

PHANTOM SUBMARINE

A SIMULATED LEARNING SITUATION

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RATIONALE: Social Studies should be a favorite subject for teacher and student; this is the subject matter which covers the areas that have the greatest effect on our lives. Social Studies deals with ideas about people and their problems both in the past and the present. It is the area of study which should give the most opportunity for looking at the world and its problems in new and creative ways. However, too often social studies lessons become bogged down in the accumulation of descriptive facts which are quickly forgotten. Hilda Taba believes, "In order to learn to think, the student must do the thinking instead of absorbing the products of thought processes performed either by the book or by the teacher."¹

What makes up thinking and in what kind of situations do students "learn to think"? Hilda Taba identifies three cognitive tasks involved in the thinking process: (1) Concept formation, (2) Interpretation of data, and (3) Application. The Phantom Submarine game is a simulated learning situation which develops all three of the cognitive tasks defined by Taba. The first of these tasks is concept formation. This involves organizing information into a system of classes or groups.² Phantom Submarine game develops this area by having the students make their own maps of the floor

¹Taba, Hilda, Effective Thinking in the Social Studies, Dept. of National Education Association, 1967, p. 43.

2. Ibid., p. 33.

of the Atlantic Ocean. The map making process involves working with concrete facts and it requires that the students label and identify items according to common properties. For example, there is only one symbol which represents mountains and all mountains in the game are labeled in this way. This symbol differs from the one used to represent the gulf stream or water depths, it only stands for those things which possess certain common properties that can be labeled as mountains.

The second cognitive task described by Taba is the interpretation of data. To do this the student must relate various kinds of information given on his map and determine cause and effect relationships.³ For example, while playing Phantom Submarine he must look for cause and effect relationships between the gulf stream and his problem with the submarine. The gulf stream passes over the mid-Atlantic Ridge at two points. What possible effect might this have on the submarine which is floating in its current?

The final step in these cognitive tasks is for the student to be able to apply what he knows, facts and generalizations, to problem solving. In the game this task is developed in the role playing portion where the students are given a role card which loosely defines the type of person he will role play, (age, occupation, and reason for being involved in the problem situation). The students, each playing a role, work in their group with four or five others to solve a problem concerning the submarine. They must use their knowledge of the map and the generalizations they have formed in the previous steps of the game to reach a decision upon which all members of the group can agree.

DESCRIPTION OF THE SIMULATED EVENT

Phantom Submarine concerns a German submarine which was believed to have been sunk off the coast of Florida in World War II. However, recent

³Ibid., p. 37.

information has led to the discovery that it was not sunk but has remained afloat in the gulf stream 200 feet beneath the surface. Students who take part in the simulation are asked first to learn the physical characteristics of the Atlantic Ocean floor and then to apply these learnings to a problem which is presented by the submarine. All students participate in the learning and problem solving by contributing different information concerning the gulf stream and floor of the Atlantic Ocean. Each child is assigned a role to play. The members of each simulation group decide, by consensus, what to do about the problem presented by the submarine.

MATERIALS AND STEPS IN IMPLEMENTING THE SIMULATION

The simulation is implemented by dividing the class into groups of five persons each. A sociogram can be used to decide the best balance for each group. The groups represent people who have been called to a meeting because of their knowledge and interest in the Phantom submarine. Each member of the group will have a data card telling some physical characteristic of the floor of the Atlantic Ocean. Each member will also have a role card telling him what person he is to represent at the meeting and a worksheet on which he records the data about the ocean floor in the form of physical characteristics. (see Appendix for these materials)

The simulation begins by the group compiling factual knowledge about the floor of the ocean and its currents. This is accomplished by a member of the group showing and reading his card to the rest of the group (cards of this type represent ocean depth, route of gulf stream, mid-Atlantic Ridge). As each member reads his card, the other members record this data on their outline maps on their worksheets. A crayola is used to duplicate the same colors presented on the data cards. All members of the group now have the same information.

The second part of the simulation involves the group deciding what to do with the submarine basing their decision the information they have on

their maps. Discussion of gulf stream speed, hazards of mountain ridges, and ocean depths by the members of the group can lead to valuable information being shared by all members.

The third part of the game begins with the problem that is given in the worksheet. The problem is based on the idea that the submarine is carrying two hundred tons of mercury to keep the ship stable. Mercury is a deadly poison and if it should be spilled in the ocean it would cause a great disaster to fish and plant life. The ecology of the entire world could be affected. It is believed that the ship carries a self-triggering device that will cause it to explode if any attempt is made to enter it or to bring it to the surface. Recently a man by the name of Mr. John L. Greedy who is a deep sea treasure hunter has learned of the submarine and has made plans to bring it up. The mercury on the submarine is worth about one million dollars and would make him a very rich man. A meeting has been called by the United Nations Committee on World Pollution Control and each group represents this meeting being held by the people who are involved or interested in this problem. Every member uses his role card to define who he represents at this meeting. Maximum time should be allowed for the discussion until a group decision is reached and the reasons are clearly set down for the decisions that are made.

At the end of this discussion, groups report to the class-at-large on their decisions and the reasons behind them.

INTENDED LEARNINGS FROM THE SIMULATION

MAP SYMBOLS: Placing and Using to Make Decisions

Students learn the meaning of map symbols at the same time they learn to use them. The symbols appear on the map as having relations to each other, i.e., the ocean water depths are represented in shades of blue and green, with light green symbolizing shallow water and dark blue representing deep water. The mid-Atlantic Ridge is indicated by mountain symbols and

the gulf stream route traced by arrows. All of these geographical features must be taken into consideration in order to make an intelligent decision about the problem concerning the submarine.

Social Structure and Its Relation to Decision Making

The group, through its role playing cards, is led to see that different people according to their interests and occupation have different opinions about the same problem. These differences of opinion must be resolved in order to reach a decision.

Group Process: Group Decision Making

The group learns to make a decision solely on the data at hand. This makes the process independent of the teacher and thereby strengthens the independency of the group and the individual. In addition to knowledge, skills of persuasion, negotiation, compromise, leadership, blocking, and facilitation are experienced.

APPENDIX A

THE PHANTOM SUBMARINE

NAME _____ DATE _____ GROUP NO. _____

DIRECTIONS: This is a fact learning and decision making game about a submarine and its possible effect on our environment. Please do these tasks in this order.

1. Read the history of the Phantom submarine.

HISTORY OF THE PHANTOM SUBMARINE

William Gaffer who lived in Fort Lauderdale, Florida had an interest in the use of radar. Mr. Gaffer had been a radar operator on a submarine chaser during World War II and although in recent years he had made his living by running a fish cruising boat he continued to work with radar as a hobby. He was known to have the best radar equipment along the coast and had located schools of fish, wrecks of sunken ships, and other objects on the bottom of the ocean floor. Since 1967, he, with the help of the United States Navy and ocean going freighters who were also equipped with radar had been tracking a submarine. In April, 1971, this Article appeared in the New York Times:

TAMPA, Fla., April 1--Reports that a German submarine, sunk near New Orleans during World War II, has drifted to within 30 miles of this port city have whetted the interest of ambitious fortune hunters, caused concern among some Government officials and raised questions of international law.

The vessel is said to be resting at the bottom of the Gulf of Mexico at an approximate depth of 90 feet, still laden with the bodies of her 72-man crew, tons of explosives and at least \$400,000 worth of elemental mercury.

Several individuals and companies have expressed an interest in raising the hull, reportedly still intact. But state and Federal agencies have taken a cautious approach to the proposals even though the submarine is supposedly beyond the 12-mile, territorial jurisdiction of the United States.

Their anxiety is rooted in the fear that an accident during salvage operations could dump beyond the 12-mile territorial 100,000 pounds of mercury, reported to be aboard, into the Gulf, creating an environmental crisis of unknown proportions. Mercury is a dense, extremely valuable, poisonous element.

A spokesman for the German Embassy in Washington said today that his Government had not taken an official position regarding the legal ownership of U-166, a submarine built in Germany in 1938 and sent to the bottom by United States Navy and Coast Guard planes on Aug. 1, 1942.

"We do not even know that the vessel is really there," said Joachim Schoenbeck, the embassy's first secretary. "We are still investigating, still trying to find out if we do own it. I suppose we do, but we just don't know."

Scott Baumer and J. C. Gaddy, both 43-year-old engineers who live in Orlando, Fla., insist the submarine is resting about 30 miles west of Tampa. They have spent five years researching her history, following her movement and planning her salvage, they say.

"I know it's there because I've been down to it," said Mr. Baumer, who is also an amateur diver. "I've sat down on its deck, I know it's there."

Mr. Gaddy has formed a Bahamian corporation, as he said in an interview today, to circumvent any German claim to the sunken vessel. His lawyer in Freeport has advised him, he said, that Bahamian law does not recognize any such claim to a vessel in international waters.

"I'm going out--maybe I'll fly out over the sub--as soon as I can and drop a marker," Mr. Gaddy said. "Then, it's mine, brother, mine."

Others Are Interested

At least three other men are also laying claim to the submarine. They are John K. Mulholland of Bethesda, Md., Melvin L. Joseph, whose address is unknown, and George Charles of Lake Wales, Fla.

Mr. Joseph and Mr. Mulholland who could not be reached for comment are partners in a salvage enterprise, and Mr. Schoenbeck said today that the two were involved in discussions with the German Government regarding the vessel.

Mr. Charles told officials of the Environmental Protection Administration in Atlanta today that he had already claimed the submarine.

Meanwhile, a spokesman for the Florida Air and Water Pollution Department said that a meeting with Mr. Gaddy and representatives of interested Federal and state agencies had been scheduled for next Friday.

Paramount in their concern, the spokesman said, is not only the possibility of an accidental leakage of mercury at the site of a salvage operation, but also the potential hazards of bringing the raised submarine nearer to the Florida coastline.

War Raids Recalled

The United States Navy confirmed today that the U-166 sunk off New Orleans in August, 1942. She was believed then to have been undamaged by direct bomb hits, a conjecture which Mr. Baumer said today was correct.

"There were no holes in her," he said in an interview. If that is the case, it is logical to assume that the submarine was sunk either by the force of concussion from bombs or by remaining submerged until her fuel and air had run out.

In the early part of World War II there was considerable German submarine activity along the North Atlantic and Gulf of Mexico coasts of this country. The underwater vessels found convoys bound for Britain an easy prey when outlined against the night lights of the coast.

United States destroyers, at first dispatched to other theaters of the war, were brought back to the Atlantic and the Gulf of Mexico to assist in protecting the convoys.

Taken from the New York Times, Friday, April 2, 1971.

The Phantom submarine for over twenty years has floated in the Gulf Stream. It has made countless circles through the hazards of underwater ledges, mountains, trenches, and basins through which it must travel. What will become of it? Where is the Phantom Submarine now?

2. Each person in the group take the large card from the brown envelope and read it as you show it to the group. Begin with the card numbered one and do the cards in order. Each member copy in crayola these symbols on the map on page four of this worksheet.

PROBLEM I

(After you have completed putting all the symbols on your own map.)

Since the submarine follows the gulf stream look at your maps and as a group decide where you think some good places might be to try to bring the submarine up. Record in writing all reasons for deciding as you did. (Keep in mind -- water depths, mountain ridges, and other markings on your map.)

REASONS

1. _____

2. _____

PROBLEM II

Recently a man by the name of Mr. John L. Greedy who is a deep sea treasure hunter has learned of the Phantom submarine and has made plans to bring up the submarine. The mercury on the submarine is worth about one million dollars and it would make him a very rich man. However, the United Nations Committee on World Pollution Control has learned of Mr. Greedy's plan and has called a meeting of Mr. Greedy and other people who are interested in or have information about the submarine.

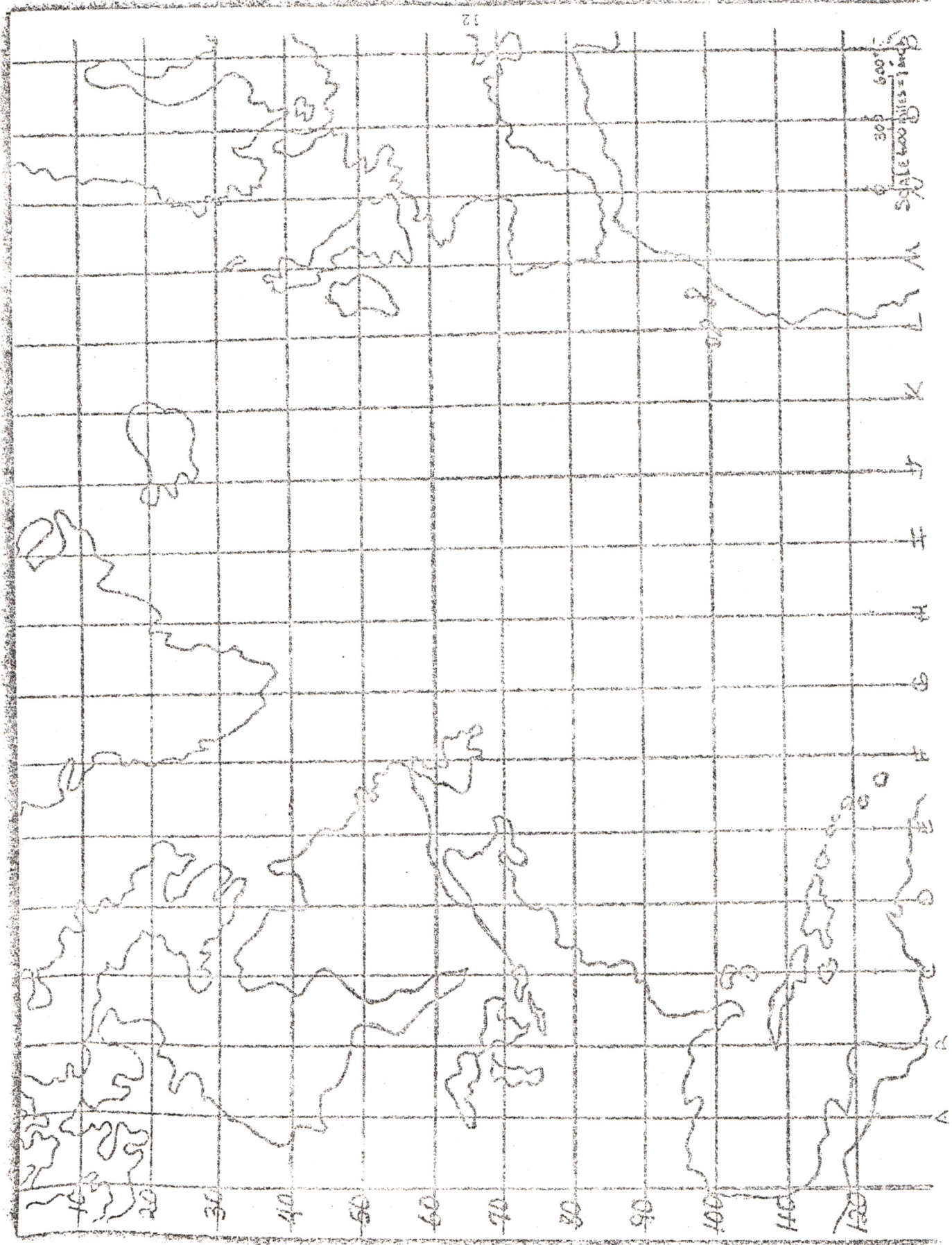
This meeting is being held at the United Nations building in New York City to decide if Mr. Greedy should be allowed to bring up the sub or what other possible action might be taken to prevent the submarine from creating a world disaster. You are one of the five people at this important meeting.

These questions may help you in your discussion of the problem.

1. What could happen if Mr. Greedy is allowed to salvage the submarine?
2. Is it a good idea to try to bring up the submarine? Why or why not?
3. What could happen if the submarine is allowed to continue in its present path?
4. Does it make any difference who is in charge of what happens to the submarine?

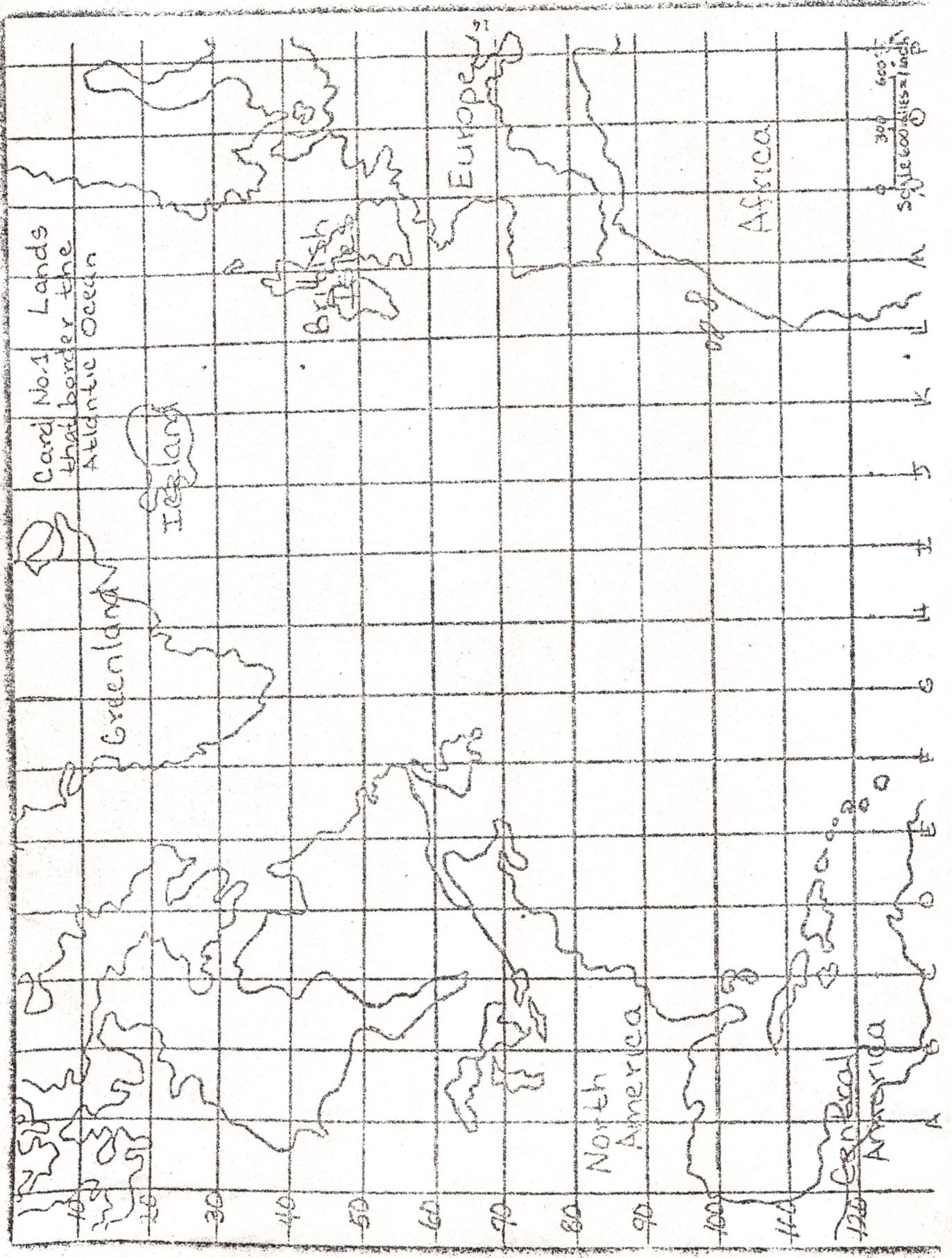
Write below what you did about the problem and why you decided the way you did. The group must agree on all decisions.

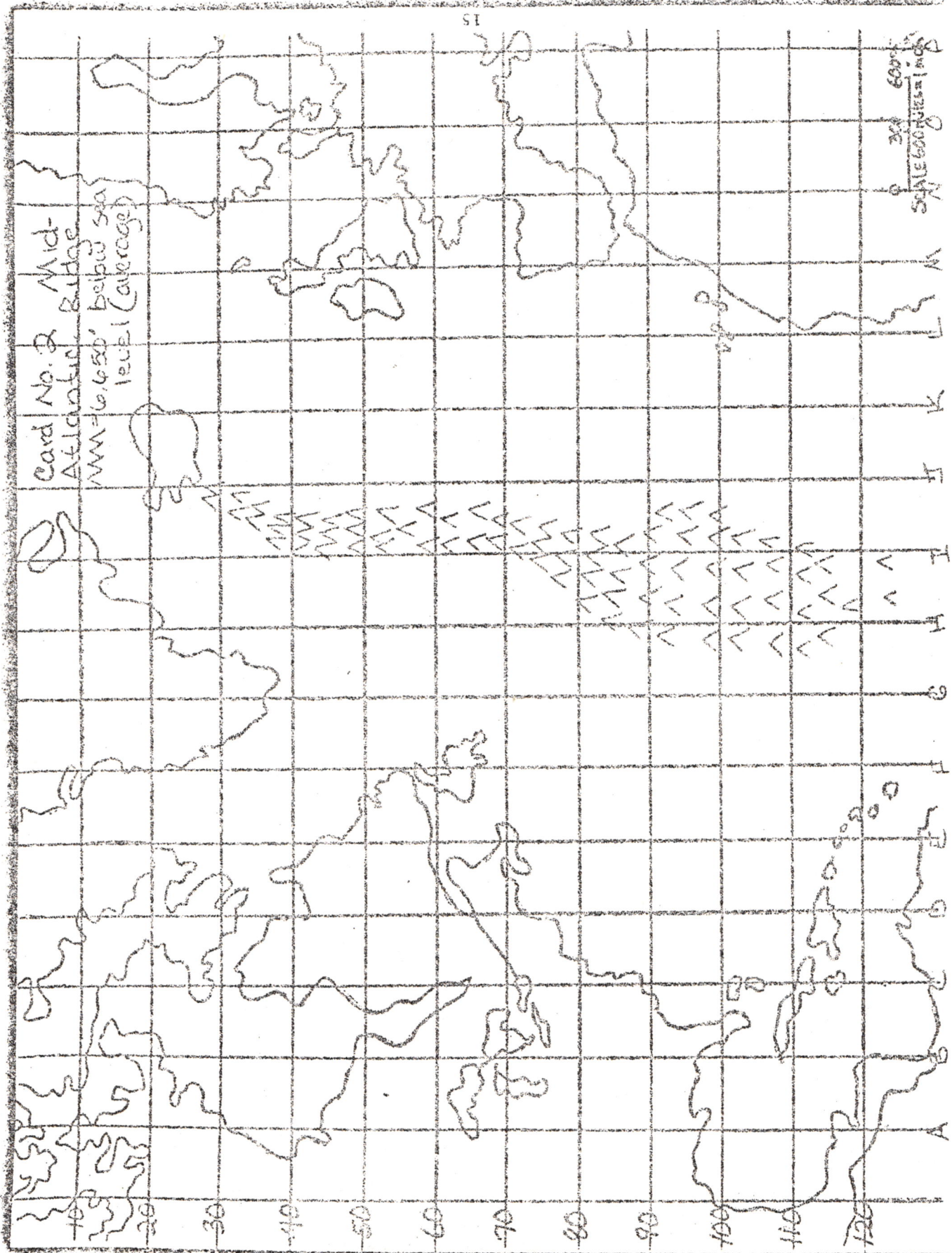
APPENDIX B



MATERIAL TO BE USED FOR THE SIMULATION

1. Cards which represent the geographical features and Gulf Stream route of the Atlantic Ocean are made on paper $8\frac{1}{2}$ " x 11" which is mounted on construction board of oaktag so they will be sturdier. They should be colored in the appropriate areas with felt tip pens. There are five cards for each group, or one for each member.
2. Role cards are put on 3" x 5" index cards. There are five cards or one for each member of the group.

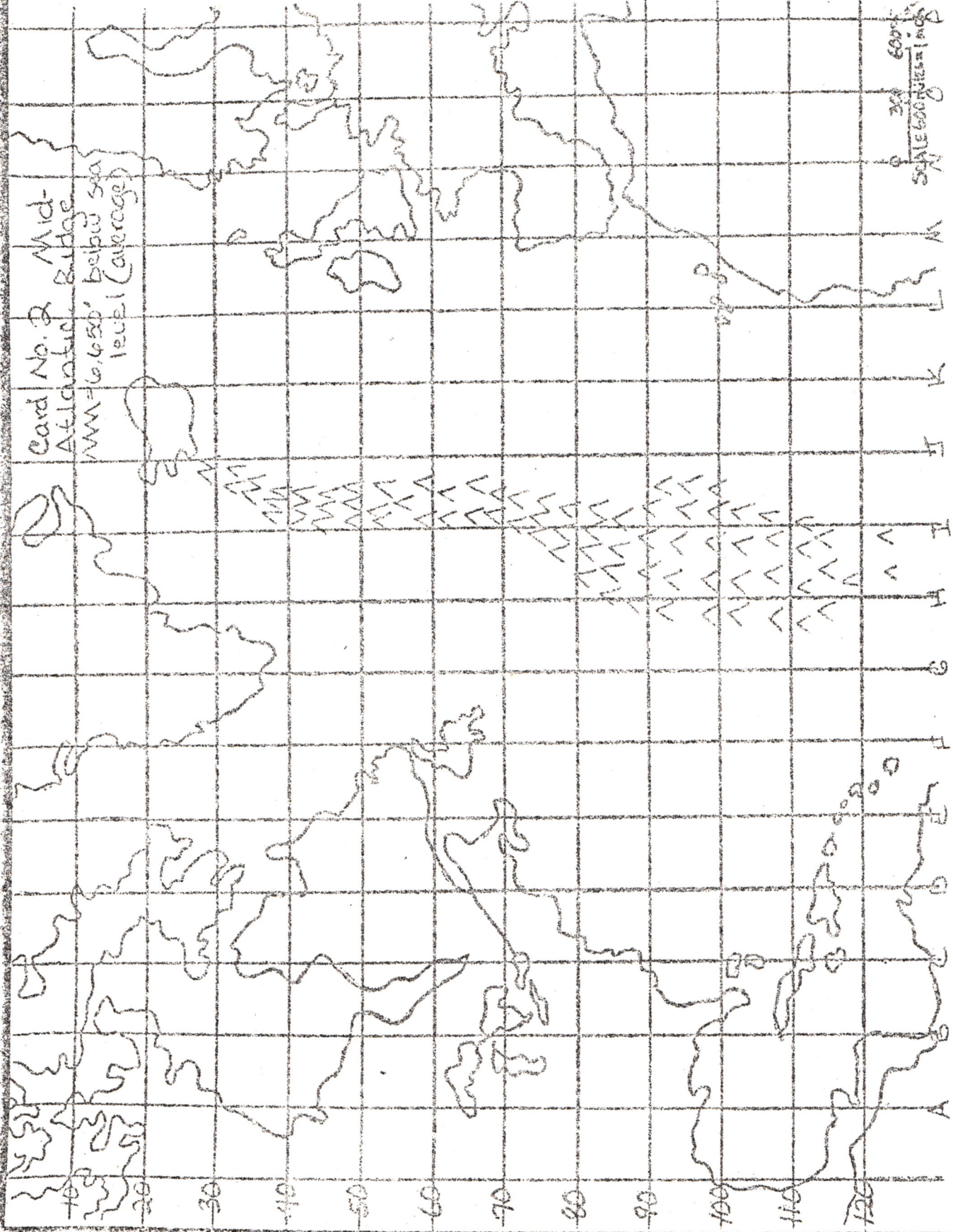


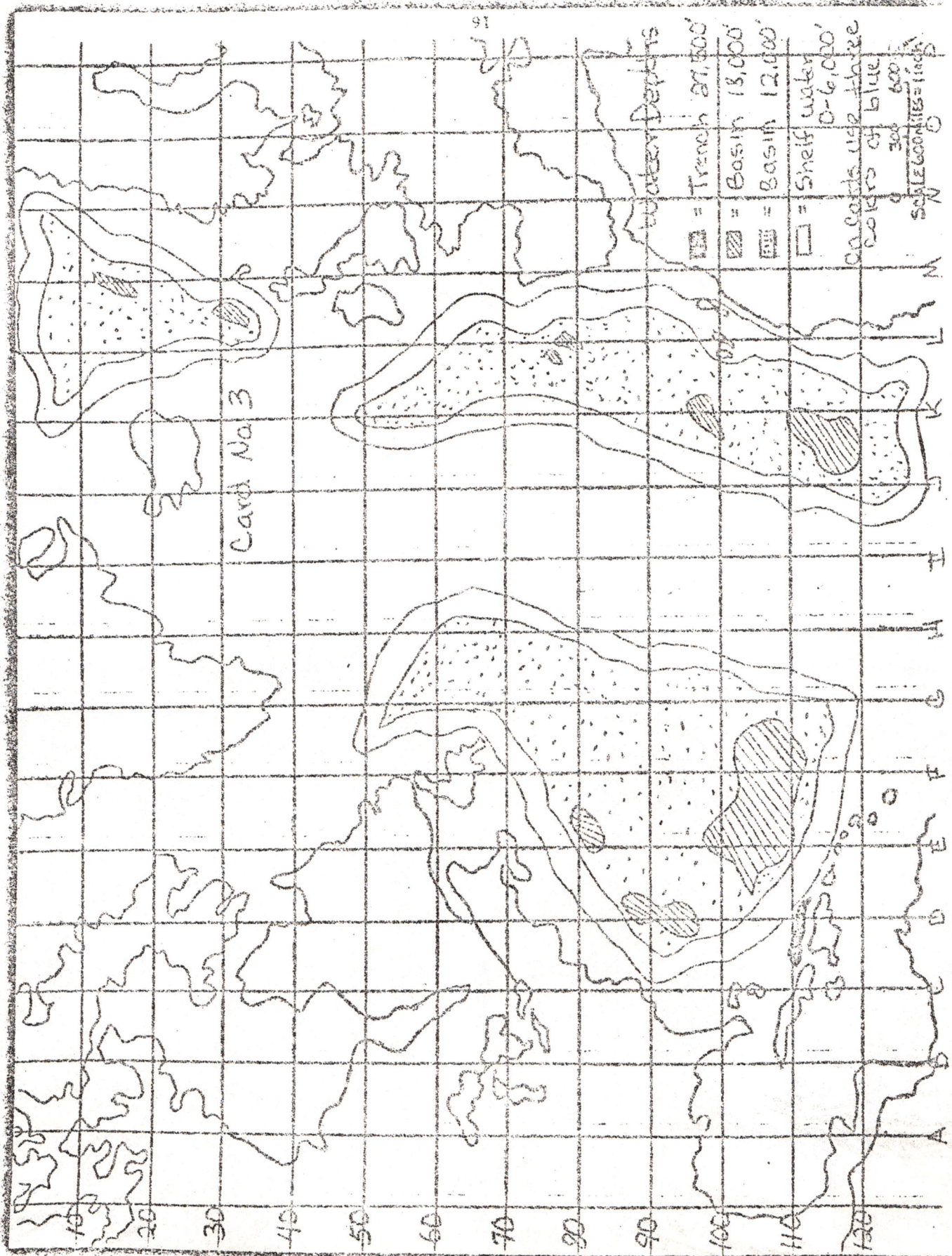


Card No. 2 Mid-Atlantic Ridge
 MM = 6,650' below sea level (average)

0 30 60 mi
 SCALE 6000000:1





51



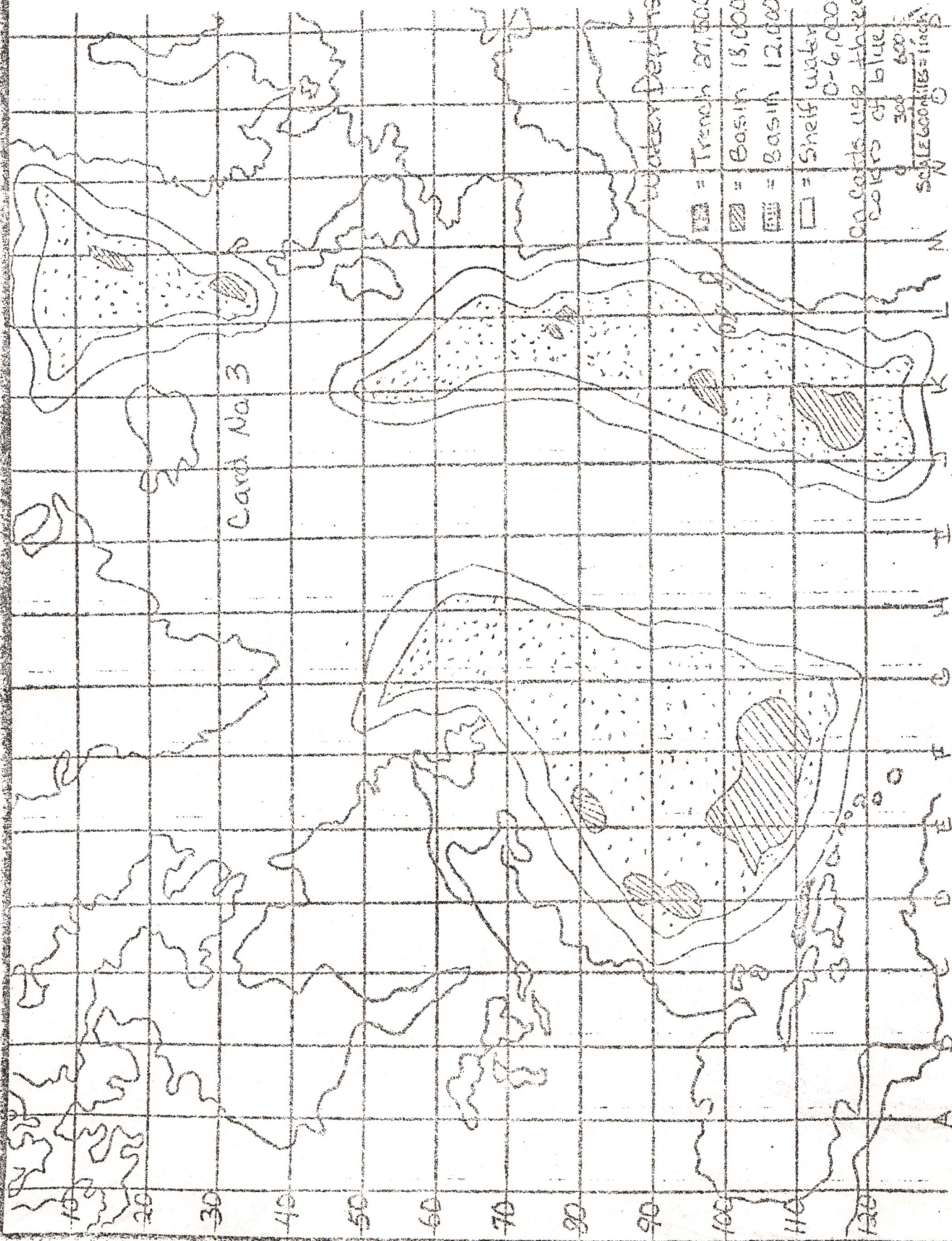


Card No. 3

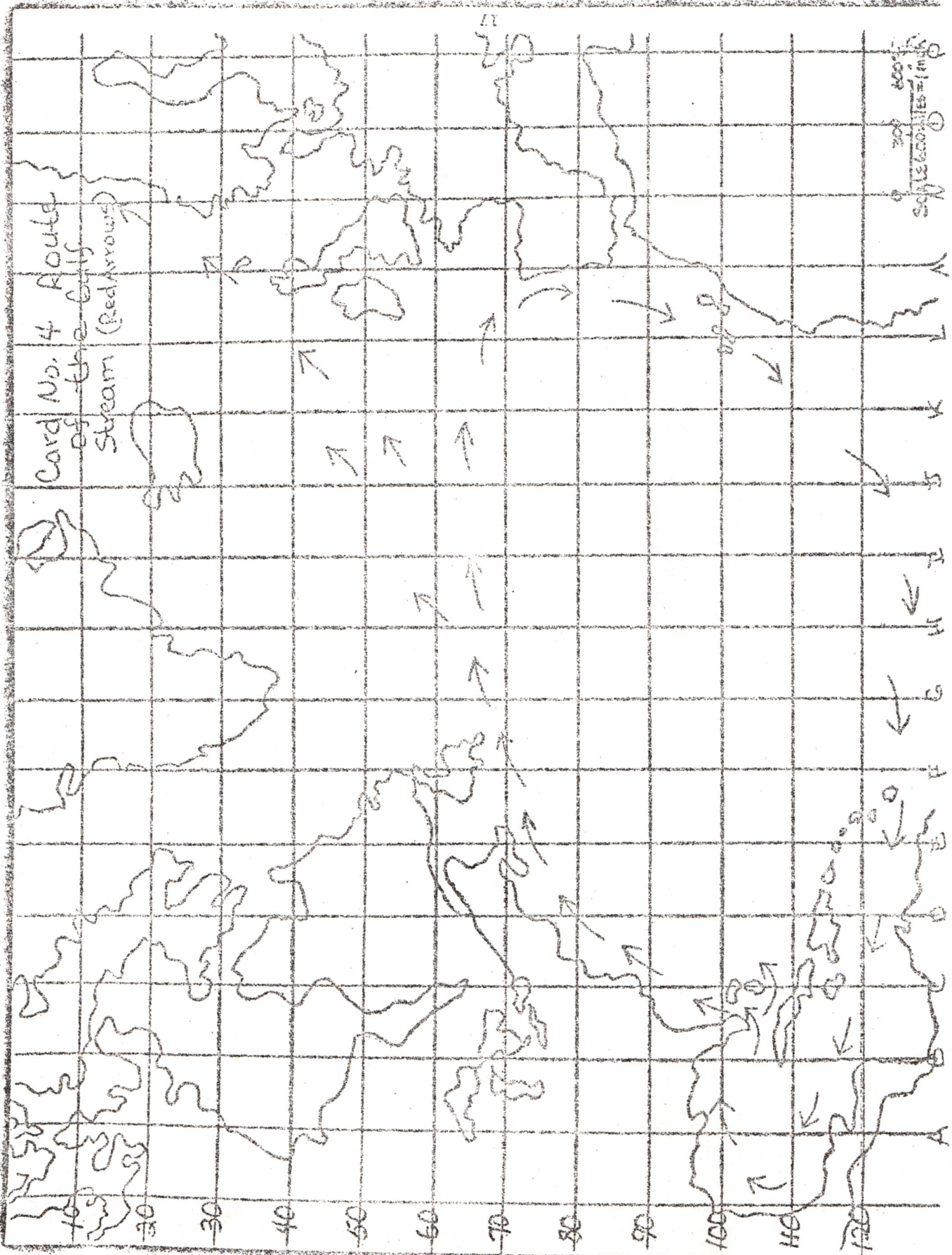
Water Depths

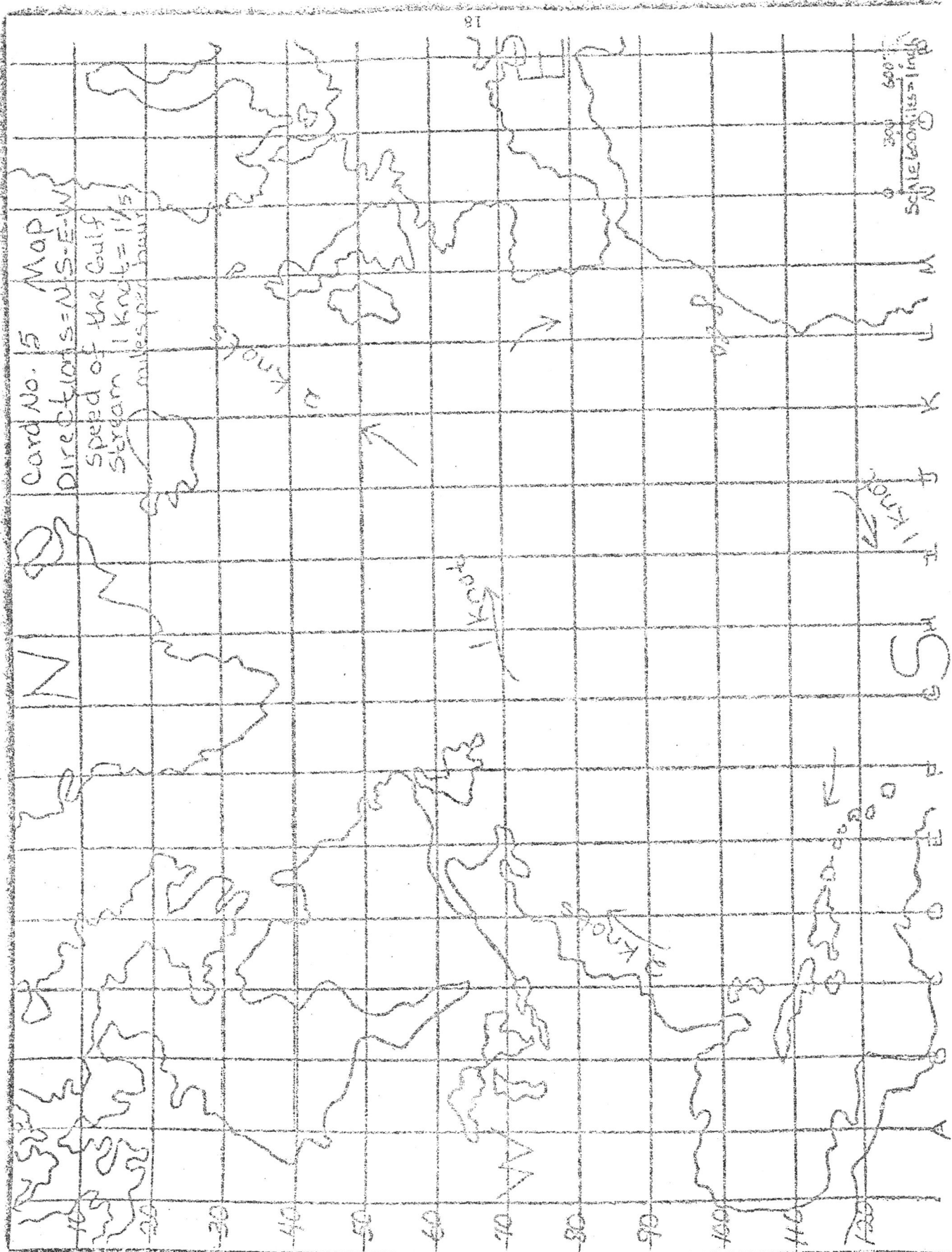
-  = Trench 27,500'
-  = Basin 13,000'
-  = Basin 12,000'
-  = Shelf water 0-6,000'

Contours are 2,000
feet or blue
SCALE 1 INCH = 600 MILES



Card No. 4 Route
of the Gulf
Stream (Red Arrows)





Card No. 5 Map
 DIRECTIONS = N-S-E-W
 Speed of the Gulf
 Stream 1 knot = 1 1/5
 miles per hour

Role Playing Cards

Card No. 1 - You are Margaret Cushman, a member of the United Nations Committee on World Pollution Control. The World Pollution Control has called this meeting after hearing of Mr. Greedy's plan to salvage (bring up) the submarine. You want to make sure that any action taken on the submarine will be supervised by the U.N. because so many other countries would be effected by the pollution if the mercury should be spilled.

Card No. 2 - You are John L. Greedy, a treasure hunter and explosive expert. You are interested in salvaging (bringing-up) the submarine to sell the mercury which is worth about one million dollars. You have had experience in defusing German made bombs during World War II and feel you could defuse the submarine and bring it up without danger. Since the sub is often in international waters you claim that you have as much right to bring it up as anyone.

Card No. 3 - You are Paul R. Krupp, a United States politician. You think that the submarine should be left alone. You feel that since it has floated in the Gulf Stream for 20 years now and has not hit anything, we shouldn't take a chance on doing something to disturb it now.

Card No. 4 - You are Helen Clearwater, an ocean ecology expert who is very concerned about the submarine and the possible damage to the environment. You are undecided as to whether taking action to salvage (bringing it up) the submarine is the wisest thing to do and if it is to be brought up who should do it.

Card No. 5 - You are Admiral Carl Seaman, an expert on the currents and depths of the Gulf Stream. For the last two years you have studied the path of the Phantom Submarine and have found that each year the submarine appears to be going deeper. If this continues it could soon be deep enough to hit some of the mountains in the Mid-Atlantic Ridge. You want the sub to be salvaged by the Navy.