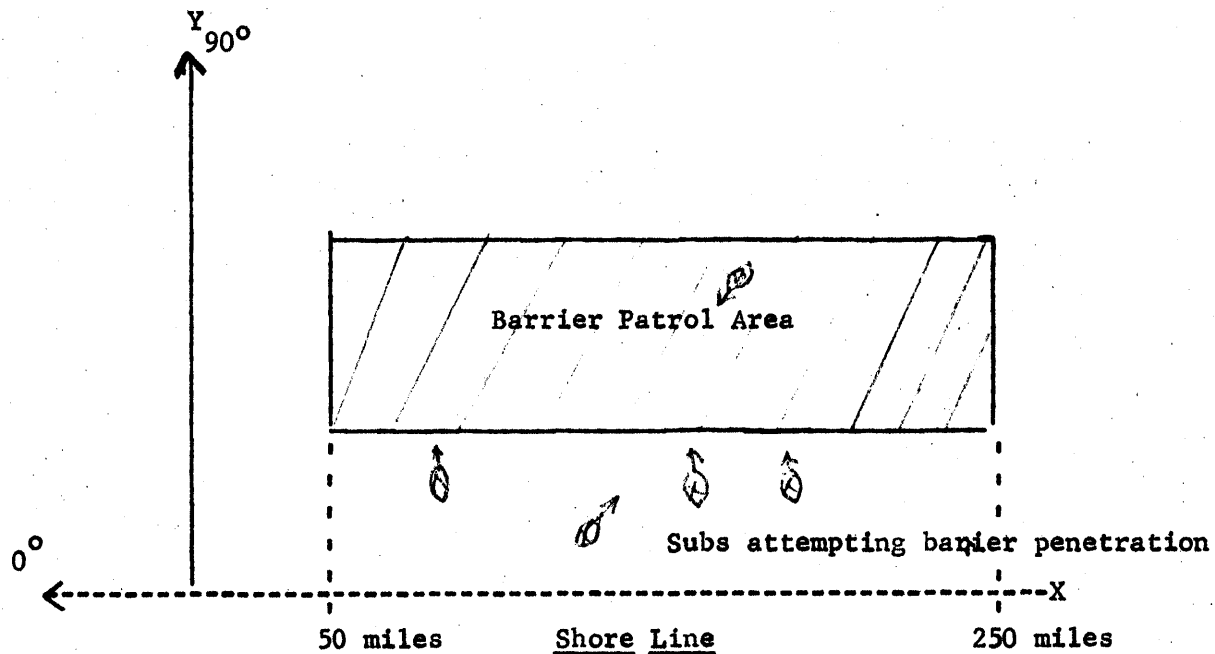
OPERATIONS RESEARCH SUBMARINE PROBLEM

OBJECTIVE: To detect and identify submarines passing by a barrier submarine without the barrier submarine being detected.

- OPERATION:**
1. Assigned to each submarine is a commander who can control his course, speed and, if he has a diesel electric vessel, snorkel depth.
 2. The only knowledge the commander will have is his location and contact intelligence (if any) as well as that information mentioned above.
 3. The computer will maintain and update the following:
 - a) Battery status for diesel/electric subs
 - b) Position
 - c) Velocity
 - d) Bearing of contacted subs
 - e) Type of contacted subs
 4. The computer will report in quarter hour increments the status of all subs and contacts (if any).

- LIMITS:**
1. The barrier submarine can patrol parallel to the shore line for 200 nautical miles in either direction. Its distance from the shore is controlled by the barrier sub commander.
 2. Contact limitation:
 - a) Contact can be made only on a 180° sweep in the direction of the contacting submarine.
 - b) If the velocity of the submarine is less than 5 knots the range for contact is equal to 5 miles.
 - c) If the velocity of the submarine is greater than 5 knots the range for contact is equal to the velocity.
 - d) If the submarine is at snorkel depth the range for contact is equal to the velocity.
 - e) The observer cannot contact at speeds greater than 5 knots or at snorkel depth.

BARRIER MAP:



PROGRAM USAGE:

1. Load program tape into the RECOMP
2. Referring to the memory map enter the following information for each submarine:
 - a) Battery Status - up to 100%
 - b) X coordinate - $50 \leq X \leq 250$ miles
 - c) Y coordinate - $0 \leq Y \leq 50$ miles from barrier submarine
 - d) Type - Nuclear, diesel/electric, diesel/electric at snorkel depth
 - e) Course - in degrees, $0^\circ \leq \text{course} \leq 360^\circ$
 - f) Speed - reasonable

NOTE: Codes for type: 0 = Nuclear
-1 = Submerged diesel/electric
/1 = Diesel/electric at snorkel depth

3. Entry of the preceding information is as follows:
 - a) Set location to 0011.0
 - b) Enter information, i.e., /50.0 in numbers fill mode
 - c) Depress 'L' key
 - d) Enter location for storage (do not depress enter key)
 - e) Depress start 1

- f) If sequential information is entered repeat step b) and depress start 2
 - g) If the user wishes to skip one location repeat step b) and depress start 3
4. After all entries are completed set location to L2774.0 and press start.
 5. The computer will type out status report of all submarines.
 6. Return to step 3 to change any information and continue until game is completed.

MEMORY MAP:

	Battery	X	Y	Type	Course	Speed
Barrier Sub	L4000.0	L4400.0	L5000.0	L5400.0	L6000.0	L6400.0
Sub 1	4002.0	4402.0	5002.0	5402.0	6402.0	6402.0
Sub 2	4004	4404	5004	5404	6004	6404
	Etc...					

RESTRICTIONS:

1. Only one barrier submarine can be used.
2. Up to 100 penetration subs can be used.
3. Switch B up eliminates subs on contact.