

NO. 47
SEP. 1975

CSK NEWSLETTER



JAPAN OCEANOGRAPHIC DATA CENTER
Hydrographic Department, Maritime Safety Agency
Tokyo, Japan

C O N T E N T S

- I. Summary Report of the 10th Session of the International Co-ordination Group for the Co-operative Study of the Kuroshio and Adjacent Regions(CSK), Tokyo, Japan, 13-17 March 1975 (IOC/CSK-X/3)

Summary Report

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II. Cruise Reports

1. Republic of Korea (ROSCOP)
Suro No. 3 (15 May - 29 June 1974)
2. Japan (ROSCOP)
Nagasaki Maru (30 July - 24 October 1973)
Shoyo Maru (2 October 1973 - 7 January 1974)
Ryofu Maru (14 January - 3 March 1974)
Keifu Maru (21 - 27 January 1974)
Chofu Maru (28 January - 28 February 1974)
Seifu Maru (2 February - 9 March 1974)
Kofu Maru (5 February - 2 March 1974)
Takuyo (5 - 22 March 1974)
Takuyo (10 - 28 May 1974)
3. U.S.S.R. CSK Cruises Received during the Period
1 June 1974 - 31 August 1975

III. Data Received

- Japan (Seifu Maru-2 crs., Shoyo Maru, Kofu Maru, Kaiyo, Shumpu Maru, Ryofu Maru-3 crs., Takuyo, Oshoro Maru -2 crs.)
U.S.S.R. (Pelamida, Tamango)

- IV. Publication of "The Kuroshio III", Proceedings of the Third CSK Symposium, Bangkok, Thailand 1973

I. SUMMARY REPORT OF THE 10TH SESSION OF THE INTERNATIONAL CO-ORDINATION GROUP FOR THE CO-OPERATIVE STUDY OF THE KUROSHIO AND ADJACENT REGIONS (CSK), TOKYO, JAPAN, 13~17 March 1975.
(IOC/CSK-X/3, Original: English)

Item 1: Opening of the Session.

The session was opened by Dr. K. Wadati, International Co-ordinator for CSK. Dr. M. Hiratsuka, Chairman of the Japanese National Commission for Unesco, and His Excellency K. Hironaga, Member of the Executive Board of Unesco, delivered welcome addresses, stressing the importance of Unesco/IOC work in connection with the CSK area.

Dr. O. Mamayev, Assistant Secretary of IOC, while pointing out the very successful results of CSK, emphasized the importance of this session in relation with the future of CSK. He emphasized two major problems: marine pollution studies and the processes of training, education and mutual assistance in this area.

Prof. K. Sugawara proposed that Dr. M. Angot (Unesco Regional Adviser in Marine Sciences for Asia and South-east Asia) act as Rapporteur with the assistance of Mr. P. Rual (France) and Prof. Y. Takenouti (Japan). This proposal was adopted unanimously.

The Chairman proposed that, following a request by official cable received on the 13th of March, the International Co-ordination Group accept Dr. E.A. Ashby as an observer for the USA. This was agreed.

The List of Participants is contained in Annex V to this Report.

Item 2: Adoption of the Agenda

The provisional agenda (Doc. IOC/CSK-X/1prov) was adopted with several amendments (see Annex I).

Item 3: Progress Reports on CSK activities since the ninth session.

3.1 Reports of ICG/CSK officers

The following reports were delivered to the session:

3.1.1 Report of the International Co-ordinator
(doc. IOC/CSK-X/6)

The proceedings of the Third CSK Symposium held at Bangkok, 26~29 May 1973, were published in 1975 by the National Research Council of Thailand with financial assistance from Unesco. Based on recommendation CSK-IX.2 adopted by the ninth session of the International Co-ordination Group for CSK, Bangkok, the International Co-ordinator had sent a letter on 29 June 1973 to each National Co-ordinator asking for nomination of a CSK Correspondent on Marine Pollution. The names and addresses of the Correspondents are given in the list attached as Annex IV to this Report.

In accordance with the same recommendation and IOC resolution VIII-7, preparations for the International Workshop on Marine Pollution in East Asian Seas are in hand (doc. IOC/CSK-X/9).

A contribution to the IOC Trust Fund from Japan (approximately \$30,000) was made in 1974 for the purpose of providing fellowships and visiting experts to the Member States of CSK; this was accepted with appreciation by the IOC Executive Council at its fourth session (res. EC-IV.13).

A Group Training Course on the Marine Environment was held at the Fisheries Faculty of Hokkaido University in Hakodate City from the middle of July to the end of August 1974, sponsored by the Japanese Government with the support of Unesco. Ten young scientists from South-east Asian Countries participated. The course was the first year programme of a 3-year plan of training on the marine environment. The second year programme is under preparation along the same lines.

Dr. Takenouti commented on the above Training Course on the Marine Environment and stated that the 2nd year programme has been announced through Japanese embassies. Dr. Angot pointed out that this Course is not an IOC activity but a Japanese one with Unesco assistance.

The International Co-ordinator also reported that:

1. The United States of America withdrew from CSK in November 1972;
2. France joined CSK in May 1973.

3.1.2 Report of the Assistant International Co-ordinator for Fisheries.

In his absence, it was decided to invite Dr. Ronquillo to send his report to the International Co-ordinator as soon as possible for distribution among the Member States of CSK.

3.2 Reports of the National Co-ordinators.

3.2.1 France (doc. IOC/CSK-X/16)

French oceanography in the CSK area is represented only by the work of O.R.S.T.O.M. (Office de la Recherche Scientifique et Technique Outre-Mer) operating from Nouméa, New Caledonia. The following investigations have been conducted: Surface data and meteorological data have been collected since 1969 from the area between New Caledonia (22°S., 167°E) and Japan, in co-operation with Japanese merchant ships; Several cruises aiming at a better knowledge of:

- equatorial circulation (zonal and meridional),
- equatorial upwelling and nitrogen cycle,
- south tropical circulation and its relations with equatorial circulation,

were made or are planned in the near future in the western Pacific; Equatorial and South Tropical pelagic fauna, especially the trophic networks leading to tuna, have been studied for the past ten years and are now being terminated.

Some new programmes are being devoted to the studies of reefs and lagoons in the South Pacific in collaboration with several other organisations: CNEXO, Universities, Museum of Natural History, etc.

3.2.2 Japan (doc. IOC/CSK-X/14).

Thirty-six research cruises were carried out or are being planned during the period April 1973-March 1975.

Twenty-five of these cruises were operated or are being planned by the Japan Meteorological Agency and the Hydrographic Department of Maritime Safety Agency, mainly as the standard section observations in the sea around Japan. Two synoptic oceanographic surveys in the East China Sea conducted by R.V. "Takuyo" of the Hydrographic Department in the autumns of 1973 and 1974 are included.

Four cruises which extend to the equator in the North-west Pacific were carried out regularly in winter and summer of each year by the R.V. "Ryofu Maru" of the Japan Meteorological Agency.

The Measurement of marine pollutants such as oil spill, COD and heavy metals, etc., were included in most of the above cruises.

The aim of the cruise in the middle latitudes in the North-west Pacific made by "Hakuho Maru" of the Ocean Research Institute, University of Tokyo in the winter of 1974, was to study the details of the Subtropical Countercurrent in this

region.

R.V. "Shoyo Maru" of the Fisheries Agency made two fisheries oceanographic cruises in the Caroline and Papua-New Guinea waters in October 1973 ~ January 1974 and October ~ December 1974.

The distribution of the tar balls in the eastern Indian Ocean and the western Pacific Ocean has been studied by the Far Seas Fisheries Research Laboratory of the same Agency.

Four research vessels participated in the South China Sea programme during the above period.

3.2.3 Republic of Korea.

Twenty synoptic observations (22 standard section observational lines) in the sea adjacent to Korea were carried out.

Four seasonal hour-to-hour current measurements with an Ekman-Merz current meter carried out in the Yellow Sea and Jeju strait.

On five occasions surveys of water pollution were carried out at 103 stations in 1973 and 117 stations in 1974, as well as in the coastal industrial regions and harbours.

On two occasions surveys of the heavy metal content of sea water at 20 major harbours and a survey of the heavy metal content of nine species of commercial fish, shell-fish and seaweed in nine areas were measured.

In 1975 on six occasions sectional oceanographic surveys at 22 observation lines in the adjacent sea to Korea are planned, and one hundred bottom-drifting plates of the jelly-bottle type will be released twice at each of nine stations in the South-west sea of Korea.

On four occasions during 1975 water pollution surveys at 94 stations established in 13 industrial regions, and analysis of heavy metals at 87 stations in 22 regions will be carried out. Also the heavy metal content of nineteen species of commercial fish, shell-fish and seaweed will be measured.

3.2.4 Thailand (doc. IOC/CKS-X/17).

In 1973~1974, twelve cruises have been carried out by R.V. "Fishery Research No.1" of the Fisheries Department, in the Gulf of Thailand. Meanwhile R.V. "Fishery Research No.2" has made seven long cruises in the Bay of Bengal and in the South

China Sea, which included CSK Reference Station No.10. Another vessel, the "Pramong 6" also carried out 15 fishery oceanographic cruises in the inner Gulf of Thailand.

The study on the biology and distribution of both pelagic and demersal fishes and shrimps is continuing. Studies on plankton, primary production, are continuing with the marine fish taxonomical studies. Species composition and seasonal variation of planktonic organisms have also been studied.

The Department of Fisheries and the Hydrographic Department are now taking part in a joint survey of chemical-physical-biological observation of the marine pollution.

The Thai scientists were congratulated for having occupied several times the same reference station.

3.2.5 USSR (doc. IOC/CSK-X/13)

Throughout the period from July 1973 up to March 1975, observations were continued from Soviet research vessels at the international sections lying between 43°N and 20°N along 130, 135, 138, 145 and 149 meridians of East longitude according to the CSK programme, as well as at the sections perpendicular to the Kuroshio Current.

All data have been forwarded to the Kuroshio Data Centre or will be sent there shortly.

Data obtained as result of the USSR observations at 897 deep water stations for the period from July 1973 up to March 1975 were passed to the CSK. These are as follows:

- data collected at 108 stations along 130 and 149 East meridians by R.V. "Orlik", from 20 July to 20 August 1972;
- data collected at 85 stations along 130 and 135 East meridians by R.V. "Priliv", from 21 July up to 18 October 1971;
- data collected at 161 stations along the 180 meridian by R.V. "Yu. M. Shokalsky", from 31 January up to 23 April 1972;
- data collected at 74 stations along 130 and 135 East meridians by R.V. "Priboy", from 9 June up to 10 September 1971;
- data collected at 58 stations along 130 and 135 East meridians by R.V. "Priliv", from 4 September up to 15 October 1971;

- data collected at 60 stations along 130 and 135 East meridians by R.V. "Volna", from 8 February up to 28 March 1973;
- data collected at 45 stations by R.V. "Pelamida" from 23 May up to 28 June 1974;
- data collected at 100 stations along 138 and 149 East meridians by R.V. "Tamango" from 17 July up to 5 September 1973;
- data collected at 172 stations by R.V. "A.I. Vojeikov" from 22 August up to 30 September 1972;
- data collected at 39 stations along the 145 East meridian by R.V. "Volna" from 7th up to 12th December 1973.

Oceanographic investigations made during each cruise covered the whole complex of physical oceanographic, meteorological and hydrochemical observations at standard horizons.

Biological investigations covered sampling of phyto-, meso- and macro-plankton, as well as visual ichthyological observations made at light stations as well. The catch of mesoplankton using a Dzeddy net was conducted in the layer from the surface down to a depth of 100 metres (0-100) at each station. In addition, the catch of mesoplankton was carried out with a standard international NORPAC net in the layer from the surface down to the depth of 150 metres at sections V and XII, every second station.

Macroplankton samples were taken using a Jsex-Kind trawl (model 10 feet in length) throughout three characteristic areas and at separate stations in darkness and fully daylight.

Biological samples have been forwarded to the Regional Marine Biological Centre, Singapore.

3.2.6 Republic of Viet-Nam *

Since August 1973, Vietnamese activities connected with the CSK programme have been directed to the exploration of the coastal waters off central Viet-Nam. Four cruises were conducted.

Temperature, salinity, dissolved oxygen, phosphate and nitrate content determinations at standard depths were obtained. Observations on water visibility and transparency were also made.

Bathythermograph casts were obtained at 11 selected stations.

* This report was received by mail from the CSK National Co-ordinator of Republic of Viet-Nam after the closure of the session.

Vertical and horizontal plankton samplings were carried out. 52 plankton samples were sent to the Regional Marine Biological Centre (Singapore).

Bottom fauna and flora were collected for systematic and distribution studies.

Trawl experiments were conducted at 80~200 m. Additional data on fishery activities were recorded.

In these four cruises, observations on pollution were also made.

Concerning training and education in marine science, Viet-Nam has made a considerable effort: the Oceanographic Institute of Nha Trang has trained 47 post-graduate students; the Coastal Community College (Nha Trang) has set up curriculums on oceanography, marine technology, marine biology and marine fishery; the Polytechnical University of Thu Duc has enrolled about 100 students in its brand-new fishery department; and the Fishery Directorate (Saigon) is offering a Fishing Master's training course.

3.3 Report of the Director of the Kuroshio Data Centre (doc. IOC/CSK-X/7).

ROSCOP forms received by the Kuroshio Data Centre are published as Cruise Reports in the CSK Newsletter. Numbers received however are low. Recently, the ROSCOP form has been revised, and it is requested that, in future, submissions to KDC be made on this revised form.

Six issues of the CSK Newsletter were published during the inter-sessional period; the latest (No. 45/46) will be distributed in the near future.

During the inter-sessional period, data from 2,557 oceanographic stations were received; the total number of CSK data already received now amounts to 16,103.

In this period, 28 volumes of the Data Report of CSK were published; the total number is now 313 volumes.

CSK Atlas Vol. 6 for April 1968 ~ March 1969 was published in March 1974.

Ninety-one abstracts from the literature, based on the CSK data, were printed in the CSK Newsletter. The Director of the Kuroshio Data Centre requested that any abstracts still

unsubmitted be sent to the Kuroshio Data Centre.

By IOC resolution VIII-6 "International Exchange of Data from Co-operative Investigations", Member States of IOC were invited to pay attention to their obligation to forward inventories (ROSCOP) and copies of data collected during international Co-operative Investigations co-ordinated by the IOC, in a timely manner to the appropriate regional data centres or to the World Data Centres for Oceanography. The obligation for forwarding CSK data to the Kuroshio Data Centre was approved by all CSK Member States at the first session of the International Co-ordination Group (Manila, 8-11 February 1965). However except in a few cases, submissions of both the ROSCOP form and data are not always satisfactory; it is therefore requested that ROSCOP forms and data not yet submitted be sent to the Kuroshio Data Centre at an early date.

The Director of the Kuroshio Data Centre after giving his views on the proposed "Guide to CSK data", which will consist of a compendium of information obtained from ROSCOP forms and a description of CSK data actually published in "CSK Data Reports", accepted on behalf of the Kuroshio Data Centre, responsibility for publishing the Guide.

3.4 Report of the Director of the Regional Marine Biological Centre, Singapore (doc. IOC/CSK-X/12).

In the absence of Prof. Chuang, Director of the Regional Marine Biological Centre, Dr. Angot agreed to report on the activities of the Centre.

During the period 1 April 1974 to February 1975, the work included the primary sorting and maintenance of samples. Dr. Tham Ah Kow had also trained the sorters on the secondary sorting of Copepoda and some experiments on plankton preservation.

The Regional Marine Biological Centre has already received 2,661 samples among which 2,143 have been sorted, 504 remain to be sorted and 14 were decayed on receipt and cannot be sorted. Maintenance of sorted and unsorted samples takes up much time. Following the recommendation of the Unesco-sponsored tenth meeting of the Advisory Panel for International Marine Biological Sorting Centres (Singapore: 26~30 March 1974), the storing of sample vials in larger glass containers with tight plastic lids was carried out. The conditions of the organisms and the pH values were also checked on first receipt at the Regional Marine Biological Centre on 271 samples from the USSR and 32 samples from Viet-Nam.

Since July 1974, after the training period, about five man-days per week were spent for secondary sorting of Copepoda.

Experiments on the preservation of plankton samples continue and the results of one series of experiments will be known by April 1975. 230 data record sheets, after primary sorting, were dispatched to the four countries concerned. CSK Zooplankton Data Report No.4 was published in September 1974.

In view of the planned reorganization of CSK and the prospect of withdrawal of the Unesco grant to the Regional Marine Biological Centre, it is important to know whether this Centre should continue to receive and sort plankton samples for the neighbouring countries, and whether the sorters, who have been well trained in this work, should continue in their specialization or be diverted to other work. Before these sorters are disbanded, it is only right to note that the work of maintenance in good usable condition of the facilities for the safe-keeping of these samples will be costly. It would be sad to see the end of the co-operation in the study of the plankton by neighbouring nations of the West and North-west Pacific.

3.5 Review of the implementation of recommendations of the ninth session of the International Co-ordination Group.

Recommendations 1 and 2 were considered respectively under item 5 and item 7. In regard to recommendation 3, the National Research Council of Thailand was congratulated for the publication of "Kuroshio III". It was thought advisable to print some errata sheets to be distributed later.

Recommendations 4 was discussed at length and a working party was formed to deal with this matter. Recommendation CSK-X.2 (see Annex II) was adopted.

Recommendation 5 was considered and dealt with under item 5 of the agenda, as it relates closely to decisions on the future of CSK and to the new body, if any, which may be established to replace CSK.

Item 4: Resolutions of the fifth session of the Executive Council of IOC relevant to CSK.

Dr. Mamayev introduced resolution EC-V.5 (doc. IOC/EC-V/3 and doc. IOC/EC-V/11 refer). Dr. Takenouti (Japan) being the only member of the Group to have been present at the fifth session of the Executive Council, was asked to comment.

During the debate on this matter at the Executive Council session, Dr. Takenouti felt that few delegates had particular concern for CSK, as most of the time had been spent in discussing CICAR and CIM. He informed the meeting that he had stated that the proposal of the Secretary of IOC should be revised more realistically for the South-east Asian region. Speaking further in his personal capacity, in view of resolution EC-V.5, it is important to prepare a recommendation expressing the opinions of the ICG on the Secretary's proposal for the reorganization of the co-operative investigations.

Dr. Sugawara (Japan) pointed out that, together with the proposal by the IOC Secretary (doc. IOC/EC-V/11), the other texts should be considered during the discussions, namely the USSR proposal (doc. IOC/CSK-X/11) and the paper "Proposed IDOE projects" submitted by Japan (doc. IOC/CSK-X/10).

Item 5: Discussion on the future of CSK.

This item was considered as the most important matter by the participants, and the discussion was very active and long.

The following opinions were expressed:

Dr. Rogotsky (USSR) said that, during the past years, Member States have studied together a very difficult, important and extremely interesting region of the Pacific Ocean-the Kuroshio Current. A very good organization for CSK within the IOC has been developed. In the name of the USSR delegation he proposed therefore that the existing organization remain in being, maybe changing its name (say to the "Co-operative Study of the North Pacific Ocean"), to expand the programme of work, apply new methods and include additional studies e.g., geophysics, pollution research, etc., into its activities. He considered that any new body formed should remain within the framework of IOC.

Dr. M. Angot, as Unesco Regional Adviser in Marine Science for South East Asia, pointed out that, although the results of CSK are excellent from a general point of view, they are not equally beneficial for the various member countries. He suggested that this is mainly due to a lack of manpower (marine scientists) in some countries, particularly the South-east Asian ones, and hoped that very strong assistance in education should be provided to this part of the world, even if CSK has to be split at the present time. He emphasized that any new organization formed to succeed CSK should be flexible enough to continue with marine research in one part of its geographic area simultaneously with a strong educative programme in marine

science in another part. Later on, when enough scientists have been trained in all the countries concerned, real co-operation, beneficial for all, will be feasible.

Dr. K. Sugawara said that he was doubtful about the idea of separating the South China Sea and bordering waters from the CSK area. He agreed to the idea of strengthening assistance to developing countries but the question of financial resources is a limiting factor which is related to the larger financial problem of running the new body.

While agreeing with the statement made by Dr. Angot, Dr. Takenouti stated that shipboard training from countries participating in CSK was one of the elements which has made the Co-operative Study so successful; he considered that shipboard fellowships would still be useful, and that these could be funded from the Japanese contribution to the IOC Trust Fund.

Dr. Ashby (USA, observer) said that consideration should be given to the disadvantages of dividing training from research activities. He suggested that ways be found to accommodate both functions in the programme since any new pattern separating teaching and research would have special problems of funding, administration, co-ordination, etc. Dr. Ashby added that we should examine CSK to see which functions need to be carried forward and which may be concluded. Those carried forward, should be given the highest priority whether in CSK or in any successor body.

Dr. Yoshida, also representing IAPSO*, commented that the Soviet proposal is important and worth serious consideration, but the problems should be specified in more detail. The scope is so broad and the area is so large, that really careful planning will be necessary. The proposal should be examined in particular relation to NORPAX(IDOE)** and GARP*** programmes.

The Japanese proposed participation in NORPAX(IDOE) puts major emphasis on the study of the mechanism of the meandering of the Kuroshio, with special reference to the recent discovery of the structure of the subtropical gyre. This specific experiment will contribute to one or more aspects of the USSR proposal.

New features revealed in connection with the structure of

* International Association for the Physical Sciences of the Ocean (IAPSO)

** North Pacific Experiment (NORPAX) International Decade of Ocean Exploration (IDOE)

*** Global Atmospheric Research Programme (GARP)

the Sub-tropical Countercurrent have been located in the waters off the Philippines and Taiwan.

Dr. Yoshida considered that the large-scale investigations should not be continued with the same type of surveys as in the past but that more careful design planning is necessary.

Dr. Ashby said that the US oceanographic research interests in this region focus primarily on two programmes. The first is the NORPAX, which is a major study of air-sea interaction already referred to by Dr. Yoshida (IAPSO) and the second is on the IOC-CCOP* sponsored study of geology and geophysics in East and South-east Asia.

In the case of NORPAX (IDOE), some work has already been done and it is highly desirable that it be continued in co-operation with other countries; the IDOE proposal from Japan is very appropriate.

In the case of the sponsored study of CCOP-IOC which is concerned with metallogenesis, hydrocarbon origins and plate tectonics, the US will present a proposal at the first meeting of the CCOP-IOC Joint Working Group for East Asian Transects in August 1975. Information concerning these programmes will be sent by mail to delegates who have an interest in these activities.

Mr. Rual (France) said that CSK, or any new successor organization should stay under the aegis of IOC. Special attention should be paid to education, training and mutual assistance. He added that France will be able to co-operate only if the programme of research covers the North-west Pacific and the equatorial areas.

Dr. Natarov (USSR) recalled that CSK research has now been conducted for over ten years. Having obtained much new knowledge of this part of the ocean, it is to be hoped that the programme proposed by the USSR will constitute one of the bases for the subsequent continuation of the CSK, taking into account proposals from other countries. However, in the opinion of the Soviet Union, this work should continue in the framework of the IOC as a part of the overall programme of the study of the ocean; there is no need to destroy the existing mechanism. The new programme should be studied and presented as a whole - taking into account new proposals. There are many ways of improving the study - synchronization of work, investigations on polygons, coverage of new regions, etc. The region should be studied as a unique system.

* Committee for Co-ordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas

The delegates of Republic of Korea, Philippines and Thailand were of the opinion that CSK activities should continue under IOC and Unesco.

After further discussion, it was finally approved that any new organization to be established in replacement of CSK should not be autonomous but should stay under the aegis of IOC and Unesco.

Dr. Sugawara (Japan) suggested that the matter of the proposed new organization should be looked into from two distinct angles:

1. its structure;
2. its function and major activities.

He introduced a working paper (doc. IOC/CSK-X/19) which was distributed as a basis for further discussion.

An ad-hoc group was formed to draft a recommendation on the future of CSK, taking into account the views already expressed in plenary session. The subsequent recommendation CSK-X.1 (see Annex II) was discussed and adopted.

Item 6: Training, Education and Mutual Assistance in marine science in the CSK area.

Dr. Mamayev introduced the subject with reference to document IOC/EC-V/13.

Dr. Angot suggested that the ICG/CSK could ask, if the members agree, for large scale assistance on educational programmes within East Asia to provide all countries of the CSK area with sufficient marine scientists and technicians to enable them to co-operate fully in marine research.

As explained by Dr. Sugawara, Japan has already provided funds to the IOC (Fund-in-Trust) for such purposes. Japan is now eager to have this money effectively spent.

Dr. Takenouti (Japan) as a participant of the fifth session of IOC Executive Council, informed the floor that the ad-hoc group meeting for TEMA planned for East Asia in September 1975, was considered as a useful mechanism. He also stated that the training of marine science administrators at the University of Rhode Island, USA, was not supported by all delegations at Venice and that the present ICG/CSK might consider it useful to discuss this point.

Mr. Jong Soo Hue (Republic of Korea) said that TEMA should include a strong component dealing with marine pollution.

Captain Tavorn (Thailand) would like to have access more often and more easily to shipboard fellowships for training at sea.

Dr. Natarov (USSR) announced that the USSR annually provides information to the Secretary IOC regarding vacancies for the training of specialists from developing countries on Soviet scientific vessels.

Mr. Rual (France) suggested that the action of this ICG/CSK, which is necessarily limited on this matter, could consist of supporting strongly the proposed TEMA meetings. He added that we should add a paragraph "TEMA activities" on the working paper distributed by Dr. Sugawara for consideration by the working group dealing with the future of CSK.

An ad hoc group on TEMA affairs was established to draft a recommendation on this subject. Subsequently Recommendation CSK-X.3 (Annex II) was discussed and adopted.

Item 7: Marine Pollution.

The subject was introduced by Dr. Sugawara with reference to document IOC/CSK-X/9. Dr. Mamayev introduced document IOC/CSK-X/8.

Professor Hirano (Japan) then requested the co-operation of and assistance from countries, which he is planning to visit as an IOC consultant in order to facilitate the preparation of national reports for the Workshop on Marine Pollution in the CSK area. Prof. Sugawara asked the delegations to bring this matter to the notice of their governments. The delegate from the Philippines confirmed that the matter would be transmitted to his Government.

On the invitation of the Chairman, as suggested by Prof. Sugawara, Prof. Uda made the following statement.

Four years ago, at the seventh session of the ICG/CSK in Tokyo, in response to his proposal, "Marine Pollution Studies" were adopted as a CSK matter. Since that time pollution disasters have increased and caused serious problems not only in Japan but also in the whole world. Now, oceanographers are mainly working on the monitoring and survey of the marine environment. They are studying diffusion or dispersion of pollutants after spillage or sea-dumping. This seems to be mostly aftercare or follow-up of the events. What is needed is

"source control" or a "ban on release of pollutants. For instance, to him, safe security for atomic power plants and oil disasters is becoming a very difficult and urgent problem in need of solution. He proposed, therefore, the promotion of systematized studies on recycling of valuable resources and the supply of non-polluting energy e.g. solar, terrestrial, wave-power, oceanic currents, etc. Urban or city sewage can be converted to nutritious food for shellfish, seaweeds, or fertilizers. Conversion of pollutants to food is the only way to keep the ocean clean.

After short exchange of views concerning Prof. Uda's statement, Dr. Natarov (USSR) requested that the following statement be included in the summary report:

"The Soviet delegation supports the idea that the study of marine pollution should be part of a new CSK programme. It is considered that the Comprehensive Plan for the Global Investigation of Pollution in Marine Pollution (GIPME), approved by IOC, should be followed. This Plan was a subject of discussion during the eighth session of the IOC Assembly. The Comprehensive Plan includes recommendations on how to organize international research on marine pollution. Analysis of the proposed programmes will be carried out by Soviet specialists under Prof. Muromtzev."

A working group, chaired by Prof. Sugawara was formed to draft a recommendation on marine pollution.

Subsequently Recommendation CSK-X.4 (Annex II) was discussed and adopted.

Item 8: Next Session.

The Group expressed the wish that the final ICG/CSK meeting be held in conjunction with the first session of the successor organization. It was agreed that this should be held during late 1976 or 1977. The delegate of France offered to hold the meeting in Nouméa, New Caledonia, if it takes place during the second part of 1977. In the absence of any delegate for Indonesia, the Group requested Dr. Angot to take the necessary official steps through the Indonesian Government to explore the possibilities, if any, to hold the meeting in Jakarta.

Item 9: Any other business.

1. CSK Symposium.

Dr. K. Sugawara proposed that a Symposium be held at the conclusion of the CSK studies. The Group agreed in principle

but it was felt that it would be better not to decide yet the time and the place for the Symposium. The delegate of the USSR expressed his opinion that the final session of ICG/CSK, the first session of the successor organization and the Symposium Kuroshio-IV be held simultaneously.

2. Fisheries Aspect of CSK.

Prof. Uda stated that fisheries aspect of oceanography is very important in CSK and it should be continued by the new organization succeeding CSK. The Special Committee on Fisheries Oceanography was established in 1961 by SCOR and met at Bergen in September 1962; IOC at its second session (Paris, 1962) adopted the definition and established ACMRR as an advisory body both to FAO and IOC. The IIOE (1960~65) adopted projects on the fisheries aspect of oceanography during the Expedition. The CSK adopted the fisheries aspect at the first session of the ICG/CSK. Since then all countries interested in the fisheries aspect have made contributions which have been compiled in the Reports of Kuroshio I, II and III. The Assistant International and National Co-ordinators for Fisheries have been nominated.

3. Guide to CSK data.

Prof. Nitani (Japan) stated that on the first day of this meeting he had stated that the time of publication of the Guide to CSK data depends upon the future of CSK. After the approval of the termination of CSK by the ninth session of the IOC Assembly, the Kuroshio Data Centre will be able to publish the Guide to CSK data in 1977 or 1978 provided ROSCOP forms and data of CSK cruises are submitted promptly by each country to the Kuroshio Data Centre. Co-operation of all Member States in this matter is sought.

Item 10: Adoption of the report.

After discussion, the summary report was adopted with some amendments.

Item 11: Closure of the session.

With no other business, the Chairman thanked Dr. Mamayev, Dr. Angot and the Secretariat for the heavy load of work effectively conducted.

The delegate for USSR, on behalf of all the participants of the meeting, thanked the Government of Japan for its invitation to hold the meeting in Tokyo; the excellent organization during the meeting and the warm atmosphere were appreciated by everybody during their stay.

The Chairman declared the tenth session of ICG/CSK closed.

AGENDA

1. Opening of the Session.
2. Adoption of the Agenda.
3. Progress Reports on CSK activities since the ninth Session.
 - 3.1 Reports of ICG/CSK officers
 - 3.1.1 Report of the International Co-ordinator
 - 3.1.2 Report of the Assistant International Co-ordinator for Fisheries
 - 3.2 Reports of the National Co-ordinators
 - 3.2.1 France
 - 3.2.2 Japan
 - 3.2.3 Republic of Korea
 - 3.2.4 Thailand
 - 3.2.5 USSR
 - 3.2.6 Republic of Viet-Nam
 - 3.3 Report of the Director of the Kuroshio Data Centre
 - 3.4 Report of the Director of the Regional Marine Biological Centre, Singapore
 - 3.5 Review of the implementation of recommendations of the ninth session of the ICG
4. Resolutions of the fifth session of the Executive Council of IOC, relevant to CSK.
5. Discussion on the future of CSK.
6. Training, Education and Mutual Assistance in marine science in the CSK area.
7. Marine Pollution.
8. Next session.
9. Any other business.
10. Adoption of the report.
11. Closure of the session.

International Co-ordination Group for the Co-operative
Study of the Kuroshio and Adjacent Regions (CSK)

(10th Session, Tokyo, Japan, 13~17 March 1975)

RECOMMENDATIONS

- | | |
|------------------|--|
| Recommendation 1 | Future activities in the CSK area |
| Recommendation 2 | Work of the Regional Marine Biological Centre, Singapore |
| Recommendation 3 | Training, Education and Mutual Assistance |
| Recommendation 4 | Marine Pollution Studies |

RECOMMENDATION CSK-X.1

FUTURE ACTIVITIES IN THE CSK AREA.

The International Co-ordination Group :

Having studied and discussed the "Proposals for possible reorganization of the Co-operative Investigations of the Commission", submitted by the Secretary (doc. IOC/EC-V/11), and also recommendation CSK-IX.1 of the ninth session of ICG for CSK;

Noting resolution EC-V.5 of the fifth session of the IOC Executive Council ;

- Agrees :
1. to terminate the CSK as a project, as of December 1976;
 - and
 2. to continue the following activities of CSK;
 - i) ongoing scientific research;
 - ii) functioning of the Kuroshio Data Centre, including publication of CSK data reports, atlases, etc.; and
 - iii) functioning of the Regional Marine Biological Centre Singapore;

Proposes the establishment within the IOC of a Working Committee for the Western Pacific and adjacent waters (WESTPAC), starting with the present membership of this Group, with the main purpose of:

1. Promoting oceanic research of the Member States on a national and international basis;
- and
2. Promoting training, education and mutual assistance;

Proposes also the gradual transformation of existing and ongoing activities of the ICG for CSK into activities of the Working Committee for WESTPAC, as considered appropriate;

Recommends the establishment within the Working Committee of Groups of Experts with the following tasks:

1. Definition of future scientific projects in the area;
- and
2. Specification of existing needs in the field of training education and mutual assistance;

Requests the Secretary, IOC to submit the proposal for establishment of a Working Committee for WESTPAC to the ninth session of the Assembly of IOC for approval, after appropriate consultations with UN agencies participating in ICSPRO;

Requests Unesco to consider provision of the necessary funding for functioning of the Working Committee for the WESTPAC; and

Recommends also that Unesco provides the present regional adviser in marine science for South-east Asia to act as Secretary for the Working Committee for the Western Pacific and adjacent waters (WESTPAC).

RECOMMENDATION CSK-X.2

WORK OF THE REGIONAL MARINE BIOLOGICAL CENTRE, SINGAPORE.

The International Co-ordination Group :

Having received the Report of the Director of the Regional Marine Biological Centre in Singapore (doc. IOC/CSK-X/12);

Appreciates the very excellent work carried out by the Centre on sorting and archiving the samples;

Understanding that the Regional Marine Biological Centre will continue its present activities with financial support from Unesco until sorting of the plankton samples collected during CSK cruises and sent to the Centre, is complete and that the samples will be made available to interested specialists;

Recommends that Unesco discuss with the government of Singapore, the possibility of establishing a permanent mechanism which will be responsible for final archiving of samples, handling of the collection, and distribution of the specimens to be studied to qualified specialists throughout the world, in accordance with the recommendations made by the Advisory Panel for Unesco sponsored Marine Biological Sorting Centres and the CSK Senior Specialists;

Further recommends that Unesco also discuss with the government of Singapore, as well as IPFC* FAO** etc., the need to strengthen the RMBC's*** work on the evaluation of fish eggs and larvae, as urged in the final paragraph of rec.CSK-IX.4 of the ninth session of the International Co-ordination Group for CSK.

RECOMMENDATION CSK-X.3

TRAINING, EDUCATION AND MUTUAL ASSISTANCE.

- * Indo-Pacific Fisheries Council
** Food and Agriculture Organization of the United Nations
*** Regional Marine Biological Centre

The International Co-ordination Group:

Noting that the second session of the Working Committee for TEMA (TEMA-II) and an ad hoc Regional meeting for TEMA, are scheduled to be held in the region in September 1975;

Endorses the provisional agenda of the above session of the Working Committee (doc. IOC/EC-V/13);

Invites the ad hoc Regional Meeting for TEMA to take into account the needs for training and education in the study of marine pollution, as expressed by the ICG for CSK at its ninth session (rec. CSK-IX.2);

Recommends that assistance from UN and/or other sources be sought on a large scale for the early planning of educational programmes in East Asia, in order to improve the manpower situation and thus ensure fruitful co-operation in marine research for all Member States in the region;

Requests Unesco and IOC to consider this matter further;

Recommends also that the above TEMA meetings take into account the need for educational programmes to be located within East Asia in order to ensure that teaching is carried out in accordance with the needs of the countries of the region, and that the marine research stations be considered for use as training centres;

Requests the Commission to transfer to the Working Committee for WESTPAC* (recommendation CSK-X.1 refers) all CSK activities concerned with TEMA matters.

RECOMMENDATION CSK-X.4

MARINE POLLUTION STUDIES.

The International Co-ordination Group :

Noting the progress being made in planning a joint IOC(CSK)/FAO(IPFC) International Workshop on Marine Pollution in East Asian Waters, as proposed by the eighth session of the IOC Assembly (res. VIII-7), and which is now tentatively scheduled to be held in Penang, Malaysia, in September 1975;

* Working Committee for the Western Pacific and adjacent waters

Taking into account also the IGOSS* Marine Pollution Monitoring Pilot Project (doc. IOC/CSK-X/8);

Requests Member States to participate actively in the above Workshop in order to ensure its success;

Urges Member States to make every effort to take part in the IGOSS Marine Pollution Monitoring Pilot Project, as a first step in the development of the worldwide network of marine pollution monitoring activities;

Further expresses its consensus that the recommended new Working Committee for WESTPAC (rec. CSK-X.1) should accept marine pollution as an important subject for study.

* Integrated Global Ocean Station System

LIST OF DOCUMENTS

IOC/CSK-X/1	Prov	Provisional Agenda (distributed with CL No.501 of 30.12.1974)
IOC/CSK-X/2		Annotated Provisional Agenda
IOC/CSK-X/3		Summary Report of the Xth session of the ICG/CSK (to be prepared during the session)
IOC/CSK-X/4	Rev	Provisional list of documents
IOC/CSK-X/5		Provisional list of participants
IOC/CSK-X/6		Report of the International Co-ordinator
IOC/CSK-X/7		Report of the Director of the Kuroshio Data Centre
IOC/CSK-X/8		IGOSS Marine Pollution Monitoring Pilot Project
IOC/CSK-X/9		Planned IOC/IPFC Workshop on Marine Pollution in the CSK area
IOC/CSK-X/10		Proposed IDOE projects (submitted by Japan)
IOC/CSK-X/11		The Program of the International Investigations of the North-west Pacific (proposal of USSR)
IOC/CSK-X/12		Report of CSK National Co-ordinator of Singapore on the Regional Marine Biological Centre for Singapore
IOC/CSK-X/13		Report of CSK National Co-ordinator of USSR
IOC/CSK-X/14		Report of CSK National Co-ordinator of Japan
IOC/CSK-X/15		Report of CSK National Co-ordinator of the Republic of Korea
IOC/CSK-X/16		Report of CSK National Co-ordinator of France
IOC/CSK-X/17		Report of CSK National Co-ordinator of Thailand
IOC/CSK-X/18		Report of CSK National Co-ordinator of The Republic of Viet-Nam
IOC/CSK-X/19		IOC Oceanographic Research Council in East Asian Waters (submitted by Prof. K. Sugawara)

OTHER DOCUMENTS

IOC/EC-V/3	Summary Report of the fifth session of the Executive Council (excerpts)
IOC/EC-V/11	Proposals for possible reorganization of the co-operative investigations of the Commission (submitted by the Secretary)
IOC/EC-V/13	Preparation and Agenda for the second session of the Working Committee for Training, Education and Mutual Assistance (TEMA-II)
IOC/CSK-IX/2	Summary Report of the ninth session of the IOG/ CSK

Annex IV

List of Co-ordinators (N.C.) and Assistant National Co-ordinators (A.N.C.) and Correspondents on Marine Pollution in the CSK area.

CHINA (People's Republic of)

N.C. Not nominated

FRANCE

N.C. M. Pierre Rual
ORSTOM
BPA-5 Nouméa Cedex
New Caledonia

INDONESIA

N.C. and Correspondent The Director
National Institute of Oceanology
Jalan Aquarium-Past Ikan
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c/o Ministry of Education
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A.N.C. Prof. Dr. Toshiyuki Hirano
Ocean Research Institute
University of Tokyo
15-1 Minamidai 1-chome
Nakano-ku, Tokyo 164

Correspondent

REPUBLIC OF KOREA

N.C. Mr. Ik-Sung Choi
Director of Fisheries Research and
Development Agency, Pusan, Korea

A.N.C. Mr. Joo-Suck Park
Researcher of Fisheries Research and
Development Agency
Pusan, Korea

Mr. Mun-Son Kim
Head of the Oceanographic Section of
ROK Hydrographic Office
Seoul, Korea

Correspondent

Mr. Yun-Keun Oh
National Fisheries Research and Develop-
ment Agency
Namhang-dong, Youngdo-ku
Pusan, Korea

PHILIPPINES

N.C.

Mr. Mario C. Manansala
Chief Geophysicist
Bureau of Coast and Geodetic Survey
421 Barraca St., San Nicolas
Manila

A.N.C.

Prof. Inocencio A. Ronquillo
Acting Chief
Fisheries Research Division
Bureau of Fisheries and Aquatic
Resources
Intramuros, Manila

Correspondent

SINGAPORE

N.C.

Prof. Shou-Hwa Chuang
Head, Department of Zoology
University of Singapore
Bukit Timah Road 10

A.N.C.

Mr. Lim Ewe Hock

Correspondent

THAILAND

N.C.

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Bangkok 12

A.N.C.

Capt. Tavorn Pongsapipatt R.T.N.
Chief, Oceanographic Division
Hydrographic Department
Bangkok

Correspondent

Mrs. S. Boghiprasart
National Research Committee
Bankhen, Bangkok

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N.C. Prof. Alexey M. Muromtsev
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A.N.C. Dr. Alexandre A. Rogotsky
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Correspondent

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Acting Senior Research Officer
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A.N.C. Dr. Kwan Ming Chan
Correspondent A correspondent will be nominated by
the Director of Agriculture and Fish-
eries

REPUBLIC OF VIET-NAM

N.C. Dr. Tran-ngoc Loi
Director of Oceanographic Institute
Nhatrang
South Viet-Nam

A.N.C. Mr. Nguyen Thuong Dao
Oceanographic Institute
Nhatrang

Correspondent Dr. Tran-ngoc Loi
(address is above mentioned)

ANNEX V/ANNEXE V/ANEXO V/ПРИЛОЖЕНИЕ V

LIST OF PARTICIPANTS/LISTE DE PARTICIPANTS/LISTA DE PARTICIPANTES/
СПИСОК УЧАСТНИКОВ

FRANCE/FRANCIA/**ФРАНЦИЯ**

Mr. Pierre Rual
National Co-ordinator for CSK
Oceanographer
ORSTOM
B.P. A-5 Nouméa Cedex
New Caledonia

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National Co-ordinator for CSK
Japanese National Commission for Unesco
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Hydrographic Department
Maritime Safety Agency
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Adviser::

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Shizuoka-ken

Prof. Yasuo Miyake
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University of Tokyo

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Mr. Sadakiyo Hori
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Mr. Kenji Doi
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Mr. Hayato Iida
Assistant to Head, Oceanographical
Division, Marine Department
Japan Meteorological Agency
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REPUBLIC OF KOREA/REPUBLIQUE DE COREE/REPUBLICA DE COREA/
КОРЕЙСКАЯ РЕСПУБЛИКА
Mr. Jong-Soo Hue
Chief, Fisheries Resources Section
Fisheries Research and Development
Agency
Pusan

PHILIPPINES/FILIPINAS/
ФИЛИППИНЫ
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National Science Development Board
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Roppongi, Minato-ku, Tokyo

THAILAND/THAILANDE/
ТАИЛАНД
Captain Tavorn Pongsapipatt
Assistant National Co-ordinator for CSK
Chief, Oceanographic Division
Hydrographic Department
Bangkok

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REPUBLICS/UNION DES
REPUBLIQUES SOCIALISTES
SOVIETIQUES/UNION DE
REPUBLICAS SOCIALISTAS
SOVIETICAS/**СОЮЗ**
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РЕСПУБЛИК
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Vladivostok

Dr. Valéry V. Natarov
Pacific Scientific Institute of
Fisheries and Oceanography
20 Leninstreet
Vladivostok

Dr. Eugène I. Lastovetsky
Far East Scientific Meteorological and
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ETATS-UNIS D'AMERIQUE/
ESTADOS UNIDOS DE AMERICA/
СОЕДИНЕННЫЕ ШТАТЫ АМЕРИКИ

Observer Dr. Ebert A. Ashby
Acting Head
National Science Foundation Tokyo
Office
Embassy of the United States of
America
Tokyo, Japan

Representatives of Inter-
national Organization/
Représentants d'organisations
internationales/Represen-
tantes de Organizaciones
Internacionales/

**Представители
международных организаций**
UNESCO Dr. Michel Angot
Regional Adviser in Marine Sciences
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IAPSO Prof. Kozo Yoshida
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Bunkyo-ku, Tokyo

Secretariat

IOC Dr. Oleg I. Mamayev
Assistant Secretary
Intergovernmental Oceanographic
Commission
Unesco
Place de Fontenoy
75700 Paris, France

* * * * *

(10/1/79)

ERRATA

Summary Report of the ninth session of the ICG/CSK
(document IOC/CSK-IX/2), item 8.4 (on page 27 in
the CSK Newsletter No. 41/42).

The document referred to inline 2 of this item
should read IOC/EC-II/12.

II. CRUISE REPORTS

1. Republic of Korea

1.1 Suro No. 3

(ROSCOP)

SHIP OR PLATFORM Suro No. 3	SCIENTIST IN CHARGE Choo Kyo Sung
INSTITUTION OR OPERATING AGENCY Hydrographic Office, Republic of Korea (ROK HO)	
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK, ROK HO-1-74	COUNTRY Republic of Korea

DATE OF CRUISE

FROM: 15 DAY / 05 MONTH / 1974 YEAR TO: 29 DAY / 06 MONTH / 1974 YEAR

PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	Q	F	D	TYPE OF FORMAT AVAILABLE	Q	QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:
DESCRIPTIVE OCEANOGRAPHY							
D 1 SERIAL STATIONS	20	a	a, b		RDC, MT	a.	ROK HO
D 2 STD						b.	
D 3 OXYGEN	20	a	a, b		PUB, MT	c.	
D 4 PHOSPHATES						d.	
D 5 TOTAL-P						e.	
D 6 NITRATES						f.	
D 7 NITRITES							
D 8 TRACE ELEMENTS							
D 9 pH	20	a	a, b		PUB, MT		
D 10 ALKALINITY							
D 11 SILICATES							
D 12 RADIOACTIVITY							
D 13 ISOTOPE CHEMISTRY						F D	FINAL DISPOSITION OF DATA
D 14 OTHER DISSOLVED GASES							(NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)						a.	ROK HO
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	20	a	a		PUB	b.	KDC/JODC(MT)
D 17 TRANSPARENCY (NO. OF OBS.)	20	a	a, b		PUB, MT	c.	
D 18 SOUND VELOCIMETER DATA						d.	
D 19 INSTRUMENTED WAVE RECORDING (✓)						e.	
D 20 TIDES (✓)						f.	
D 21 SEA (✓)							
D 22 SWELL (✓)							
D 23 ICE (✓)							
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)							
D 25 SEA SURFACE TEMPERATURE (✓)	✓	a	a		PUB		
CURRENT MEASUREMENTS							
C 1 CURRENT METERS							
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)							
C 2 GEK (✓)							
C 3 DROGUES (✓)							
C 4 SWALLOW FLOATS (✓)							
C 5 SURFACE DRIFTERS (NO. RELEASED)							
C 6 BOTTOM DRIFTERS (NO. RELEASED)							
METEOROLOGY							
M 1 UPPER AIR OBSERVATIONS (✓)							
M 2 SURFACE METEOROLOGICAL OBS. (✓)	✓	a	a		RDC		
M 3 INCIDENT RADIATION (✓)							
GEOLOGY AND GEOPHYSICS (CONTINUED)							
G 22 BOTTOM RADIOACTIVITY (✓)							
G 23 SIDE-SCANNING SONAR (Km)							
BIOLOGY							
B 1 PRIMARY ORGANIC PRODUCTION							
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION							
B 3 PARTICULATE ORGANIC MATTER							
B 4 DISSOLVED ORGANIC MATTER							
B 5 NEUSTON AND PLEUSTON							
B 6 BACTERIA AND OTHER MICROORGANISMS							

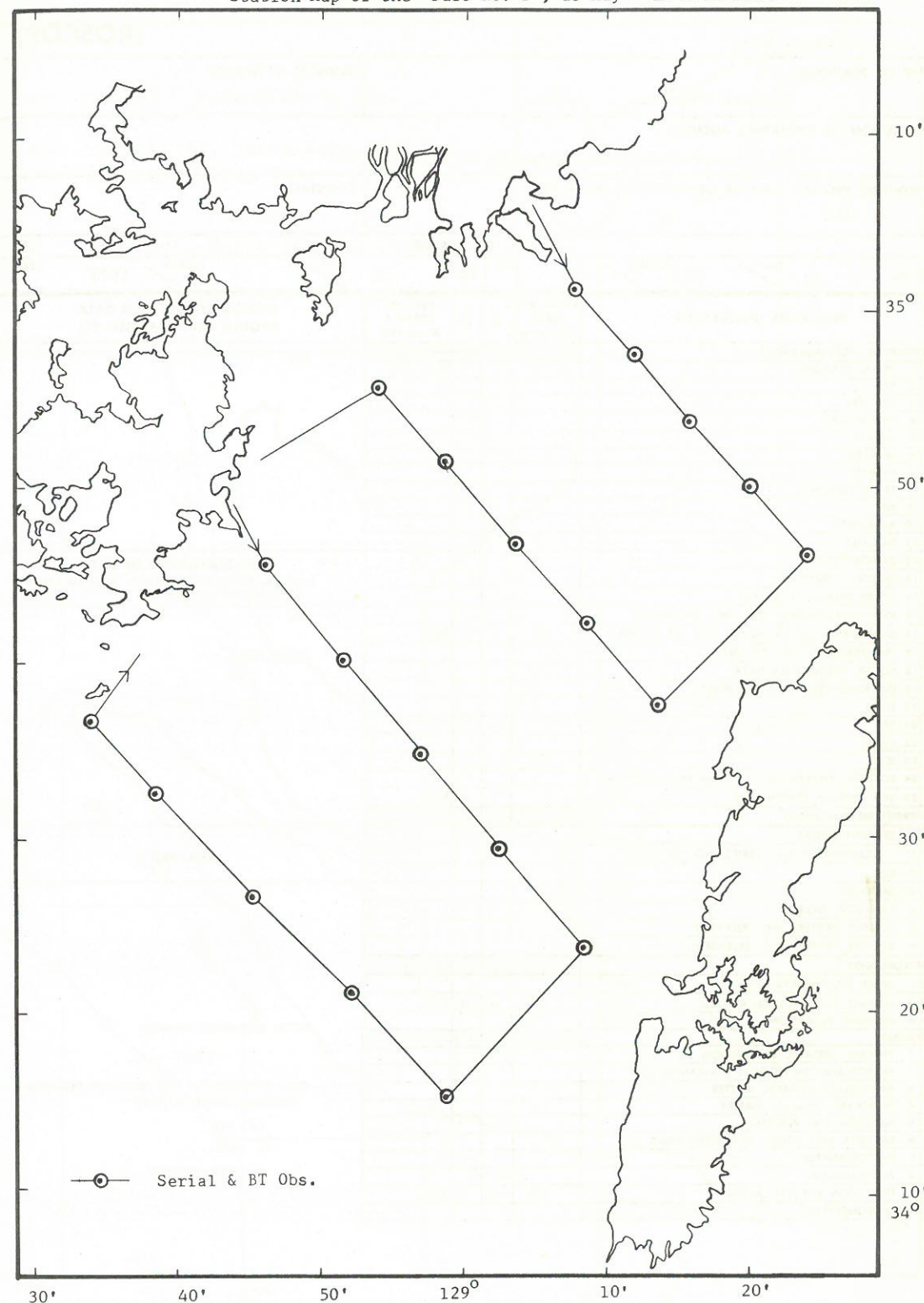
REMARKS

TOTAL KILOMETERS STEAMED:

DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP):

- (✓) YES
- () NO
- () PART (SPECIFY)

Station Map of the "Suro No. 3", 15 May - 29 June 1974



2. Japan

2.1 Nagasaki Maru

(ROSCOP)

SHIP OR PLATFORM Nagasaki Maru	SCIENTIST IN CHARGE K. Mizue
INSTITUTION OR OPERATING AGENCY Faculty of Fisheries, Nagasaki University (NU)	
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK	COUNTRY Japan

DATE OF CRUISE	
FROM: 30 DAY / 07 MONTH / 1973 YEAR	TO: 24 DAY / 10 MONTH / 1973 YEAR

PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	Q	F D	TYPE OF FORMAT AVAILABLE	Q	QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:
DESCRIPTIVE OCEANOGRAPHY						
D 1 SERIAL STATIONS	7	a	b	MT, PC	a.	NU
D 2 STD					b.	
D 3 OXYGEN					c.	
D 4 PHOSPHATES					d.	
D 5 TOTAL-P					e.	
D 6 NITRATES					f.	
D 7 NITRITES						
D 8 TRACE ELEMENTS						
D 9 pH						
D 10 ALKALINITY						
D 11 SILICATES						
D 12 RADIOACTIVITY						
D 13 ISOTOPE CHEMISTRY						
D 14 OTHER DISSOLVED GASES						
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)					F D	FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	10	a	a	RDS	a.	NU
D 17 TRANSPARENCY (NO. OF OBS.)					b.	KDC/JODC
D 18 SOUND VELOCIMETER DATA					c.	
D 19 INSTRUMENTED WAVE RECORDING (✓)					d.	
D 20 TIDES (✓)					e.	
D 21 SEA (✓)					f.	
D 22 SWELL (✓)						
D 23 ICE (✓)						
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)						
D 25 SEA SURFACE TEMPERATURE (✓)	✓	a	a	RDS		
CURRENT MEASUREMENTS						
C 1 CURRENT METERS						
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)						
C 2 GEK (✓)						
C 3 DROGUES (✓)						
C 4 SWALLOW FLOATS (✓)						
C 5 SURFACE DRIFTERS (NO. RELEASED)						
C 6 BOTTOM DRIFTERS (NO. RELEASED)						
METEOROLOGY						
M 1 UPPER AIR OBSERVATIONS (✓)						
M 2 SURFACE METEOROLOGICAL OBS. (✓)	✓	a	a	RDS		
M 3 INCIDENT RADIATION (✓)						
BIOLOGY						
B 1 PRIMARY ORGANIC PRODUCTION						
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION						
B 3 PARTICULATE ORGANIC MATTER						
B 4 DISSOLVED ORGANIC MATTER						
B 5 NEUSTON AND PLEUSTON						
B 6 BACTERIA AND OTHER MICROORGANISMS						
B 7 PHYTOPLANKTON						
B 8 ZOOPLANKTON						
B 9 FISH EGGS AND/OR LARVAE	18	a	a	RDS		
B 10 MICRONEKTON						

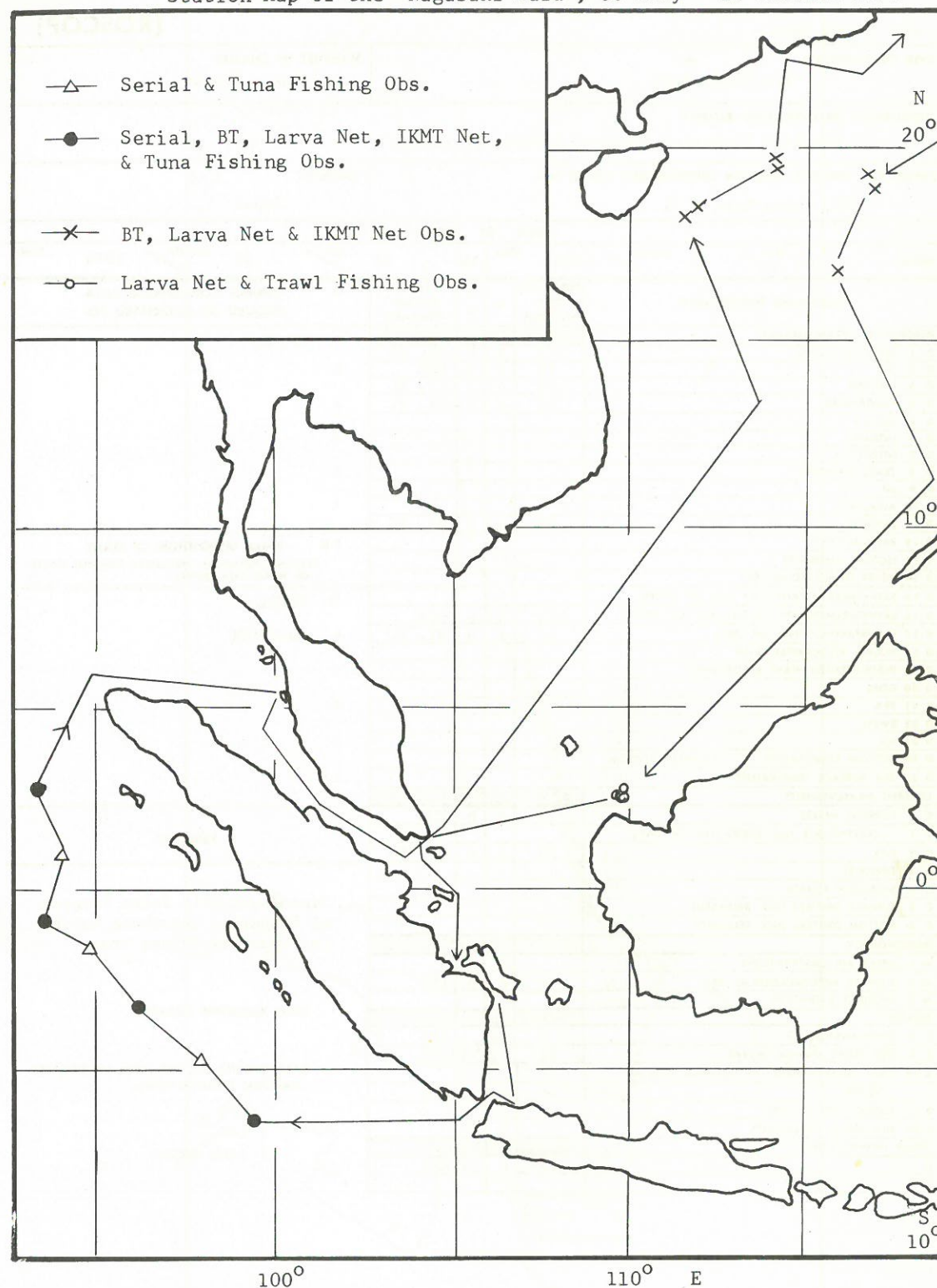
REMARKS

TOTAL KILOMETERS STEAMED:
9967 n.m.

DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP):

- (✓) YES
() NO
() PART (SPECIFY)

Station Map of the "Nagasaki Maru", 30 July - 24 October 1973



2.2 Shoyo Maru

(ROSCOP)

SHIP OR PLATFORM R/V Shoyo Maru		SCIENTIST IN CHARGE Dr. Shoji Kikawa	
INSTITUTION OR OPERATING AGENCY Far Seas Fisheries Research Laboratory (FSFRL)			
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK, Shoyo Maru - 73		COUNTRY Japan	
DATE OF CRUISE			
FROM: 02 DAY / 10 MONTH / 1973 YEAR		TO: 07 DAY / 01 MONTH / 1974 YEAR	

PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	Q	F	D	TYPE OF FORMAT AVAILABLE	Q	QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:
DESCRIPTIVE OCEANOGRAPHY							
D 1 SERIAL STATIONS	72	a	b		MT, PC	a.	FSFRL
D 2 STD	16	a	b		PUB	b.	
D 3 OXYGEN	84	a	b		MT, PC	c.	
D 4 PHOSPHATES	85	a	b		MT, PC	d.	
D 5 TOTAL-P						e.	
D 6 NITRATES						f.	
D 7 NITRITES							
D 8 TRACE ELEMENTS							
D 9 pH							
D 10 ALKALINITY							
D 11 SILICATES	85	a	b		MT, PC		
D 12 RADIOACTIVITY							
D 13 ISOTOPE CHEMISTRY							
D 14 OTHER DISSOLVED GASES							
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)						F D	FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	184	a	b		PUB	a.	FSFRL
D 17 TRANSPARENCY (NO. OF OBS.)	51	a	b		MT, PC	b.	KDC/JODC
D 18 SOUND VELOCIMETER DATA						c.	
D 19 INSTRUMENTED WAVE RECORDING (✓)						d.	
D 20 TIDES (✓)						e.	
D 21 SEA (✓)						f.	
D 22 SWELL (✓)							
D 23 ICE (✓)							
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)							
D 25 SEA SURFACE TEMPERATURE (✓)							
CURRENT MEASUREMENTS							
C 1 CURRENT METERS	3	a	b		RDS		
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)							
C 2 GEK (✓)	20	a	b		MT, PC		
C 3 DROGUES (✓)							
C 4 SWALLOW FLOATS (✓)							
C 5 SURFACE DRIFTERS (NO. RELEASED)							
C 6 BOTTOM DRIFTERS (NO. RELEASED)							
METEOROLOGY							
M 1 UPPER AIR OBSERVATIONS (✓)							
M 2 SURFACE METEOROLOGICAL OBS. (✓)	✓	a	b		PUB		
M 3 INCIDENT RADIATION (✓)							
BIOLOGY							
B 8 ZOOPLANKTON	2	a	a		RDS		
B 9 FISH EGGS AND/OR LARVAE	62	a	a		RDS		
B 22 FIELD OBSERVATIONS ON BEHAVIOR (SPECIFY GROUP) (✓)	✓	a	a		RDS		
B 23 BORERS AND FOULERS (✓)	✓						
B 24 BIOLOGICAL POLLUTANTS							
OTHER OBSERVATIONS							
O 1	✓	a	a		RDS		
O 2							

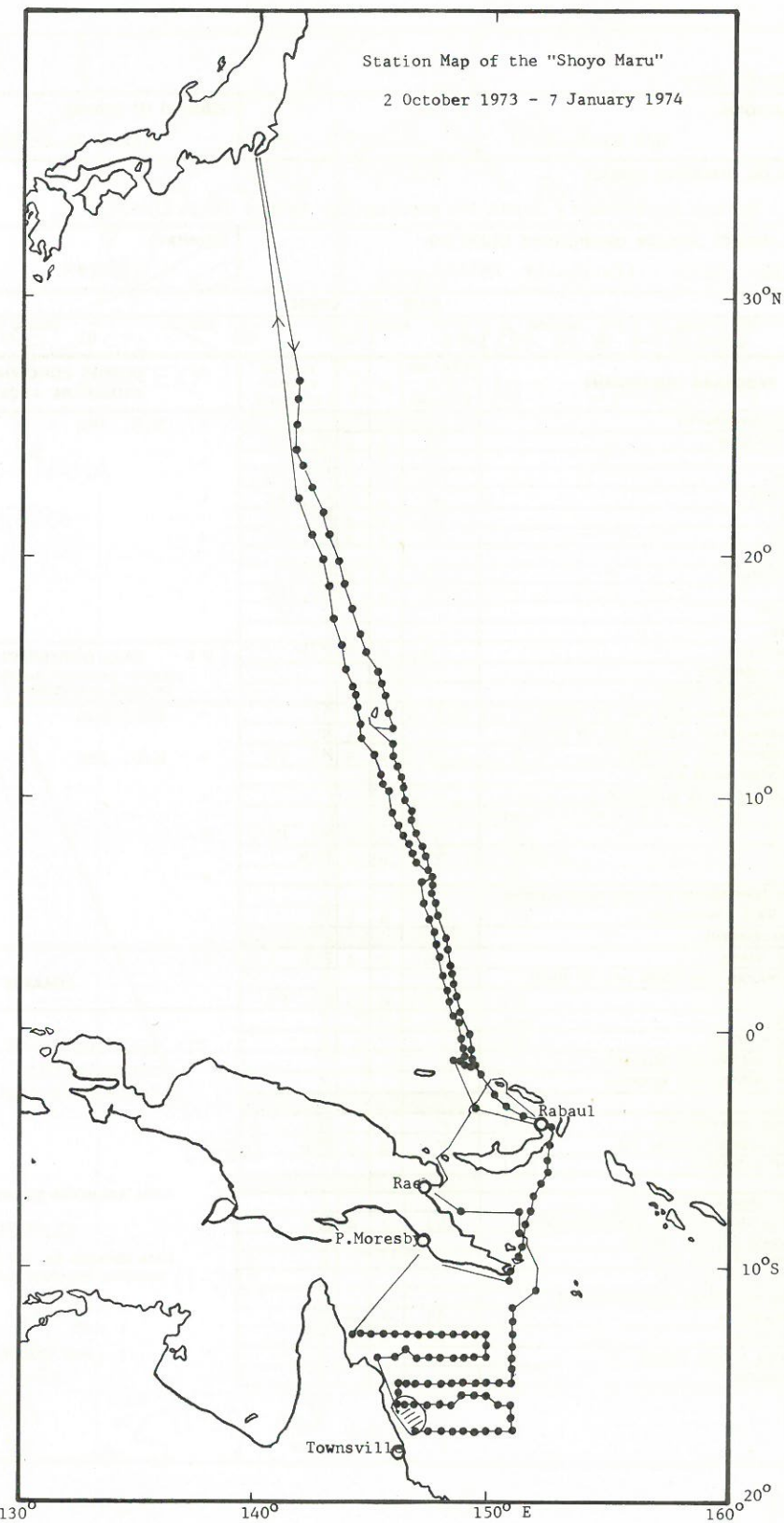
REMARKS

Japan/Australia Joint Program
of Fisheries Resources Survey
in Papua New Guinea Area

TOTAL KILOMETERS STEAMED:

DATA REPORTED ON THIS FORM ARE DECLARED
NATIONAL PROGRAM (DNP):

- (✓) YES
() NO
() PART (SPECIFY)



2.3 Ryofu Maru

(ROSCOP)

SHIP OR PLATFORM R/V Ryofu Maru	SCIENTIST IN CHARGE Takeo Tsuchida
INSTITUTION OR OPERATING AGENCY Marine Department, Japan Meteorological Agency (M.D. JMA)	
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK 74-01 (Partially AMTEX)	COUNTRY Japan

DATE OF CRUISE
FROM: 14 DAY 01 MONTH 1974 YEAR TO: 03 DAY 03 MONTH 1974 YEAR

PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	Q	F	D	TYPE OF FORMAT AVAILABLE	Q	QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:
DESCRIPTIVE OCEANOGRAPHY							
D 1 SERIAL STATIONS	51	a	a	a	MT, PC	a.	M.D. JMA
D 2 STD	15	a	b	a	AT	b.	
D 3 OXYGEN	51	a	a	a	MT, PC	c.	
D 4 PHOSPHATES	42	a	a	a	MT, PC	d.	
D 5 TOTAL-P	10	a	a	a	MT, PC	e.	
D 6 NITRATES	11	a	a	a	MT, PC	f.	
D 7 NITRITES							
D 8 TRACE ELEMENTS	10	a	a	a	PUB		
D 9 pH	11	a	a	a	MT, PC		
D 10 ALKALINITY							
D 11 SILICATES							
D 12 RADIOACTIVITY	4	a	b	a	PUB		
D 13 ISOTOPE CHEMISTRY							
D 14 OTHER DISSOLVED GASES							
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)	11	a	b	a	AT	F D	FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	51	a	a	a	PUB	a.	KDC/JODC
D 17 TRANSPARENCY (NO. OF OBS.)	26	a	a	a	MT, PC	b.	M.D. JMA
D 18 SOUND VELOCIMETER DATA						c.	
D 19 INSTRUMENTED WAVE RECORDING (✓)						d.	
D 20 TIDES (✓)						e.	
D 21 SEA (✓)		✓	a	a	MT, PC	f.	
D 22 SWELL (✓)		✓	a	a	PUB		
D 23 ICE (✓)							
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)							
D 25 SEA SURFACE TEMPERATURE (✓)		✓	a	b	AT		
CURRENT MEASUREMENTS							
C 1 CURRENT METERS	16	a	a	a	PUB		
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)							
C 2 GEK (✓)	5	a	a	a	MT, PC		
C 3 DROGUES (✓)							
C 4 SWALLOW FLOATS (✓)							
C 5 SURFACE DRIFTERS (NO. RELEASED)							
C 6 BOTTOM DRIFTERS (NO. RELEASED)							
METEOROLOGY							
M 1 UPPER AIR OBSERVATIONS (✓)		✓	a	b	PUB		
M 2 SURFACE METEOROLOGICAL OBS. (✓)		✓	a	a	PUB		
M 3 INCIDENT RADIATION (✓)							
BIOLOGY							
B 1 PRIMARY ORGANIC PRODUCTION							
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION	43	a	a	a	PUB		
B 3 PARTICULATE ORGANIC MATTER							
B 4 DISSOLVED ORGANIC MATTER							
B 5 NEUSTON AND PLEUSTON							
B 6 BACTERIA AND OTHER MICROORGANISMS							
B 7 PHYTOPLANKTON	51	a	a	a	PUB		
B 8 ZOOPLANKTON	51	a	a	a	PUB		
B 9 FISH EGGS AND/OR LARVAE							
B 10 MICRONEKTON							

REMARKS

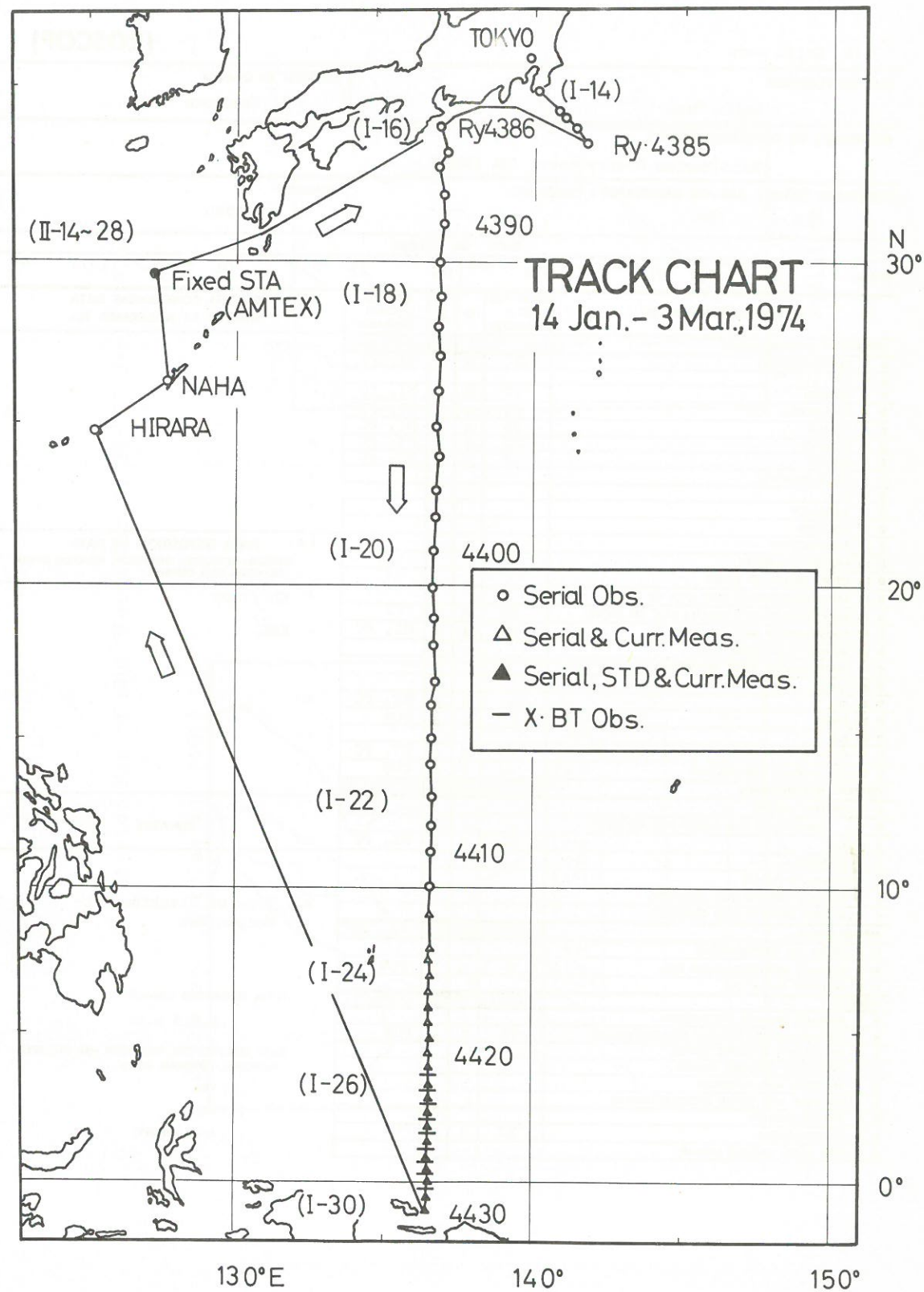
C1: with two TS-II currentmeters (reference depth 1000m)

TOTAL KILOMETERS STEAMED:

11,000Km

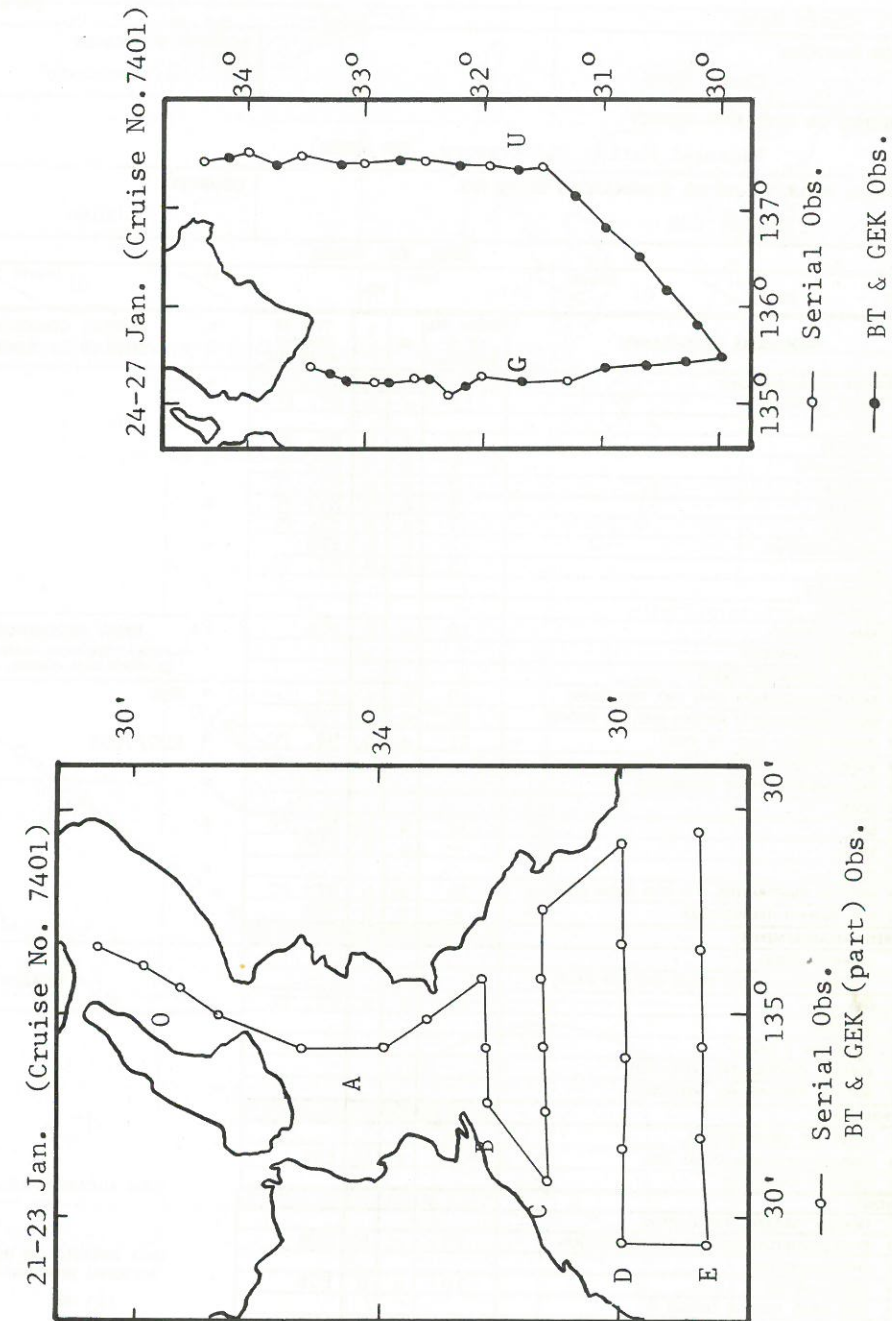
DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP):

(✓) YES
() NO
() PART (SPECIFY)



SHIP OR PLATFORM Keifu Maru		SCIENTIST IN CHARGE K. Yamamoto	
INSTITUTION OR OPERATING AGENCY Kobe Marine Observatory, JMA (KMO)			
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK 7401		COUNTRY Japan	
DATE OF CRUISE			
FROM:	21 DAY / 01 MONTH / 1974 YEAR	TO:	27 DAY / 01 MONTH / 1974 YEAR
PROGRAMS UNDERTAKEN		QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:	
DESCRIPTIVE OCEANOGRAPHY	TOTAL NO. OF Δ STATIONS	Q	F D TYPE OF FORMAT AVAILABLE
D 1 SERIAL STATIONS	37	a	a MT, PC
D 2 STD			
D 3 OXYGEN	37	a	a MT, PC
D 4 PHOSPHATES	37	a	a MT, PC
D 5 TOTAL-P	25	a	a MT, PC
D 6 NITRATES	25	a	a MT, PC
D 7 NITRITES	37	a	a MT, PC
D 8 TRACE ELEMENTS			
D 9 pH			
D 10 ALKALINITY			
D 11 SILICATES			
D 12 RADIOACTIVITY			
D 13 ISOTOPE CHEMISTRY			
D 14 OTHER DISSOLVED GASES			
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)			
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	58	a	a PUB
D 17 TRANSPARENCY (NO. OF OBS.)	13	a	a MT, PC
D 18 SOUND VELOCIMETER DATA			
D 19 INSTRUMENTED WAVE RECORDING (✓)			
D 20 TIDES (✓)			
D 21 SEA (✓)	✓	a	a MT, PC
D 22 SWELL (✓)	✓	a	a PUB
D 23 ICE (✓)			
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)	12	a	a MT, PC
D 25 SEA SURFACE TEMPERATURE (✓)	✓	a	a PUB
CURRENT MEASUREMENTS			
C 1 CURRENT METERS			
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)			
C 2 GEK (✓)	2	a	a MT, PC
C 3 DROGUES (✓)			
C 4 SWALLOW FLOATS (✓)			
C 5 SURFACE DRIFTERS (NO. RELEASED)			
C 6 BOTTOM DRIFTERS (NO. RELEASED)			
METEOROLOGY			
M 1 UPPER AIR OBSERVATIONS (✓)			
M 2 SURFACE METEOROLOGICAL OBS. (✓)	✓	a	a PUB
M 3 INCIDENT RADIATION (✓)			
BIOLOGY			
B 1 PRIMARY ORGANIC PRODUCTION			
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION	16	a	a PUB
B 3 PARTICULATE ORGANIC MATTER			
B 4 DISSOLVED ORGANIC MATTER			
B 5 NEUSTON AND PLEUSTON			
B 6 BACTERIA AND OTHER MICROORGANISMS			
B 7 PHYTOPLANKTON			
B 8 ZOOPLANKTON	23	a	a PUB
B 9 FISH EGGS AND/OR LARVAE			
REMARKS			
B2: Type of Plankton Net - Norpac Net			
TOTAL KILOMETERS STEAMED: 1,015 n.m.			
DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP): (✓) YES () NO () PART (SPECIFY)			

Station Map of the "Keifu Maru", 21-27 Jan., 1974



(ROSCOP)

2.5 Chofu Maru

SHIP OR PLATFORM Chofu Maru	SCIENTIST IN CHARGE S. Yamamoto
INSTITUTION OR OPERATING AGENCY Nagasaki Marine Observatory, JMA (NMO)	
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. AMTEX, CSK	COUNTRY Japan
DATE OF CRUISE FROM: 28 DAY / 01 MONTH / 1974 YEAR TO: 28 DAY / 02 MONTH / 1974 YEAR	

PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	a	F	D	TYPE OF FORMAT AVAILABLE	Q	QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:
DESCRIPTIVE OCEANOGRAPHY							
D 1 SERIAL STATIONS	52	a	b		MT, PC	a.	NMO
D 2 STD						b.	MD, JMA
D 3 OXYGEN	52	a	b		MT, PC	c.	
D 4 PHOSPHATES	9	a	b		MT, PC	d.	
D 5 TOTAL-P	3	a	b		MT, PC	e.	
D 6 NITRATES	3	a	b		MT, PC	f.	
D 7 NITRITES	3	a	b		MT, PC		
D 8 TRACE ELEMENTS	2	b	b		PUB		
D 9 pH	3	a	b		MT, PC		
D 10 ALKALINITY							
D 11 SILICATES							
D 12 RADIOACTIVITY	10	a	b		PUB	F D	FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)
D 13 ISOTOPE CHEMISTRY						a.	NMO
D 14 OTHER DISSOLVED GASES						b.	KDC/JODC
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)	20	a	a		AT	c.	
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	91	a	b		PUB	d.	
D 17 TRANSPARENCY (NO. OF OBS.)	21	a	b		MT, PC	e.	
D 18 SOUND VELOCIMETER DATA						f.	
D 19 INSTRUMENTED WAVE RECORDING (✓)							
D 20 TIDES (✓)							
D 21 SEA (✓)		a	b		MT, PC		
D 22 SWELL (✓)		a	b		PUB		
D 23 ICE (✓)							
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)	24	a	b		MT, PC		
D 25 SEA SURFACE TEMPERATURE (✓)		a	b		PUB		
CURRENT MEASUREMENTS							
C 1 CURRENT METERS							
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)							
C 2 GEK (✓)	68	a	b		MT, PC		
C 3 DROGUES (✓)							
C 4 SWALLOW FLOATS (✓)							
C 5 SURFACE DRIFTERS (NO. RELEASED)							
C 6 BOTTOM DRIFTERS (NO. RELEASED)							
METEOROLOGY							
M 1 UPPER AIR OBSERVATIONS (✓)							
M 2 SURFACE METEOROLOGICAL OBS. (✓)		a	b		PUB		
M 3 INCIDENT RADIATION (✓)							
BIOLOGY							
B 1 PRIMARY ORGANIC PRODUCTION							
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION	19	a	b		PUB		
B 7 PHYTOPLANKTON							
B 8 ZOOPLANKTON	10	a	b		PUB		
B 9 FISH EGGS AND/OR LARVAE							
B 10 MICRONEKTON	9	a	b		PUB		
OTHER OBSERVATIONS							
O 1 COD	3	a	b		PUB		

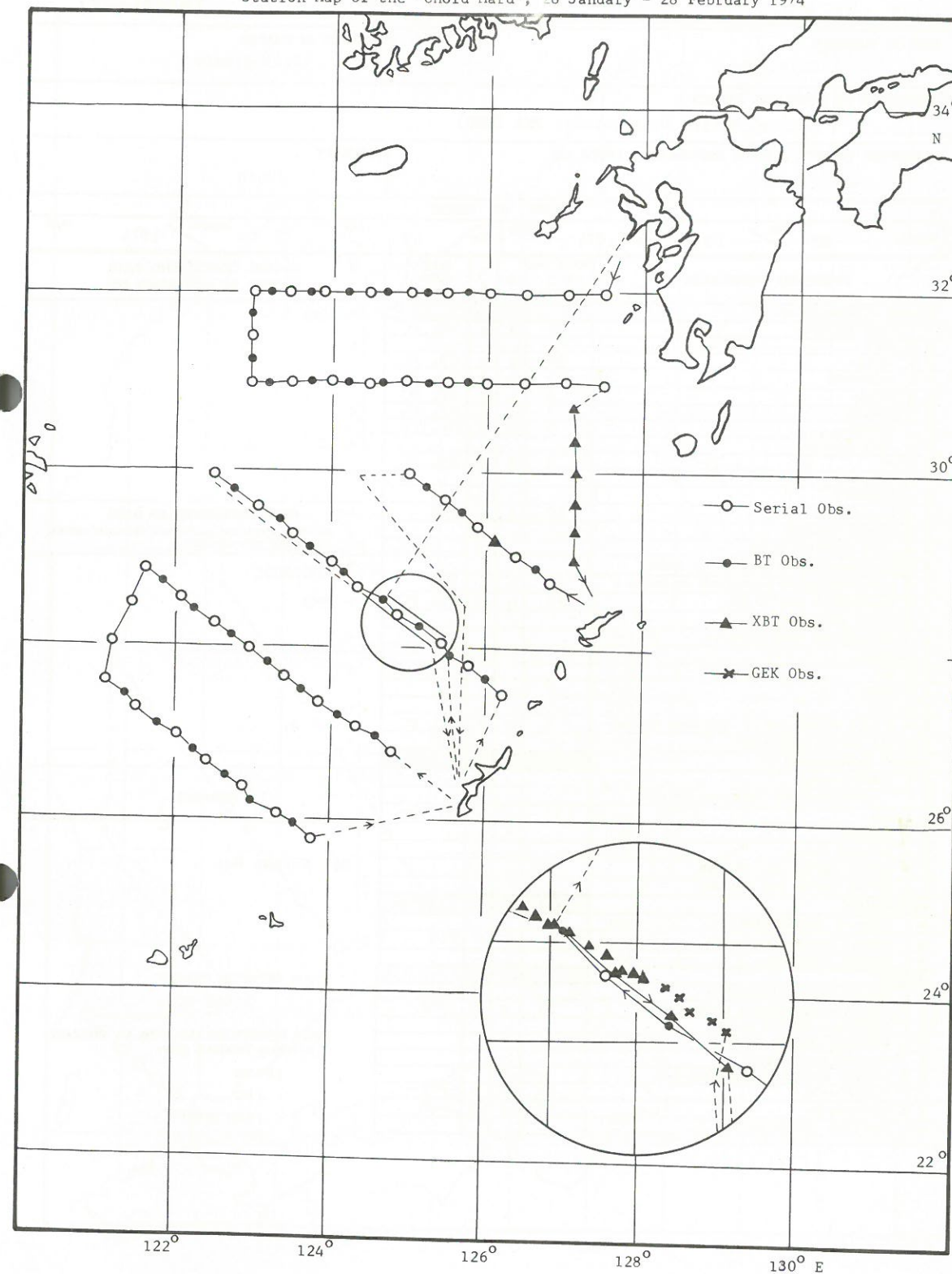
REMARKS

TOTAL KILOMETERS STEAMED:

DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP):

- (✓) YES
- () NO
- () PART (SPECIFY)

Station Map of the "Chofu Maru", 28 January - 28 February 1974



2.6 Seifu Maru

(ROSCOP)

SHIP OR PLATFORM Seifu Maru		SCIENTIST IN CHARGE I. Fujiwara	
INSTITUTION OR OPERATING AGENCY Maizuru Marine Observatory, JMA (MMO)			
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK 74-01		COUNTRY Japan	
DATE OF CRUISE			
FROM:	02 DAY / 02 MONTH / 1974 YEAR	TO:	09 DAY / 03 MONTH / 1974 YEAR

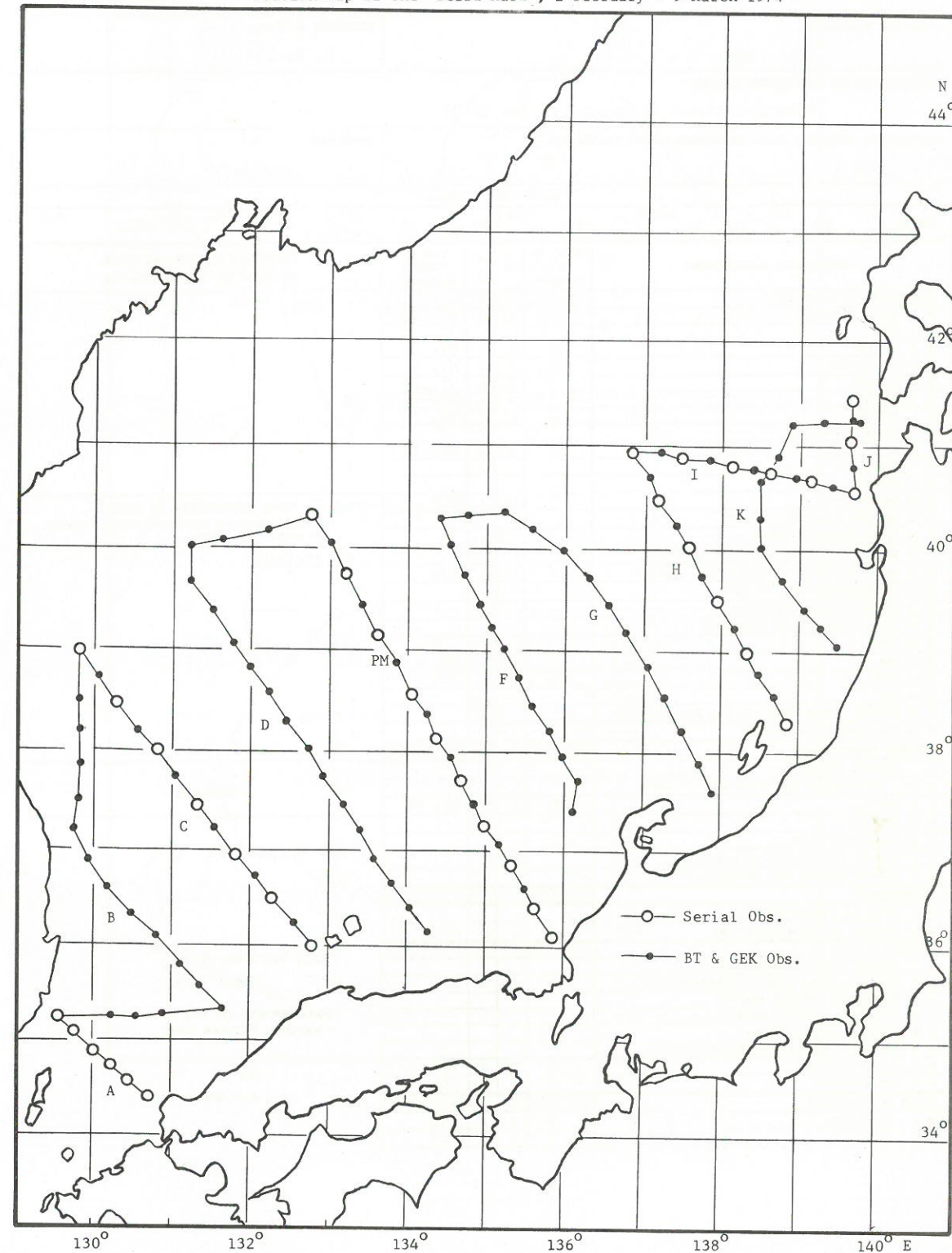
PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	Q	F	D	TYPE OF FORMAT AVAILABLE	Q	QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:
DESCRIPTIVE OCEANOGRAPHY							
D 1 SERIAL STATIONS	36	a	a		MT, PC	a.	MMO
D 2 STD						b.	
D 3 OXYGEN	36	a	a		MT, PC	c.	
D 4 PHOSPHATES	23	a	a		MT, PC	d.	
D 5 TOTAL-P	3	a	a		MT, PC	e.	
D 6 NITRATES	3	a	a		MT, PC	f.	
D 7 NITRITES	3	a	a		MT, PC		
D 8 TRACE ELEMENTS							
D 9 pH	3	a	a		MT, PC		
D 10 ALKALINITY							
D 11 SILICATES							
D 12 RADIOACTIVITY	10	a	a		PUB	F D	FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)
D 13 ISOTOPE CHEMISTRY						a.	KDC/JODC
D 14 OTHER DISSOLVED GASES						b.	MMO
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)						c.	
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	131	a	a		PUB	d.	
D 17 TRANSPARENCY (NO. OF OBS.)	14	a	a		MT, PC	e.	
D 18 SOUND VELOCIMETER DATA						f.	
D 19 INSTRUMENTED WAVE RECORDING	(✓)						
D 20 TIDES	(✓)						
D 21 SEA	(✓)						
D 22 SWELL	(✓)						
D 23 ICE	(✓)						
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)	5	a	a		MT, PC		
D 25 SEA SURFACE TEMPERATURE	(✓)	a	a		PUB		
CURRENT MEASUREMENTS							
C 1 CURRENT METERS							
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)							
C 2 GEK	(✓)	131	a	a	MT, PC		
C 3 DROGUES	(✓)						
C 4 SWALLOW FLOATS	(✓)						
C 5 SURFACE DRIFTERS (NO. RELEASED)							
C 6 BOTTOM DRIFTERS (NO. RELEASED)							
METEOROLOGY							
M 1 UPPER AIR OBSERVATIONS	(✓)						
M 2 SURFACE METEOROLOGICAL OBS.	(✓)	✓	a	a	PUB		
M 3 INCIDENT RADIATION	(✓)						
BIOLOGY							
B 1 PRIMARY ORGANIC PRODUCTION							
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION	10	a	a		PUB		
B 3 PARTICULATE ORGANIC MATTER							
B 4 DISSOLVED ORGANIC MATTER							
B 5 NEUSTON AND PLEUSTON							
B 6 BACTERIA AND OTHER MICROORGANISMS							
B 7 PHYTOPLANKTON	10	a	a		PUB		
B 8 ZOOPLANKTON	10	a	a		PUB		
B 9 FISH EGGS AND/OR LARVAE							

REMARKS

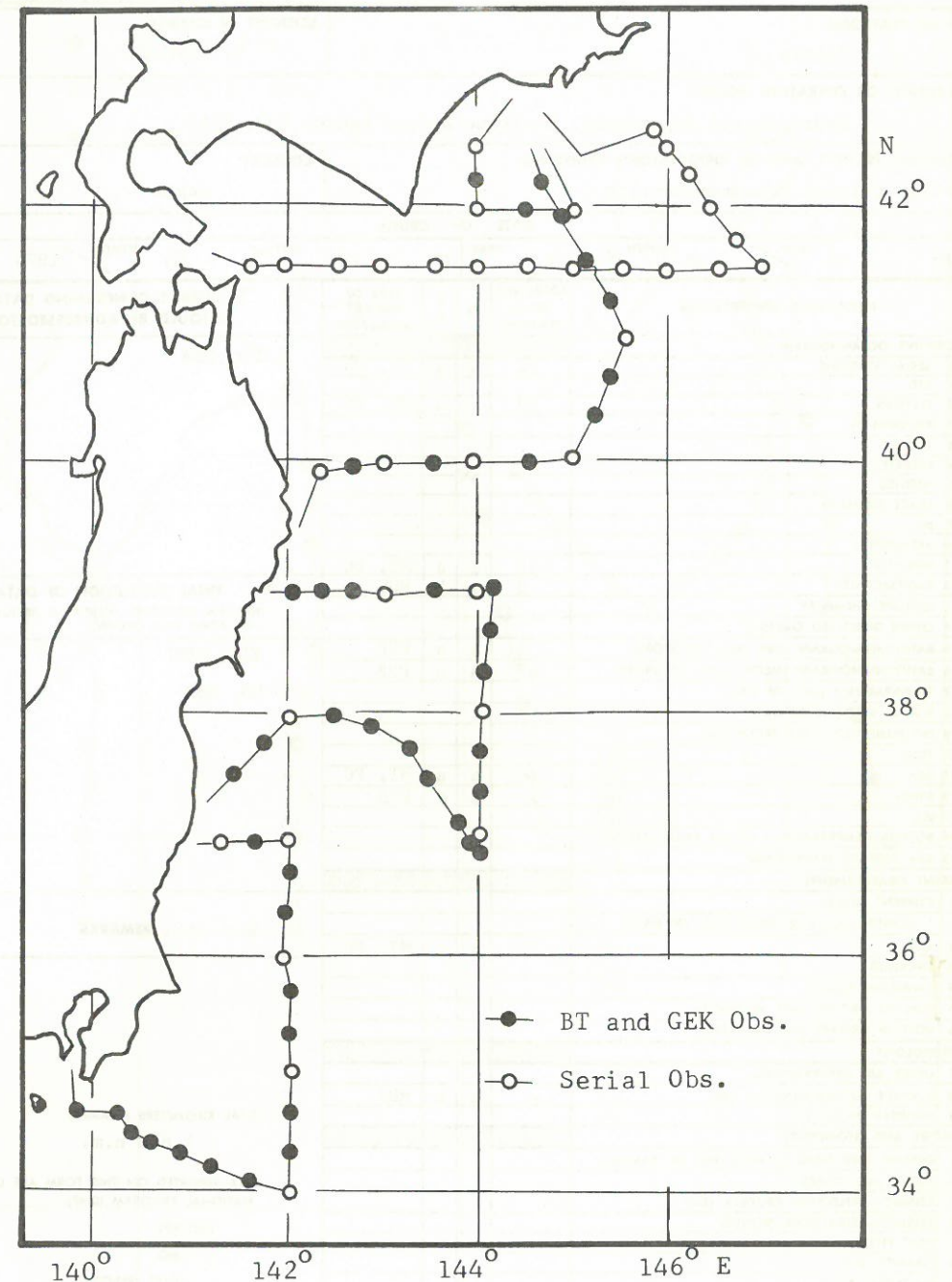
B8: Norpac Net

TOTAL KILOMETERS STEAMED:
3,800 n.m.DATA REPORTED ON THIS FORM ARE DECLARED
NATIONAL PROGRAM (DNP):(✓) YES
() NO
() PART (SPECIFY)

Station Map of the "Seifu Maru", 2-February - 9 March 1974



SHIP OR PLATFORM		SCIENTIST IN CHARGE	
Kofu Maru		K. Karohji	
INSTITUTION OR OPERATING AGENCY			
Hakodate Marine Observatory, JMA (HMO)			
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO.		COUNTRY	
CSK		Japan	
DATE OF CRUISE			
FROM:	05 DAY / 02 MONTH / 1974 YEAR	TO:	02 DAY / 03 MONTH / 1974 YEAR
PROGRAMS UNDERTAKEN		TOTAL NO. OF Δ STATIONS	Q F D TYPE OF FORMAT AVAILABLE
DESCRIPTIVE OCEANOGRAPHY			
D 1 SERIAL STATIONS	26	a	a MT, PC
D 2 STD			
D 3 OXYGEN	26	a	a MT, PC
D 4 PHOSPHATES	26	a	a MT, PC
D 5 TOTAL-P	3	a	a MT, PC
D 6 NITRATES	3	a	a MT, PC
D 7 NITRITES	3	a	a MT, PC
D 8 TRACE ELEMENTS			
D 9 pH	3	a	a MT, PC
D 10 ALKALINITY			
D 11 SILICATES			
D 12 RADIOACTIVITY	5	a	a PUB
D 13 ISOTOPE CHEMISTRY			
D 14 OTHER DISSOLVED GASES			
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)			
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	78	a	a PUB
D 17 TRANSPARENCY (NO. OF OBS.)			
D 18 SOUND VELOCIMETER DATA			
D 19 INSTRUMENTED WAVE RECORDING	(✓)		
D 20 TIDES	(✓)		
D 21 SEA	(✓)	a	a MT, PC
D 22 SWELL	(✓)	a	a PUB
D 23 ICE	(✓)		
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)			
D 25 SEA SURFACE TEMPERATURE	(✓)		
CURRENT MEASUREMENTS			
C 1 CURRENT METERS			
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)			
C 2 GEK	(✓) 70	a	a MT, PC
C 3 DROGUES	(✓)		
C 4 SWALLOW FLOATS	(✓)		
C 5 SURFACE DRIFTERS (NO. RELEASED)			
C 6 BOTTOM DRIFTERS (NO. RELEASED)			
METEOROLOGY			
M 1 UPPER AIR OBSERVATIONS	(✓)		
M 2 SURFACE METEOROLOGICAL OBS.	(✓)	a	a PUB
BIOLOGY			
B 1 PRIMARY ORGANIC PRODUCTION			
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION	6	a	a PUB
B 3 PARTICULATE ORGANIC MATTER			
B 4 DISSOLVED ORGANIC MATTER			
B 5 NEUSTON AND PLEUSTON			
B 6 BACTERIA AND OTHER MICROORGANISMS			
B 7 PHYTOPLANKTON	6	a	a PUB
B 8 ZOOPLANKTON	6	a	a PUB
OTHER OBSERVATIONS			
O 1 Ammonia	3	a	a PUB
O 2 COD	3	a	a PUB
QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:			
a. HMO			
b.			
c.			
d.			
e.			
f.			
F D FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)			
a. KDC/JODC			
b.			
c.			
d.			
e.			
f.			
REMARKS			
B8: Norpac Net			
TOTAL KILOMETERS STEAMED: 2,644 n.m.			
DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP): (✓) YES () NO () PART (SPECIFY)			

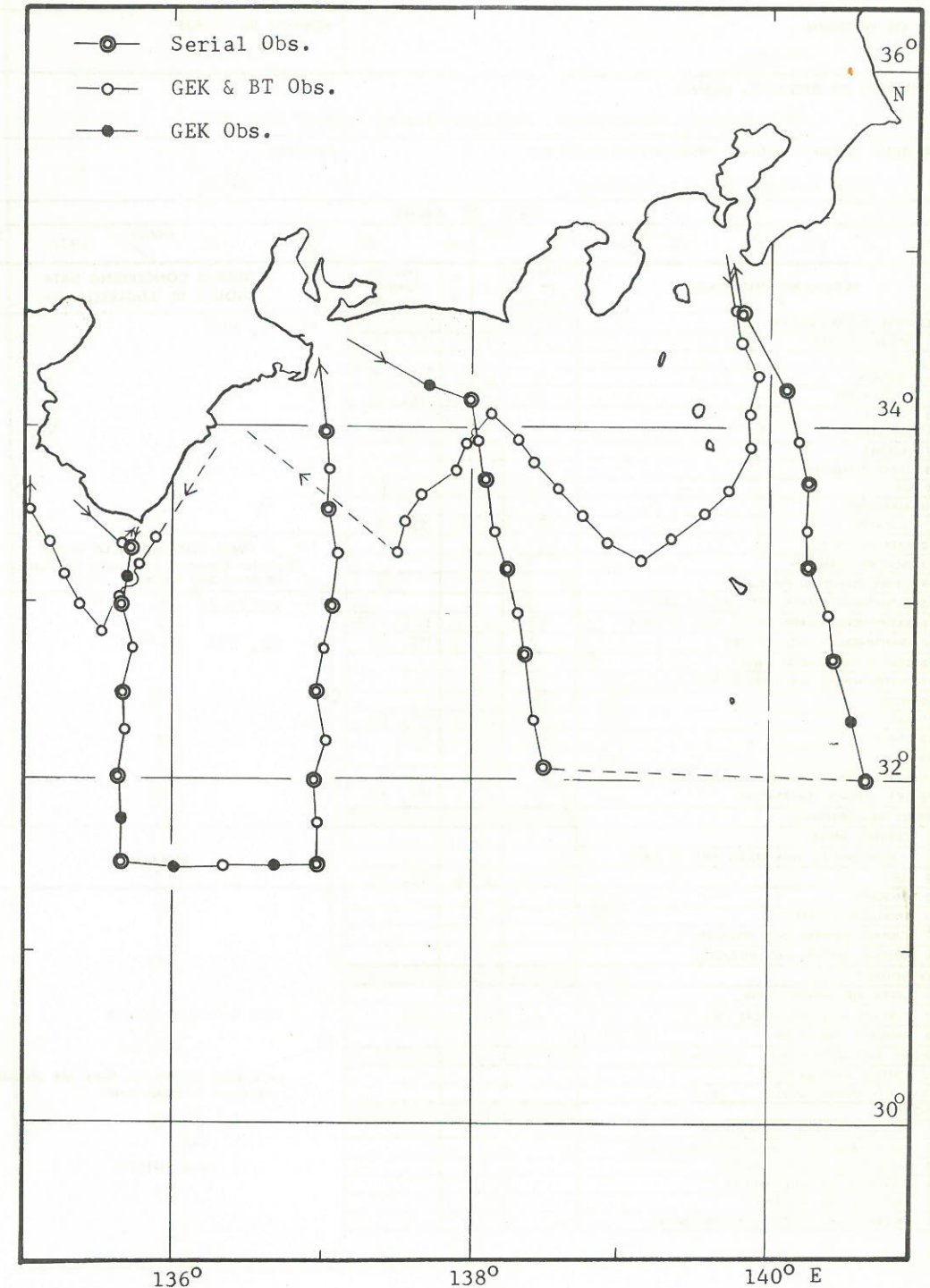


2.8 Takuyo

(ROSCOP)

SHIP OR PLATFORM Takuyo		SCIENTIST IN CHARGE K. Nishida	
INSTITUTION OR OPERATING AGENCY Hydrographic Department, Maritime Safety Agency (HD, MSA)			
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK, Current Measurement-11th		COUNTRY Japan	
DATE OF CRUISE FROM: 05 DAY / 03 MONTH / 1974 YEAR TO: 22 DAY / 03 MONTH / 1974 YEAR			
PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	Q	F D TYPE OF FORMAT AVAILABLE
DESCRIPTIVE OCEANOGRAPHY			
D 1 SERIAL STATIONS	22	a	a MT, PC
D 2 STD			
D 3 OXYGEN	22	a	a MT, PC
D 4 PHOSPHATES			
D 5 TOTAL-P			
D 6 NITRATES			
D 7 NITRITES			
D 8 TRACE ELEMENTS			
D 9 pH			
D 10 ALKALINITY			
D 11 SILICATES	22	a	a MT, PC
D 12 RADIOACTIVITY	2	a	b RDC
D 13 ISOTOPE CHEMISTRY			
D 14 OTHER DISSOLVED GASES			
D 15 BATHYTHERMOGRAPH (XBT) (NO. OF DROPS)	1	a	a PUB
D 16 BATHYTHERMOGRAPH (MECH.) (NO. OF DROPS)	65	a	a PUB
D 17 TRANSPARENCY (NO. OF OBS.)			
D 18 SOUND VELOCIMETER DATA			
D 19 INSTRUMENTED WAVE RECORDING (✓)			
D 20 TIDES (✓)			
D 21 SEA (✓)	✓	a	a MT, PC
D 22 SWELL (✓)	✓	a	a PUB
D 23 ICE (✓)			
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)			
D 25 SEA SURFACE TEMPERATURE (✓)			
CURRENT MEASUREMENTS			
C 1 CURRENT METERS			
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)			
C 2 GEK (✓)	72	a	a MT, PC
C 3 DROGUES (✓)			
C 4 SWALLOW FLOATS (✓)			
C 5 SURFACE DRIFTERS (NO. RELEASED)			
C 6 BOTTOM DRIFTERS (NO. RELEASED)			
METEOROLOGY			
M 1 UPPER AIR OBSERVATIONS (✓)			
M 2 SURFACE METEOROLOGICAL OBS. (✓)	✓	a	b RDS
M 3 INCIDENT RADIATION (✓)			
GEOLOGY AND GEOPHYSICS			
G 1 DREDGE AND GRAB SAMPLES (NO. OF SAMPLES)			
G 2 CORES (NO. CORES)			
G 3 SEISMIC—REFLECTION PROFILES (Km)			
G 4 SEISMIC—REFRACTION PROFILES			
G 5 HEAT FLOW			
G 6 GRAVITY (Km)			
G 7 MAGNETIC (Km)			
G 8 CHEMICAL ANALYSIS OF SEDIMENT (✓)			
QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:			
a. HD, MSA			
b.			
c.			
d.			
e.			
f.			
F D FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)			
a. KDC/JODC			
b. HD, MSA			
c.			
d.			
e.			
f.			
REMARKS			
TOTAL KILOMETERS STEAMED: 1,880 n.m.			
DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP):			
(✓) YES			
() NO			
() PART (SPECIFY)			

Station Map of the "Takuyo", 5 - 22 March 1974



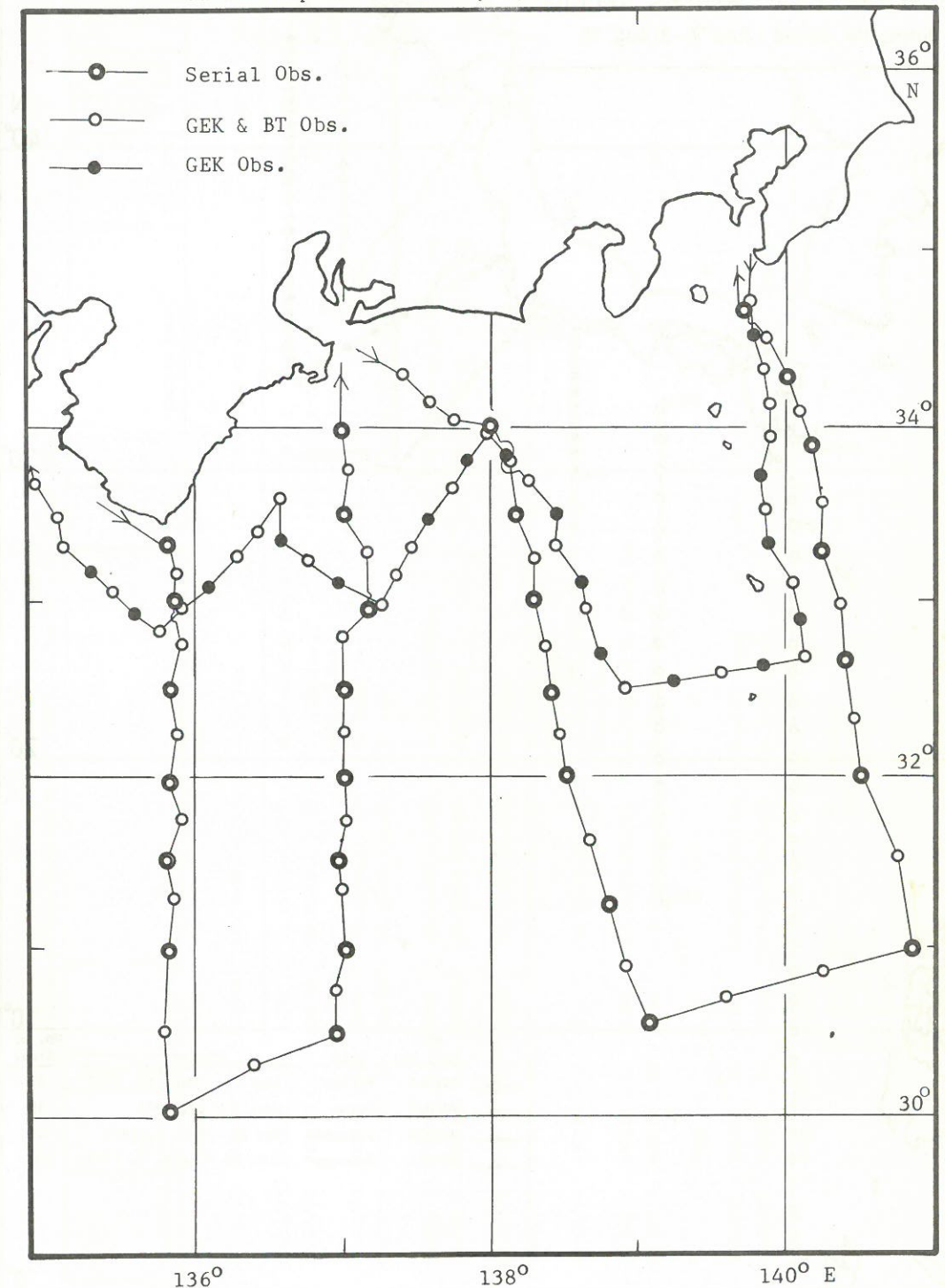
2.9 Takuyo

(ROSCOP)

SHIP OR PLATFORM Takuyo		SCIENTIST IN CHARGE G. Ueno	
INSTITUTION OR OPERATING AGENCY Hydrographic Department, Maritime Safety Agency (HD, MSA)			
EXPEDITION, PROJECT, AND/OR ORIGINATOR'S CRUISE NO. CSK, Current Measurement-2nd		COUNTRY Japan	
DATE OF CRUISE			
FROM:	10 DAY / 05 MONTH / 1974 YEAR	TO:	28 DAY / 05 MONTH / 1974 YEAR
PROGRAMS UNDERTAKEN	TOTAL NO. OF Δ STATIONS	Q	F D TYPE OF FORMAT AVAILABLE
DESCRIPTIVE OCEANOGRAPHY			
D 1 SERIAL STATIONS	29	a	a MT, PC
D 2 STD			
D 3 OXYGEN	29	a	a MT, PC
D 4 PHOSPHATES	29	a	a MT, PC
D 5 TOTAL-P			
D 6 NITRATES			
D 7 NITRITES			
D 8 TRACE ELEMENTS			
D 9 pH	29	a	a MT, PC
D 10 ALKALINITY			
D 11 SILICATES	29	a	a MT, PC
D 12 RADIOACTIVITY			
D 13 ISOTOPE CHEMISTRY			
D 14 OTHER DISSOLVED GASES			
D 15 BATHY THERMOGRAPH (XBT) (NO. OF DROPS)			
D 16 BATHY THERMOGRAPH (MECH.) (NO. OF DROPS)	87	a	a RDC, PUB
D 17 TRANSPARENCY (NO. OF OBS.)	2	a	a MT, PC
D 18 SOUND VELOCIMETER DATA			
D 19 INSTRUMENTED WAVE RECORDING (✓)			
D 20 TIDES (✓)			
D 21 SEA (✓)	✓	a	a MT, PC
D 22 SWELL (✓)	✓	a	a PUB
D 23 ICE (✓)			
D 24 BOTTOM TEMPERATURE (≤ 10M FROM BOTTOM)			
D 25 SEA SURFACE TEMPERATURE (✓)	✓	a	a MT, PC
CURRENT MEASUREMENTS			
C 1 CURRENT METERS			
C 1 CONTINUOUS TIME SERIES (NO. OF DAYS)			
C 2 GEK (✓)	104	a	a MT, PC
C 3 DROGUES (✓)			
C 4 SWALLOW FLOATS (✓)			
C 5 SURFACE DRIFTERS (NO. RELEASED)			
C 6 BOTTOM DRIFTERS (NO. RELEASED)			
METEOROLOGY			
M 1 UPPER AIR OBSERVATIONS (✓)			
M 2 SURFACE METEOROLOGICAL OBS. (✓)	✓	a	b RDS
M 3 INCIDENT RADIATION (✓)			
GEOLOGY AND GEOPHYSICS (CONTINUED)			
G 22 BOTTOM RADIOACTIVITY (✓)			
G 23 SIDE-SCANNING SONAR (Km)			
BIOLOGY			
B 1 PRIMARY ORGANIC PRODUCTION			
B 2 PHYTOPLANKTON PIGMENT CONCENTRATION			
B 3 PARTICULATE ORGANIC MATTER			
B 4 DISSOLVED ORGANIC MATTER			
B 5 NEUSTON AND PLEUSTON			
B 6 BACTERIA AND OTHER MICROORGANISMS			
QUERIES CONCERNING DATA SHOULD BE ADDRESSED TO:			
a. HD, MSA			
b.			
c.			
d.			
e.			
f.			
F D FINAL DISPOSITION OF DATA (NATIONAL REPOSITORY, INSTITUTION, REGIONAL CENTER, OR WORLD DATA CENTERS)			
a. KDC/JODC			
b. HD, MSA			
c.			
d.			
e.			
f.			
REMARKS			
TOTAL KILOMETERS STEAMED: 3,000 km			
DATA REPORTED ON THIS FORM ARE DECLARED NATIONAL PROGRAM (DNP): (✓) YES () NO () PART (SPECIFY)			

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Station Map of the "Takuyo", 10 - 28 May 1974



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IV. PUBLICATION OF "THE KUROSHIO III", PROCEEDINGS OF THE THIRD
CSK SYMPOSIUM, BANGKOK, THAILAND 1973

The information concerning the publication of "the Kuroshio III",
Proceedings 1973 was announced by the following paragraph from
Deputy Secretary-General for Natural Sciences, the National
Council, Bangkok, Thailand.

"THE KUROSHIO III": Proceedings of the Third CSK
Symposium, Bangkok, Thailand 1973

.....

The Symposium took place in Bangkok during May 26-29, 1973.
The Proceedings report the findings of the close cooperative
study by marine scientists from various countries in the
Pacific region. This is the third of its kind in the attempt
to reveal the mysteries of the counterpart current of the
well-known Gulf Stream of the Atlantic.

The Symposium was divided into three Session; Session 1, Physics,
Chemistry and Geology; Session 2, Biology and Biochemistry; and
Session 3, Fisheries.

Ten papers were presented in Session 1, seven in Session 2 and
five in Session 3, totalling 22 papers. Included in the Volume
of the Proceedings are: introduction, list of countries,
institutions, participants, and observers, provisional time
table, opening ceremony and summary report, making 463 pages,
size 19 x 25.5 cm.

Requests for the Proceedings will be honored by the National
Research Council, 196 Phaholyothin Road, Bangkok 9,
Thailand without charge except for the mailing per volume as
follows: Europe, U.S. \$7.00; Asia, U.S. \$4.00; U.S.A., U.S.
\$10.00.

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