

CSK NEWSLETTER

*Cooperative Study of the Kuroshio
and
Adjacent Regions*

CONTENTS

- I. Cruise Plans.
- II. Cruise Reports.
- III. Indo-Pacific Fisheries Council (IPFC)
Discussions Concerning CSK.
- IV. Excerpts from Draft Report of ACMRR III, FAO.

Nº 3

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JAPANESE OCEANOGRAPHIC DATA CENTER

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I. CRUISE PLANS

1. U.S.A.

U.S. Coast Guard ship will take part in the CSK. Following is a cruise plan received from John C. Marr, U.S. National Coordinator.

(1) Attached is a list of stations prepared for the U.S. Coast Guard's participation in the Cooperative Study of the Kuroshio. The location, water depth and desired cast depth are given for each station as well as approximate time required to complete each cast. The total time required is 32 hours. Initially, the section will be occupied semi-annually in January and July.

(2) The observation program will consist of the following:

- a. Nansen casts at station 1 through 9 and alternate stations thereafter to a depth of 2000 meters. At the remainder of the stations, i.e., stations 10, 12, 14 and 16, casts to as near the bottom as practical will be taken.

Samples at depths of 0, 10, 20, 30, 50, 75, 100, 150, 200, 300, 400, 500, 600, 800, 1000, 1200, 1500, 2000, 2500, 3000, 4000, 5000 and 6000 meters will be obtained.

Two casts will be required at each station: the first not to exceed a depth of 1000 meters and the other to obtain samples at the remaining depths.

Temperature, salinity and oxygen determinations will be made.

- b. ET observation at each station and at the half-way points between stations will be obtained.
- c. Water color and transparency measurements when the sun's altitude is greater than 15° will be recorded.
- d. Biological observations: Approximately one hour per station is available for biological observations and collections. It is anticipated that a non Coast Guard activity having an interest in the CSK will conduct this phase of the program by either; (i) supplying equipment and direction for a very minimal program to be executed by ship's personnel or (ii) by making arrangements to have a biologist aboard to personally execute the program.

Station	Position	Water Depth	Cast Depth	Time Required
	Lat. Long.	Meters		
VICTOR	34°00' N 164°00' E	5500	2000	
1	34°00' N 162°04' E	5000	2000	1.5
2	34°00' N 160°00' E	4000	2000	1.5
3	34°00' N 158°12' E	3500	2000	1.5
4	34°00' N 156°16' E	5500	2000	1.5
5	34°00' N 154°20' E	6500	2000	1.5
6	34°00' N 153°09' E	6500	2000	1.5
7	34°00' N 151°57' E	6500	2000	1.5
8	34°00' N 150°46' E	6500	2000	1.5
9	34°00' N 149°34' E	6000	2000	1.5
10	34°00' N 148°23' E	5500	5000	4
11	34°00' N 147°11' E	5500	2000	1.5
12	34°00' N 146°00' E	5500	5000	4
13	34°00' N 144°54' E	4500	2000	1.5
14	34°00' N 143°48' E	3000	3000	2
15	34°00' N 142°41' E	5500	2000	1.5
16	34°00' N 141°35' E	5000	5000	4

32

2. REPUBLIC OF CHINA

Chinese research vessel YANG MING will take part in the CSK. Following is a report on her first cruise plan received from Chinese National Committee on Oceanic Research:

Research Vessel: YANG MING
 Calling Signal: B A M E
 Frequency: Principal Channel 5-128 KC
 Secondary Channel 6356 KC

Dates: September 6 to October 20, 1965

Itinerary and Stations: as shown on accompanying chart

Items of Works:

Hydrology

Water temperature observation and sampling with Nansen bottle at the following depths:

0, 10, 20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400, 500, 600, 700, 800, 1000, 1200, 1500 and 2000 meters.

Physics

- Bathythermograph cast to 274 m.
- Water transparency and color observation.
- Visual wave observation.
- GEK current measurement.

Meteorology

- Observations of air pressure, temperature, humidity, wind direction and velocity.

Chemistry

- Determination of salinity, oxygen and pH at shipboard laboratory.
- Determination of silicate, total and inorganic phosphate and nitrite at land laboratory.

Geology

- Sediment sampling at the bottoms shallower than 500 m.

Biology

- Plankton collecting with NORPAC standard nets.
- Preparation of samples for productivity determination by C_{14} method.

Personnel:

Physical Oceanographer: Prof. Chu Tsu-you (Cruise leader)

Hydrographer: Lt. Comdr. Chang Sian-Tien
Lt. Comdr. Shang Shih-Lee
Lt. Comdr. Cheng Yuen-Lin

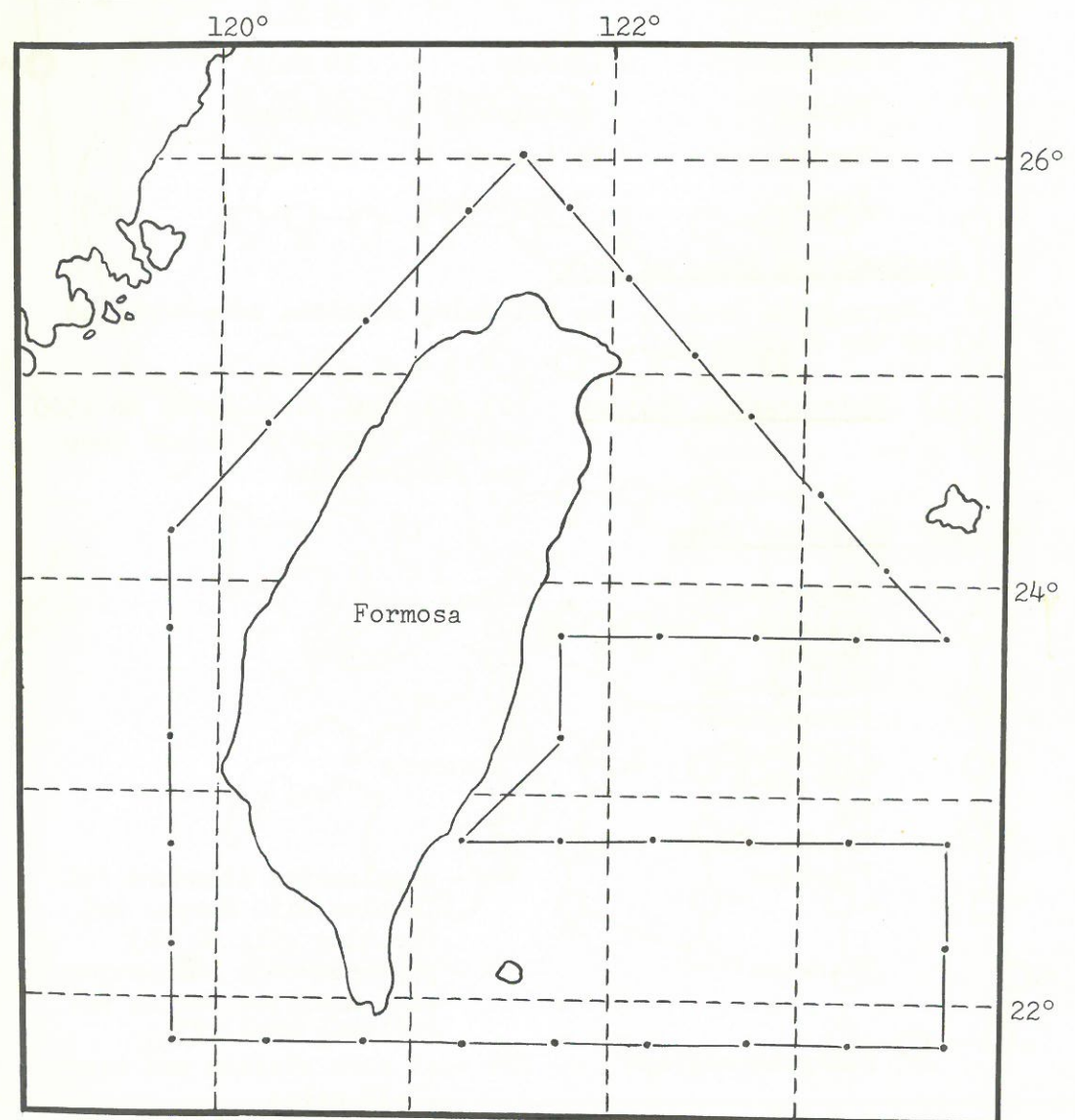
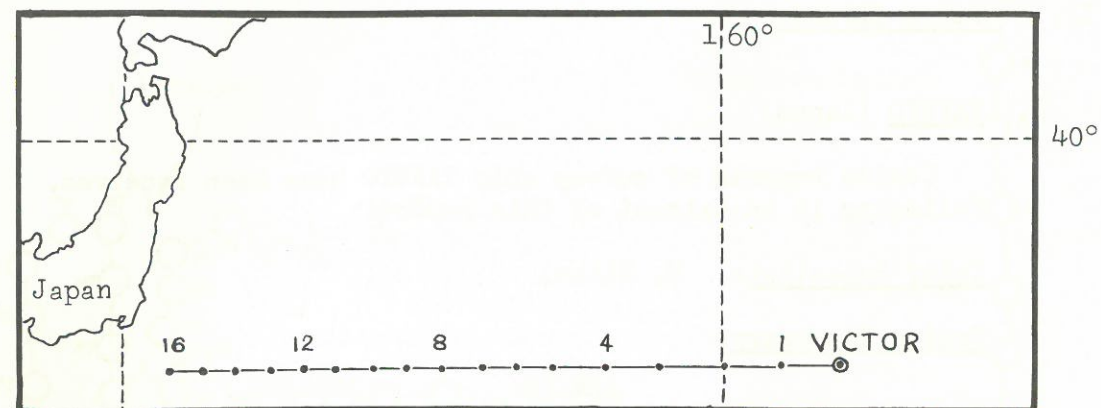
Meteorologist: Lt. Comdr. Hou Tso-Chin
Mr. Su Chang-Chuen

Chemist: Mr. Hung Tsu-Chang
Mr. Lee Chin-Wei
Mr. Wang Tsenh-Tien

Geologist: Mr. Fang Tsuin-Chiu

Biologist: Mr. Tseng Wen-Yang
Mr. Lue Tse-Chang
Mr. Cheng Kuei

Scheduled Track of the U.S. Coast Guard's ship
January and July



Scheduled Track of the R/V YANG MING
First Cruise, September 6 - October 20, 1965

II. CRUISE REPORTS

1. TAKUYO (Japan)

Cruise reports of survey ship TAKUYO have been received. Following is an extract of this report:

Chief Scientist: H. Nitani

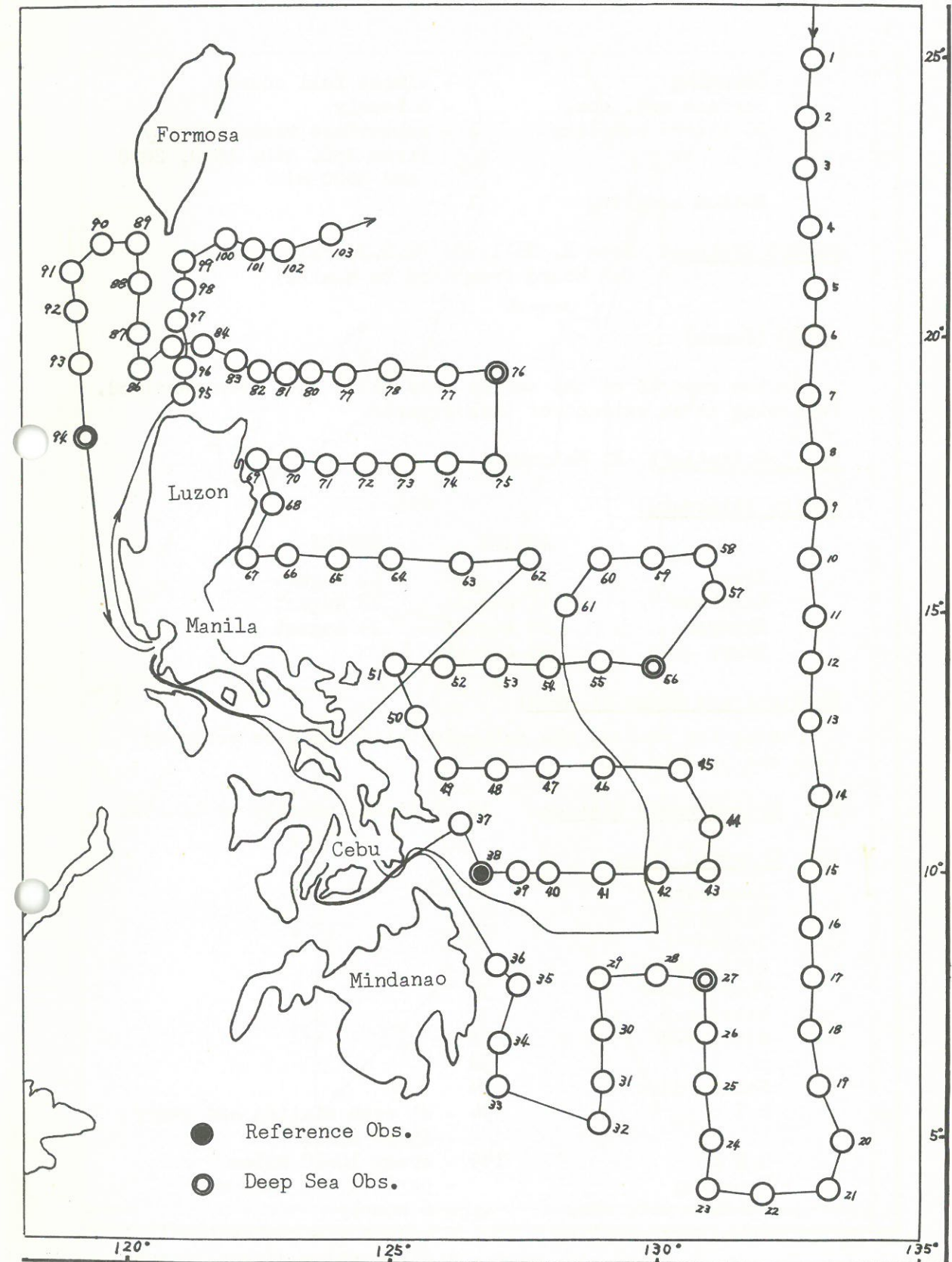
Cruise Itinerary:

	ARRIVE	DEPART
Tokyo		25 June
Cebu	15 July	19 July
Manila	4 August	10 August
Manila	26 August	29 August
Tokyo	7 September	

Stations and Items of Work:

During the cruise, the following stations were occupied (see the Station Map).

- (1) Hydrographic Station 103 stations, usually up to 1500 meters, five of which are deep sea observation.
- (2) Observed Items
- | | |
|------------------|---|
| Temperature | 103 |
| Salinity | 103 |
| Oxygen | 103 |
| Silicate-Si | 103 |
| Phosphate-P | 103 |
| Nitrite-N | 103 |
| Nitrate-N | 103 |
| pH | 103 |
| Secchi disc | 51 |
| Plankton | 44 - zooplankton standard collection with Norpac net (bolting silk GG 54) |
| Plankton | 24 - phytoplankton collection with modified Norpac net (bolting silk XX 13) |
| Bathythermograph | 274 - at each station and every 20-30 miles |
| G E K | 242 - every 10-20 miles (Northern to 12° N) |



Station Map of the survey ship TAKUYO
June 25 - September 7, 1965

Sounding - almost full course
 Surface met. obs. - 6 hourly
 50 liters sampling 1 - subsurface radioactivity
 (from 250, 500, 1000, 2000
 and 3000 m)
 Bottom sampling 1

UNESCO Trainee: Jose B. Millares (C.G.S. Philippines)
 (on board from Cebu to Manila)

2. KAIYO (Japan)

Cruise reports of the survey ship KAIYO have been received.
 Following is an extract of this report:

Chief Scientist: N. Matsumoto

Cruise Itinerary:

	ARRIVE	DEPART
Tokyo		10 August
Kurihama	15 August	18 August
Shiogama	20 August	24 August
Tokyo	30 August	

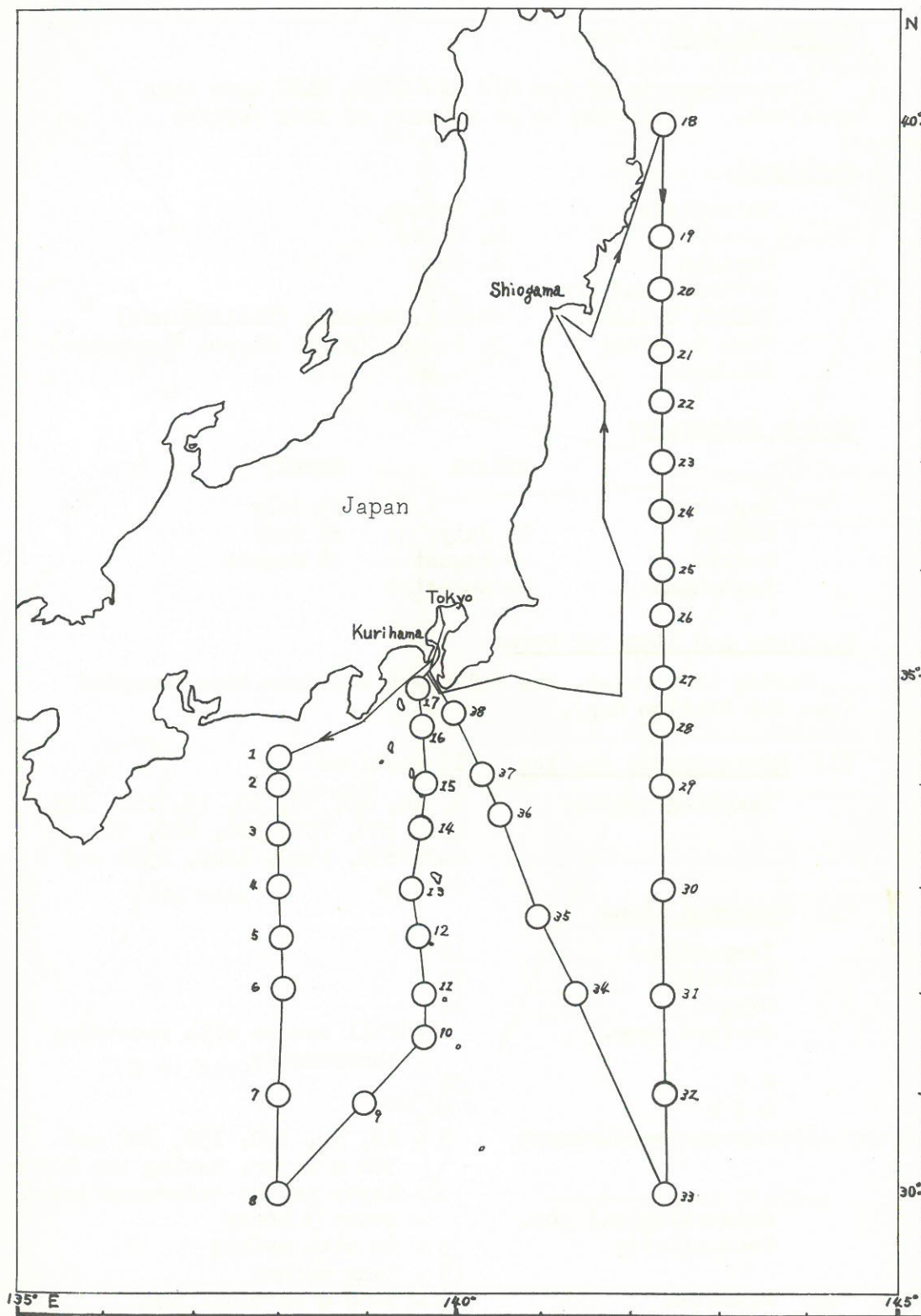
Stations and Items of Work:

During the cruise, the following stations were occupied
 (see the Station Map).

(1) Hydrographic Station 38 stations, usually up to 1500 m.

(2) Observed Items

Temperature	38	
Salinity	38	
Oxygen	38	
Silicate-Si	38	
Phosphate-P	38	
Nitrite-N	38	
Nitrate-N	38	
pH	38	
Secchi disc	14	
B T	94	- at each station and every 15-30 miles
G E K	149	- every 10-20 miles
Sounding		- part of the course
Surface met. obs.		- 6 hourly
20 liters sampling	2	- subsurface radioactivity (from below discontinuous layer)



Station Map of the survey ship KAIYO

August 10 - 30, 1965

3. KAGOSHIMA MARU (Japan)

Cruise reports of the R/V KAGOSHIMA MARU have been received. Following is an extract of this report:

Personnel:

Scientists	K. Nozawa
	M. Chaen
Captain	S. Ueda
Officers and Crew	34
UNESCO Trainee	Jose A. Ordonez (Philippines)
News Reporter	S. Kumano (Nishi Nippon Newspaper)
Students	42

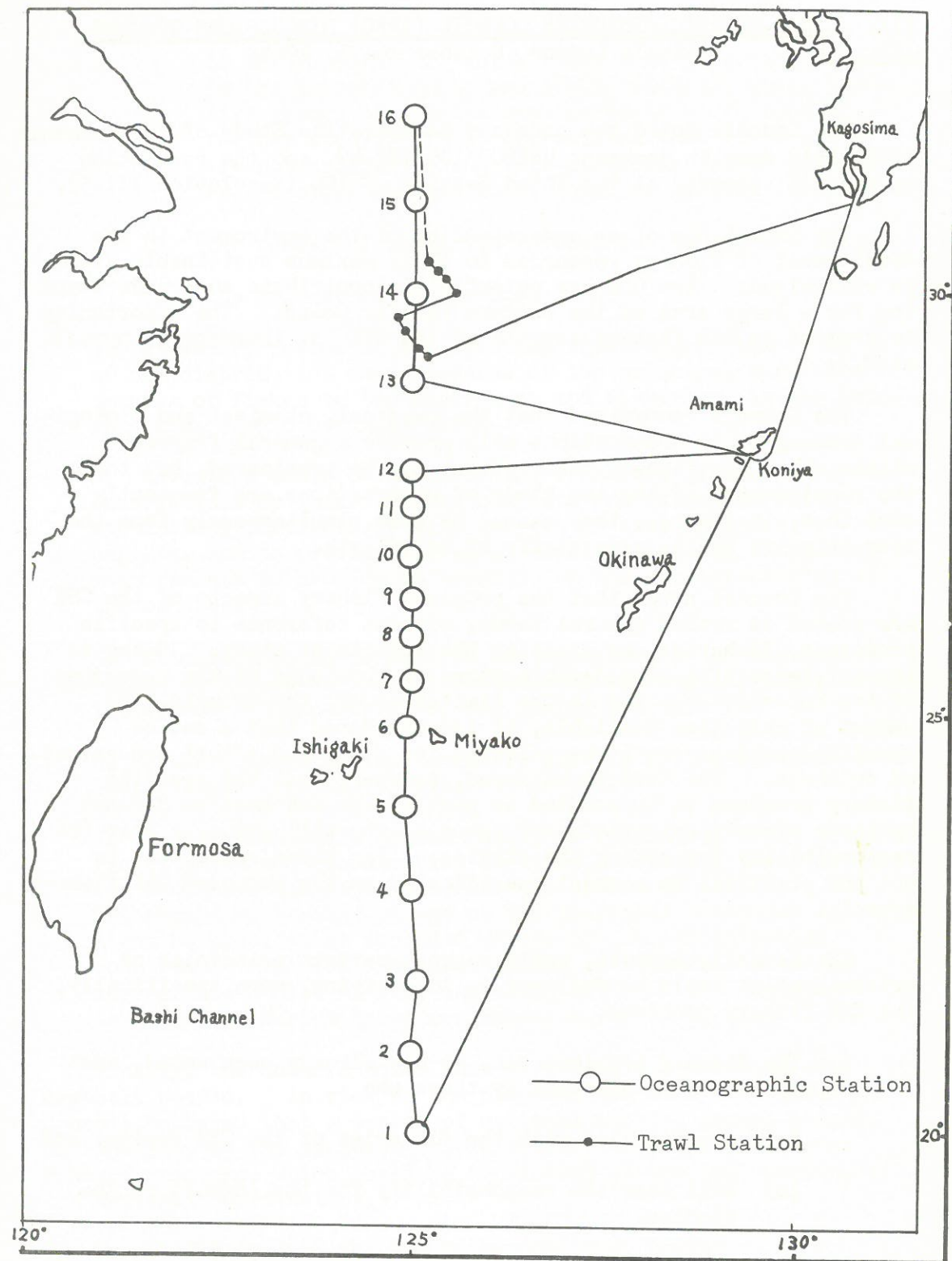
Cruise Itinerary:

	ARRIVE	DEPART
Kagoshima		23 July
Koniya	24 July	26 July
Koniya	4 August	8 August
Kagoshima	14 August	

Stations and Items of Work:

During the cruise, the following stations were occupied (see the Station Map).

- | | |
|---------------------------------|---|
| (1) <u>Hydrographic Station</u> | 16 stations |
| Sampling depths: | 0, 10, 20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400, 500, 600, 800, 1000, 1200, 1500 and 2000 m. |
| (2) <u>Observed Items</u> | |
| Temperature | 16 |
| Salinity | 16 |
| Oxygen | 16 |
| Surface temp. | - full course with recording thermometer |
| B T | 24 |
| G E K | 8 |
| Current measurement | 3 - 10, 50, 100, 150, 200 and 300 m layer, taking the 800 m layer as the reference level |
| Meteorological obs. | - every 3 hours |
| Productivity | 3 - in situ method |
| | 13 - tank method |
| Plankton | 16 - 0-50 m vertical haul |
| Larva sampling | - every night, 30 minutes |
| Eye observations | - full course |
| Sounding | - every 10 minutes |



Station Map of the R/V KAGOSHIMA MARU
First Cruise, July 23 - August 14, 1965

III. INDO-PACIFIC FISHERIES COUNCIL (IPFC) DISCUSSIONS CONCERNING CSK. (Kuala Lumpur, October 16-31, 1964)

The Council noted the proposed Co-operative Study of the Kuroshio (CSK) laid down in document UNESCO/IOC/INF-47, and the resolution on the CSK approved at the Third Session of IOC (Resolution III-5).

The importance of an understanding of the environment in the development of fishery resources to their maximum sustainable yield is recognised. The CSK has potential to contribute such understanding for a large area of the western Pacific Ocean. The opportunity to comment on the fishery aspects of the CSK is, therefore, appreciated.

The Council recognised that the physical, chemical and biological oceanographic observations will provide a general framework within which the fishery observations may be considered, but that the requirements of the two kinds of observations are frequently such that, in general, they cannot be made simultaneously from the same ships or by the same staffs of scientists.

The Council noted that the proposed fishery aspects of the CSK are stated in rather general terms, without reference to specific processes, fisheries, or areas as the objects of study. Owing to the existence of a considerable store of knowledge of the resources of the Kuroshio area and to the limitation of, for example, the amount of ship time available, it is considered that a set of specific problems should be selected for study and effort concentrated on these. The Council believed, however, that the specific fishery problems to be studied as part of the CSK must be defined by those fishery scientists and agencies who will actually bear the responsibility for making the studies. For these reasons it is not now practical to comment specifically on the proposed CSK fishery aspects.

The Council, however, would suggest certain principles or criteria which could be followed in identifying, more specifically, the CSK fishery problems.

1. The fishery problems can, as has already been noted, most appropriately be selected by those who
 - (a) are familiar with the fisheries of the CSK region; and
 - (b) will bear the responsibility for the conduct of the studies.
2. Selection of particular fishery problems might be governed, among other things, by

- (a) the magnitude of the fisheries (attention is drawn to IPFC/C 64/WP 22, which lists some important fisheries in the Kuroshio area, and IPFC/C 64/M 21, which lists five groups of species considered to be in need of further study. It is appreciated that these lists are not exhaustive and that particular countries may regard other species as of equal or greater importance.);
- (b) the number of countries involved in the fisheries; and
- (c) the urgency of the problems.

3. A summary review of the existing knowledge of the relation of the distribution and abundance of the principal harvested species of fishes to the environment and fisheries, in the Kuroshio area should be undertaken.

4. Advantage could be taken of the framework of oceanographic observations by insuring more complete and extensive catch statistics, particularly with respect to area and time of capture, and to provide for more detailed sampling and market measurements to provide information on the characteristics of the catches.

5. Attention could be paid to the relationship of the distribution of fishes to special features of the region; e.g., fronts, interfaces between currents, and mixing areas.

6. Fishery organizations normally working in the Kuroshio area could relate existing studies to the CSK.

7. A fisheries Study Leader (FSL), if appointed, could provide facilitation and coordination services, including these services for studies which might otherwise be under-emphasized. The FSL should be located in one of the countries concerned and might be provided or seconded by one of the participating countries. The FSL should establish relationship with the appropriate bodies of FAO, including IPFC and the Advisory Committee on Marine Resources Research.

Finally, the Council noted that more detailed planning was urgently needed. In view of the proposed CSK time schedule, the Council believed that a series of national working groups should be convened, at the earliest possible time, to prepare national fishery programs, which could be considered at the next meeting of the National Coordinators.

CSK-Terms of Reference for the Fisheries Study Leader

In the light of information at present available to it the

Council considered that the duties of the CSK-FSL might include items such as those set out below but recognised that precise statement of such duties could be made only after the fishery content of the project had been decided upon.

The Council considered that the following duties of particular importance fall within the ambit of the CSK-FSL:

1. Stimulate the definition of the fisheries problems of the CSK; the types of problems; the species affected; the areas and seasons. This will require meetings of fishery experts in each country to define national problems, followed by a regional meeting at which those problems which can be solved by concerted action should be allotted a degree of priority. (It is noted that this definition of the problems should not be delayed until the appointment of the FSL. It is included here as a logical first duty should the FSL be appointed at an early date.)
2. Examine the proposed national programmes to see how far they go to solving the fisheries problems; point out gaps and possible duplication, in the programmes, and try to arrange the greatest degree of coverage within the resources available.
3. Since direct comparability of observations will increase considerably their usefulness, the FSL should try to bring about a uniform approach to each problem, by such means as the inter-calibration of standard techniques where feasible, and arranging the loan of gear.
4. Check the availability of trained staff in the participating countries, and stimulate such training and/or secondments as may be feasible to insure the best use of the available ship-time.
5. Check that countries possess adequate staff and facilities to work up the collected material. Where deficiencies are found, make appropriate recommendations such as the training and/or secondment of staff, and the analysis of certain types of material by one organization which has greater experience.

The Council further considered that these duties needed the full-time attention of the FSL, and that he should be funded sufficiently to enable travel to be undertaken as required.

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IV. EXCERPTS FROM DRAFT REPORT OF ACMRR III, FAO.
(Rome, March 1-8, 1965)

Cooperative Study of the Kuroshio-CSK (Agenda Item 6.2.-ACMRR/3/Rec.)

The Secretary of IOC reviewed the main development since the last session of the Committee. He informed the Committee that, following IOC Resolution 5, arrangements have been made between IOC and FAO for discussion by the IPFC on the fisheries aspects of the CSK. This body emphasized that fisheries programs should be developed on the CSK on a national basis and that at this stage a fisheries subject leader was not necessary. He also reported in detail on the recent, third regional meeting, in Manila, of representatives of the marine science institutions in East and South East Asia, and on the first meeting of the International Co-ordination Group for the CSK, at which Dr. Wadati, Japan, was appointed international co-ordinator.

The main resolutions of direct interest to fishery research deal with the preparation of catalogues and the analysis of existing data, field and laboratory testing of methods and equipment, the nomination of assistant national co-ordinators, for fisheries, from among whom an Assistant International Co-ordinator for fisheries should be selected. Assistance by FAO was requested, to provide travel expenses for him, and to co-operate in the preparation of species synopses of commercial fishes in the area, and to promote the development of fishery statistics collection.

The Manila Meeting also decided to include the South China Sea in the CSK area.

The Chief of Biology Branch assured the Committee that FAO would do its utmost to fulfill these requests.

The Committee noted with approval steps being taken to incorporate plans for fisheries research aspects in the planning stage of the CSK, but felt unable to give more detailed advice on the recommendations of the Manila Meeting, because insufficient notice of them had been given. It recommends that the FAO Secretariat should continue to collaborate with IOC in the execution of this project.

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ERRATUM

Add "Skipjack" after "Albacore" on page 12, line 18 in the CSK Newsletter No. 1.