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U. S. NAVAL TECHNICAL MISSION TO JAPAN
CARE OF FLEET POST OFFICE
SAN FRANCISCO, CALIFORNIA

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X-18-1

20 December 1945

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From: Chief, Naval Technical Mission to Japan.
To : Chief of Naval Operations.

Subject: Target Report - Japanese Hydrography, Article 1 -
Organization, Operation and Methods.

Reference: (a)"Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report, dealing with Target X-18 of Fascicle X-1
of reference (a), is submitted herewith.

2. The investigation of the target and the target report
were accomplished by Lt. Comdr. H. T. Birgel, USNR, assisted by Lieut. .
J. Catt, RNVR, as translator and interpreter.


C. G. GRIMES
Captain, USN

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**JAPANESE HYDROGRAPHY - ARTICLE 1
ORGANIZATION, OPERATION AND METHODS**

"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945

FASCICLE X-1, TARGET X-18

DECEMBER 1945

U.S. NAVAL TECHNICAL MISSION TO JAPAN

SUMMARY

MISCELLANEOUS TARGETS

JAPANESE HYDROGRAPHY - ARTICLE 1 ORGANIZATION, OPERATION, AND METHODS

This report represents the results of investigations requested by the Hydrographer of the United States Navy. It includes a detailed description of the internal functions, operations and methods used in the Japanese Hydrographic Department, as well as data on lithographic reproduction processes used in Japan, particularly as applied to the reproduction of charts.

Insofar as equipment, methods, practices and operations of the Japanese Hydrographic Department are concerned, the report is negative. Nothing was observed which has not been known and at least equalled in the U.S. Navy Hydrographic Office.

A list of Japanese hydrographic charts, publications, etc., which were collected and forwarded to the Washington Document Center and the U.S. Navy Hydrographic Office is attached to the report.

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REFERENCES

Location of Target:

Japanese Hydrographic Department, TOKYO.

At Naikaku Insatsukyoku, Nishigahara, Takimogawaku, TOKYO.
Mr. NAKAMURA - Managing Director.

Naikaku Insatsukyoku, (Government Printing Office) Nishigahara,
Takimogawaku, TOKYO.

Shubido Kaisha (Shubido Printing Co., Ltd.) Shibaku, TOKYO

Dai Nippon Insatsu (Dai Nippon Printing Co., Ltd.) Ichigaya,
Kagamachi Ushigameku, TOKYO.

Toppan Insatsu Kabushiki Kaisha (Toppan Printing Co., Ltd.)
Shimura, Itabashiku, TOKYO.

Japanese Personnel Interviewed:

At the Japanese Hydrographic Department

Capt. DAITO, IJN - Executive Officer.
Capt. YAMAGA, IJN - Chief Officer, Second Section.
Commander OTSUKA, IJN.
Mr. AOYAMA - Asst. Engineer, First Section.
Mr. WAKIYA - Asst. Engineer, First Section.
Mr. SOTO - Engineer, Second Section.
Mr. GOTO - Printing Engineer, Second Section.
Mr. IWASAKI - Asst. Engineer, Second Section.
Mr. YOSHIDA - Engineer Surveyor, Third Section.

At Naikauk Insatsukyoku, Nishigahara, Takimogawaku, TOKYO

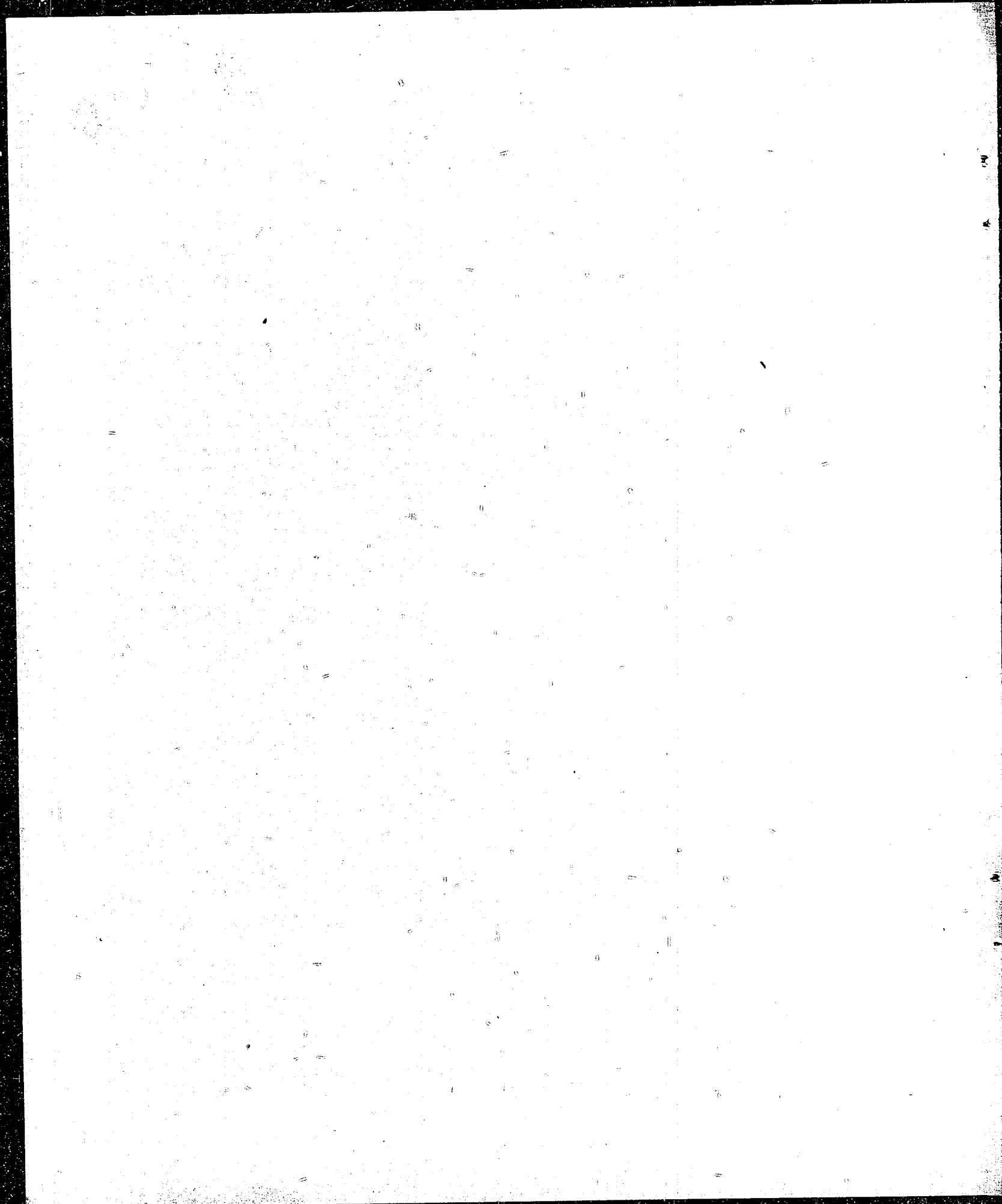
Mr. NAKAMURA - Managing Director.

All personnel interviewed were highly capable in matters pertaining
to the preparation and reproduction of charts.

INTRODUCTION

This report is based upon (1) a detailed study of the functions, organization, equipment, materials, processes, personnel, housing, history and development of the Japanese Hydrographic Department; and (2) information obtained by visiting and inspecting other Japanese governmental and industrial organizations engaged in charting, mapping, lithographic printing and allied fields.

Responsibility for the collection of Japanese topographic and hydrographic data, documents and publications rested with the office of the Chief Engineer, Intelligence Division of GHQ. Cooperation was extended to that office in collecting, indexing, checking and forwarding to the United States, hydrographic charts, publications, etc., required by the U.S. Navy Hydrographic Office.



THE REPORT

Part I

FUNCTIONS, ORGANIZATION, EQUIPMENT, MATERIALS, PROCESSES, PERSONNEL, HOUSING, HISTORY AND DEVELOPMENT OF THE JAPANESE HYDROGRAPHIC DEPARTMENT

A. Introduction

The United States Hydrographic Office specifically requested that important phases of the internal organization and operations of the Japanese Hydrographic Department be investigated. To this end a questionnaire was prepared in English, translated into Japanese and submitted to Japanese officials at the Hydrographic Department. The questionnaire, as paraphrased for translation into Japanese, and the material submitted in reply, written in English, form Enclosures (A), (B), and (C) of this report. It is felt that the information furnished presents an accurate description of the function, organization, equipment materials, personnel, housing and development of the Japanese Hydrographic Department.

B. Methods and Procedures Used in the Preparation of Originals for Surface Navigation Charts

Japanese Hydrographic Department charts for surface navigation generally are printed in three to five colors. The base or key representing all land and hydrographic features is printed in black. The land areas are tinted buff, shoal water areas are tinted blue and lights are spotted in orange. Green may be used to indicate dragged areas. Special charts occasionally require further printing in other colors.

To prepare originals for such charts the following procedures are used: Field material consists of separate record books containing triangulation data, sounding data, distance computations and shoreline survey data, as well as general field books. Graphic material compiled therefrom, either in survey ship, field office, or main office consists of separate charts on which are plotted triangulation points, soundings, shoreline and dragged areas.

From this material there is assembled, by means of tracing and carbon papers smooth copy containing all available surveying information, hereafter called a compilation drawing. All information is drawn on heavy chart paper in black ink with the following exceptions: isodepths are connected in green ink; dragged areas are outlined and depths noted in red ink; and symbols for inhabited areas are filled in with a light blue wash.

Contour lines are taken without verification from Japanese Army land survey maps, as are geodetic positions.

The compilation drawing and original triangulation point sheets are mounted with adhesive on light canvasses which in turn are mounted on drawing boards constructed of several joined panels with wooden end binders across the grain.

If the compilation drawing is made in the field, which is the normal procedure, it is mounted as described above prior to forwarding to the Hydrographic Department. If it is made at the main office, the work is performed in the Second Division, Third Section, (see organization outline, Enclosure (C) under the direction and supervision of the field surveyor in charge of the party.

Samples examined covering shoreline areas were compiled at a scale of 1 to

6,500. If necessary, because of the size of the area covered, or because of the scale at which the separate graphic records are assembled, several separate sheets may be combined into one chart of soundings or dragged areas, each representing the work of a boat or a team.

Compass roses, with variation pointers on nautical charts are normally drawn by hand. The procedure is to trace them on the compilation drawing, using a master drawing or master print, and carbon paper. Only on rare occasions is the more economical pasting a pre-printed rose to the drawing used. On those occasions prints on either paper or cellophane type material are used. It is claimed that the thickness of cellophane fogs the image in the subsequent photographic operation, and that paper prints require elaborate cutouts or tracings to provide for soundings or other data within the rose area. Use of the tedious and difficult method of tracing each compass rose individually and then reinking it, can be explained only by the ample supply of skilled and patient draftsman working for low wages.

It is to be noted that compilation drawings contain all available survey information and that the preparation of charts therefrom necessitates editing and the selection of soundings and other detail. The ultimate scale of the chart as printed may require that certain features be accentuated or de-emphasized. Soundings may appear in fathoms, meters or feet and require conversion to another measure. The compilation sheet may cover only a part of the total area of the desired finished chart, the balance of which may be made up from other surveys or other existing charts of Japanese or foreign origin. The borders, scales, notes, and titles must also be added. All of these requirements necessitate the making of a tracing on paper. Soundings are selected, converted, and drawn larger or heavier, as required, at this time. Shorelines, culture and other features are enlarged and accentuated, or made smaller and lighter depending on the scale of the finished chart.

If the compilation sheet represents the entire chart, the final tracing, as modified, is then completed with the addition of borders, scales, and printed or hand-drawn notes and titles. However, if the compilation drawing represents only a portion of the chart, an extra step is required. The tracing, with the above mentioned compensations and changes, is photographed to final scale, generally with a reduction in size. Other source material is similarly prepared and photographed. Separate blue prints or ozalid type prints are made of each component part, mounted on canvas, and in turn, are traced to a common sheet of tracing paper on which the projection and border scales have previously been drawn. Notes and titles are subsequently added as above. Proper location on the projection in all cases is obtained by spotting of known points. Register marks, arbitrarily located, are added to both prints and tracing paper, and aid the draftsman in his work. Overprint materials, such as dragged areas, variation lines, anchorages, etc. are made as separate tracings.

When photo-lithographic reproduction has been completed the tracings are filed for reference only. No attempt is made to use them again for corrections or other purposes because the tracing paper is unstable in size, becomes dry and brittle, and is easily damaged.

Pre-printed material is used only for titles and notes. All the other work is done by hand.

Photo-reproduction and printing, changes and corrections are treated in a subsequent part of this report.

C. Aviation Charts, Preparation of Originals

The most elaborate aviation charts prepared by the Japanese Hydrographic Department are printed in seven colors; black, blue, orange, green, light brown, medium brown, and dark brown.

Black is used to represent the base chart containing the border, scales, projection, compass roses, place names, shoreline shading, general culture, railroads, notes and title.

Blue is used to represent coastlines, drainage and water names.

Orange is used for roads and aviation data, including ports, lights, beacons and restricted areas.

Green is used to tint areas between water level and 100 meters of elevation called the Zero Band.

Light brown is used to tint areas between 100 and 300 meters of elevation known as the Number One Band, and areas between 300 and 500 meters of elevation known as the Number Two Band. It is also printed full strength under all areas subsequently printed in medium and dark browns.

Medium brown is used for four purposes. It is used to print the 100, 300, and 500 meter contour lines between Bands Zero and One, One and Two, and Two and Three, respectively. A straight line screen pattern of medium brown is printed over solid light brown in all areas between 500 and 1000 meters of elevation known as Number Three Band. A solid print of medium brown over a solid print of light brown is used to tint areas between 1000 and 1500 meters of elevation designated Number Four Band. It is also printed full strength under all areas subsequently printed in dark brown.

The dark brown is used for three purposes. It is used to print the 1500 meter contour line between Bands Number Four and Five. A straight line screen pattern of dark brown is printed over solid light and medium browns in all areas between 1500 and 2000 meters of elevation known as Number Five Band. A solid print of dark brown over solid prints of light and medium browns is used to tint all areas above 2000 meters of elevation known as Number Six Band.

No contour lines appear between Bands Number Three and Four, or between Bands Number Five and Six.

The final effect concerning elevations is one green area and six shades of brown areas accomplished in four prints, one green and three browns.

No special surveys are conducted by the Hydrographic Department for air charts.

Source material consists of surface navigation charts for shorelines and Army land survey maps for geodetic positions, contours, rails, general culture, drainage, roads, etc.

Compilation drawings are prepared in the manner and style described for surface navigation charts and include all material available for use in a chart of the area concerned.

The technique used and compensations made in the execution of tracings are also the same as those described in the preparation of nautical charts. However, in the case of aviation charts four tracings are made instead of one. They include separate tracings for the black, blue, and orange plates, and a special composite tracing to be used in the creation of the one green and three brown plates. The black, blue, and orange tracings, made with black ink on tracing paper, include only the material to appear in those colors in the final printing. The composite tracing contains the shoreline and 100 meter contour line traced in orange ink, and the 300, 500, 1000, 1500, and 2000 meter contour lines traced in black ink on tracing paper.

Compass roses on aviation charts are generally of the pre-printed variety, on cellophane, and are pasted to the final tracing for the black plate. This technique is used on aviation charts, rather than the individual drawing

technique used on surface navigation charts, for the reason that there are generally open water areas which contain no details, thus obviating the photographic and cut-out difficulties mentioned in connection with surface navigation charts. If areas are congested, the drawing method is used.

Details of the subsequent procedures used in plate making, especially in the cases of the elevation bands, will be discussed later in this report.

No pre-printed material other than roses, notes and titles are used in the preparation of originals. All work is hand lettered except as noted.

Tracings are filed for reference only, as in the case of surface navigation charts.

D. Lithographic Reproduction of Charts

The reproduction of charts in the Japanese Hydrographic Department follows basic photolithographic processes known and practiced in the U.S. Hydrographic Office. Many features of the processes which are standard practice are obsolete and have been superseded by more modern and efficient operations in the United States.

The photographic and plate making operations are accomplished by one of two methods, called the direct and indirect processes.

The direct process involves standard wet plate photography by copying cameras, negative retouching, engraving, and albumen plate making. Details, equipment, and formulae conform to recognized standards. However, in some cases wartime shortages have forced the use of inferior substitute materials which have caused inconvenience and lowered the quality of the work. Many items such as developing ink are homemade in contrast with the commercially prepared materials used in the United States.

The indirect process eliminates the camera operation. A zinc press plate is coated with a bichromated gum solution. The tracing paper on which the original has been drafted is placed in contact with the plate in a vacuum frame and exposed under a double arc lamp for 1½ minutes. The plate is immersed in water and then in a dye, generally methyl violet, and a negative image is developed. The plate is rubbed with calcium carbonate to clear the open image areas and sharpen the edges of the lines. The plate is then inked with developing ink and smoothed dry. It is then powdered with magnesia and flowed with hot water and rocked. The positive inked image remains and the dyed background washes away. The plate then is washed in cold water, rubbed out sharp and dried and is ready for proving.

The prover gums the plate, washes it with a solvent, rubs it, rolls it, pulls dry proofs on power-driven proving presses, and then powders the plate with resin and re-gums it with etching gum solution.

Chalk offsets are made for light and tint plates of land and water areas.

No blue line photographic prints are used for hand created originals or hand drawn zinc plates. Deep etch process is not used.

Base plates are retouched and tint plates created by artist draftsmen working with conventional tools,

All plates are proved in color and checked by the creating section. When proofs are approved, black prints are made of all plates on Baryta paper, and these prints are stored with the zinc plates. If corrections are required for subsequent printings, they are made on both the zinc plates and the Baryta prints. The Baryta paper is a heavy white engraver's proof paper which is stable in size and little affected by atmospheric changes. The prints are

considered the basic originals for future reference. They make good copy for re-photographing when new plates are required by reason of wear or extensive corrections. Negatives are not preserved after satisfactory plates are made. Compass rose variation indicators are brought up to date whenever new plates are prepared. The average press run is four to five thousand sheets and the Japanese Hydrographic Department is satisfied with a plate life of 10,000 impressions, although commercial concerns achieve 40,000 impressions.

Operations involved in the making of elevation plates for aviation charts are of interest. Either the direct or indirect process may be used, but the indirect process is considered easier and will be described first.

It will be recalled that one green and three brown plates are required. Using the indirect process the contour tracing and the drainage tracing are placed in register and a combination print on zinc is produced and finished. The zero band is tused in, omitting water areas shown in the drainage, and the contour lines for the higher elevations are polished out with stone. For the three brown plates zinc plates are prepared and the contour tracing exposed on each. The operation is carried as far as the negative image. For the dark brown plate the 100, 300, 500, and 1000 meter contour lines are gummed out. The development is then completed. Band Number Six is painted solid with tusche and a straight line screen pattern laid in Band Number Five with a Ben Day machine. The same general procedure is used for the light brown and medium brown plates, unwanted work is gummed out, solids are painted in and a Ben Day screen pattern is laid in Band Number Five.

In the direct process, the following procedure is used. One albumen zinc plate is made from negatives of each of the base, drainage, and air data tracings. Three plates are made of the contour tracing negative. In addition, a composite chalk offset is made on another zinc plate from the contour and drainage plates, and on this the green plate, or zero band, is created by hand tusing. One of the three contour plates is painted solid from the 100 meter line upward. This is the light brown plate. A second contour plate is made into the medium brown by gumming out the first and second bands, laying a Ben Day screen in Band Three, and painting solid Bands Four, Five, and Six. The gum is washed off and the plate is finished. The third contour plate is similarly handled, Bands One, Two, Three, and Four are gummed out. A Ben Day screen is laid in Band Five; and Band Six is painted solid. The gum is washed off and the 100, 300, and 500 meter contour lines are polished with stone. This completes the dark brown plate.

The press equipment of the Japanese Hydrographic Department was completely destroyed. However, it is understood that practices were those generally employed in western establishments.

Part II

OTHER CHARTING AND REPRODUCTION ESTABLISHMENTS

A. Governmental Mapping and Charting

The only governmental mapping and charting agency discovered in the environs of TOKYO is the Geodetic Investigation Office of Japanese Government (Department of Home Affairs) also known as the Japanese Imperial Land Survey, now located in MATSUMOTO City, Nagano Prefecture. It is understood to have been formerly located in TOKYO, but that it was moved in order to avoid bomb damage.

The establishment was not inspected during the course of this investigation, but it was thoroughly checked by the Intelligence Division of the Office of Chief Engineer, GHQ, SCAP. The report of that Division will contain an exhaustive survey of its equipment and operations. It is known however, that the plant was only partially re-established in its new location at the end of

the war and that much of its equipment was not set up. It is the opinion of Army investigators who have visited the establishment that the reproduction equipment is similar to that of the Japanese Hydrographic Department and private lithographic establishments described elsewhere.

B. Private Establishments, Mapping and Charting

Investigation of this field indicated that private establishments so engaged publish only school, guide, and road maps, and purchase their lithography. It is understood that no new information is gathered for these maps, rather available information is re-edited.

C. Government Establishments Engaged in Lithography

The Naikaku Insatsukyoku (Government Printing Office) sometimes known as the Printing Office of the Japanese Cabinet located in Nishigahara, Takimogawaku, TOKYO, was visited and studied and Mr. NAKAMURA, Managing Director, was interrogated.

This establishment is very large, probably the largest graphic arts establishment under one roof in Japan. It is engaged in letterpress, intaglio steel plate and lithographic printing. It does only government work and is currently engaged in all departments in printing only currency and government bonds.

Only the lithographic department was closely examined. It is the smallest branch and at present is operating only six offset presses. They are of Japanese manufacture, quite old, hand-fed and in only fair condition. The plant operates a minimum amount of photolithographic equipment, one camera, one whirler, one vacuum frame, and miscellaneous incidental equipment. Since all of its lithographic work is in connection with the production of bank notes, much hand transferring is done. Old methods of preparing singles on stone are still used. Methods and equipment were found to be antiquated and of no interest.

It is understood that a greater variety of work was performed at the central city branch in TOKYO, but that establishment was completely demolished and no definite information concerning it was available.

D. Private Concerns Engaged in Lithography

Three representative firms were visited and studied, a small establishment, a moderately large establishment, and the largest privately owned plant in Japan. They are in order: The Shubido Kaisha (Shubido Printing Co. Ltd.), Shibaku, TOKYO, and Dai Nippon Insatsu (Dai Nippon Printing Co. Ltd.), Ichigaya Kagamachi Ushigomeku, TOKYO, and the Toppan Insatsu Kabushiki Kaisha (Toppan Printing Co. Ltd.) Shimura, Itabashiku, TOKYO.

The Shubido plant is a small, privately owned, and engaged in letterpress and lithographic printing. The letterpress equipment was mostly destroyed by bombing and fire, but the lithographic facilities remained largely unharmed.

During the war this plant did considerable press work on Hydrographic Department unclassified charts, and therefore is of particular interest. It still is doing work for the Hydrographic Department in limited quantities. In all cases plates and stock were supplied by the Hydrographic Department. A small quantity of similar work was performed for the Army during the war.

In addition to the Hydrographic Department work, the greatest volume of its production consists of school, road, and guide maps printed for publishers. Regular black and white base maps (compilation drawings) are supplied by the customer, and Shubido makes the black and color plates.

Photo equipment consists of two wet plate cameras, one approximately 24" and

the other a smaller gallery type. No color work or separations are made. One whirler, vacuum frame and set of arc lamps complete the platemaking equipment. It is all of Japanese manufacture, quite old, and in poor condition. Hand transferring is performed for some commercial and bank note work, on four small and one large hand transfer presses. One large proving press answers all requirements. All plates are albumen or hand transfers. No deep etch work is performed.

Press equipment consists of three Japanese hand-fed presses, similar to old Potter presses of approximately 28 x 34 paper size, and three larger German Albert presses, only one of which has an automatic feeder. The newest equipment was manufactured in 1932. The entire plant is poorly housed, cramped, and poorly equipped. The quality of work is surprisingly good considering the circumstances under which it is produced. The processes are standard and have been somewhat handicapped by scarcity of critical materials. Labor is not highly skilled, but patience is great.

The Dai Nippon plant also was damaged by bombs. However, it is very much larger, and better equipped than the Shubido plant. It is engaged in letterpress, lithographic and gravure printing.

During the war it also did a small amount of unclassified offset press work for the Japanese Hydrographic Department for which press plates were furnished. It did a large total of wartime general printing, Army land and air maps and charts. For all map and chart work, plates were furnished by the ordering agency.

The general line of work of this plant is varied and consists of books, magazines, commercial printing, posters, stationery, insurance policies, and bank notes. At present only 30% of its equipment is in operation. The balance is either damaged or still dispersed for safety. The dispersed material now is in the process of being shipped back and erected. Camera and plate making equipment for the offset department consists of one large overhead darkroom camera for dry plate process work, two small gallery type wet plate cameras for black and white, all of Japanese manufacture, three Directoplate Simplex (American) photo-composing machines, and three vacuum frames.

Process work is performed by the indirect method of four-color work, involving the making of continuous tone separation negatives, projected continuous tone positives on which all retouching except highlighting is done and half tone negatives, which are highlighted by hand. All color correction is done by hand without the aid of densitometers.

All plates are made by albumen process because of the non-availability of deep etch materials.

Offset press equipment consists of 15 offset presses as follows: Two (Japanese) Hamada Co., 38 x 50 two-color presses, copied from German presses; one impression cylinder, automatic feeder design; two (Japanese) Hamada Co., 38 x 50 two-color presses copied from Potter (American) presses, with two impression cylinders and automatic feeders; three single-color, hand-fed Hamada presses, approximately 34 x 44; two (Japanese) Nakajima single-color, hand-fed presses approximately 28 x 41; and two single color, hand-fed Hamada presses approximately 22 x 34 with large plate cylinder. In addition, there are two single-color 38 x 50 automatic-feed presses copied from Potters, and built by Hamada Iron Works and two very small German presses, none of which is in operation.

The 22 x 34 Hamada has a cylinder design which appeared to be novel. The circumference of the cylinder is much larger than required. On the plate cylinder the large gap is filled in and built up to the level of the plate surface. This surface takes ink and acts as an ink reservoir and is claimed to aid in ink distribution and permit the use of fewer ink rollers. The presses are not new and these features are not incorporated in later presses

by the same manufacturer. It is believed that such a design probably is known to American manufacturers and considered impractical.

It was observed again that labor is not highly skilled, and though the plant is better equipped and housed, the work standard is no higher than at Shubido. The general impression of Dai Nippon is that it is a large organization, and has been a successful one, but has succeeded in spite of poor technical management and workmanship. One cannot escape the conclusion that cheap labor in all possible operations results in a trial and error, or hit or miss operating procedure.

The gravure plant is not operating but constitutes a large part of the establishment. Its press equipment includes a four-color German web press, three colors face, one color back; one German one-color face and one-color back web press; three German Palatia one-color, one-side presses, and three unidentified German one-color, one-side presses; plus one Hamada copy of a German web style which prints two-colors face and one-color back. The gravure department operates two small gallery type cameras for wet and dry plate copying. The process involves the use of continuous tone negatives, projected continuous tone positives on film, retouching, stripping, printing to carbon tissue through fine screens in vacuum frame, application of tissue to copper cylinder, separation and etching, and chrome topping.

The Toppan Printing Company is in general, the outstanding plant engaged in lithography and printing in Japan. In addition to its main plant in outlying TOKYO, it operated thirteen other plants in Japan, China, and Korea. Two of these plants are known to have been destroyed and the condition of the others is doubtful. The main plant is well-housed, well and spaciouly planned, efficiently operated, and well-equipped. Its original capitalization in 1898 was ¥40,000 and today it has a fully paid up capital of over ¥22,500,000.

There is no doubt of its having been modeled along western lines, as evidenced by its equipment, methods and management. Its directors have travelled and studied printing in America and Europe.

Press equipment consists of the following.

Colors	Maker	Style	Size	Total	Under Repair	Being re-installed	Not yet re-installed	In Operation
2	Harris	Harris	45 $\frac{1}{2}$ x 64	2				2
2	Hamada	Harris	45 $\frac{1}{2}$ x 64	4	3			1
1	Potter	Potter	38 x 50	15	2	2	4	7
1	Scott	Scott	48 x 65	2	2			
1	Potter	Potter	34 x 44	2			2	
1	Mieble	Mieble	34 x 44	4	1			3
1	Hamada	Potter	37 x 45	1				1
1	Hamada	Hamada	28 x 34	1				1
4	Hamada	Hamada	38 x 50	1				1

This plant is now engaged in printing the Far East editions of "Newsweek" and "Yank". The only large domestic work being performed, as in all other plants, is production of bank notes and bonds. In normal times it does a complete line of all types of lithography. Press operation, which is extremely efficient, is conducted along American lines. All plates are albumen, because of shortages.

Press crews for single color presses consist of one pressman and two helpers. Two-color presses are operated by one chief pressman, one assistant pressman and two helpers.

The four-color press is interesting even if its efficiency is questionable. It is Japanese made, the only one of its kind, and has one impression cylinder and two transfer cylinders.

This press is used for editions of 500,000 sheets, usually text books. It was claimed that a change of plates and stock takes three hours for a make ready, but that a complete make ready takes two days of ten hours each. It was admitted that there is frequent trouble with the press but it was contended that under normal conditions it is economically sound. No accurate information on speed was available.

The adoption of American methods was also apparent from the equipment in the gallery and plate rooms. Basic equipment is Huebner Bleistein and its successors, Lanston Monotype. The offset camera department operates eight copying cameras consisting of one H.B. 36 x 48, one H.B. 28 x 41, one metal NAKAJIMA, one wooden Japanese camera 28 x 41 and four small gallery type cameras. All lenses are German Zeiss, as in all other plants observed. Wet and dry plate processes are used. A 42" circular, 133 line, Levy (American) screen is the largest; many smaller ones are used.

High grade four-color process work is done by the indirect method as employed at Dai Nippon. All color correction is done by hand, using only erasers, pencils, and graphite. No airbrush is used. The indirect process uses all three cameras, each making in turn separation negatives, positives, and screen negatives. Female help is used in retouching. The results are fairly good.

Platemaking for bank note work is performed by old-fashioned hand transfer methods, although in the case of this company these methods are used only because they are specified by the Government.

Photo platemaking is done on several vacuum frames, two Huebner photo composing machines, one Lanston Monotype, and one Simplex Directoplate. Albumen plates only are made at the present time, but normal practice is to use deep etch for color and long run work. At least four proving presses are now in operation. Work samples were the best seen in Japan.

This company operates a Japanese built photo lettering machine for setting display and caption lettering. It is reminiscent of the Rutherford (American) machine, but much simpler in design and operation. It sold for ¥5000 which is believed to be much less than the price of the Rutherford. It is probable that the machine is not as versatile as the American, but it appears to be an excellent product. A series of master characters appear in photographic negative form in a horizontal glass plate. The plate can be moved left and right, forward and backward, on channelled ball bearings to bring any character over a light opening. The light image passes through selected lens contained in a circular rotating magazine of lenses to a sensitive paper in a magazine over the machine. Various lenses permit enlargement, reduction, contraction or expansion in either direction or italicizing.

Other equipment of a special nature includes a pantographic engraving machine, for use with channelled master letter plates, for the creation of new engravings or duplicates.

E. Allied Fields

Interrogations and observations indicated that there is nothing unique or of superior quality or performance in Japanese graphic arts.

Part III

COLLECTION OF HYDROGRAPHIC DOCUMENTS

A. Charts

SCAP Directive #2, dated 3 September 1945, required the Japanese to submit the following material:

Ten copies of the latest published editions of all nautical and aviation charts and other hydrographic publications of all classifications covering Japan proper and all areas occupied during war.

Triangulation and tidal data for the Marianas and Carolines.

Two copies of the latest editions of all topographic maps of all scales and classifications pertaining to Japan proper and all areas occupied during war.

Two copies of all records of geodetic positions and descriptions of triangulation stations and bench marks in Japan and occupied areas.

Philippine survey data captured by Japanese forces.

The Office of the Chief Engineer, Intelligence Division of GHQ was responsible for the collection, cataloging and distribution of all topographic and hydrographic data, documents, and publications.

Representatives of NavTechJap cooperated with Office of the Chief Engineer in advancing this work, with emphasis upon collection, indexing, checking, and forwarding of hydrographic charts, publications, and information to the U.S. Navy Hydrographic Office.

Lists of Japanese hydrographic charts which had been published at the time of the surrender are contained in the annexes to Enclosure (B).

B. Publications

Publications are being handled by the Office of the Chief Engineer, Intelligence Division of GHQ, by the same authority and in the same manner as charts.

C. Tidal and Survey Information

Copies of harmonic tidal constants are contained in Enclosure (B) - Annex II. These represent latest observations and determinations.

The following items were furnished to CINCPAC:

Tidal Harmonic Constants of the Marianas and Carolines.

Triangulation Data on Palau.

Trigonometric Survey Information of Saipan, Tinian, and Truk.

Part IV

GENERAL OBSERVATIONS AND COMMENTS

As can be noted from the building plan of the Japanese Hydrographic Department, (See Enclosure (B) attached Special Sheet No. 1), the establishment consisted of several detached buildings. The pressroom, bindery, and composition buildings were completely destroyed. The main building, housing the business offices, and cartographic operations is intact, although many of its fixtures and contents were dispersed in order to avoid bomb damage. That material is being reassembled at present, but it is still beyond accurate description or evaluation. From what could be observed, there is no reason to believe that operations or methods used are comparable with those employed in the U.S. Hydrographic Office, or that anything is to be gained by further study.

Among other buildings destroyed were a large warehouse for finished charts and a warehouse for survey instruments.

The building and equipment for photographic platemaking, retouching and proving operations remains intact. It was noted that German Zeiss lenses are used exclusively. All equipment except one camera is in poor condition and of old design. The one camera of note was manufactured in Japan by RAKUO SHA TOKYO. It is a large overhead type camera of excessively heavy construction. Copy is suspended between two glass plates and may be illuminated from front or back. Larger copy suitable for use with this camera is approximately 30" x 43½". The largest possible negative is 43½" x 60". The camera is motor-driven by chain and sprockets, but has no automatic precision focussing. It is placed approximately by power and brought into accurate focus by hand and eye. The copy board has a special tilting apparatus to compensate for inaccurate originals. Any edge may be moved to adjust the finished size of the image. With present lens equipment, Zeiss Apochromatic Tessar 1:15 f = 180cm, maximum enlargement is 1:13 and minimum reduction 4 to 1. The screen equipment consists of 120 line and 150 line. All halftones are made on wet plate except for very rare four-color process, dry plates and film being very scarce.

Attention should be called to the manner in which complicated changes in Japanese "Notices to Mariners" are actually plotted and printed as chart inserts which may be traced or pasted onto the appropriate chart. This practice is known in the United States but it is not in use. Obvious advantages of this method cannot be denied.

The most modern building in the establishment of the Japanese Hydrographic Department is one designed and used for storage of zinc press plates and compilation drawings. It is air-conditioned throughout and has excellent banks of racks for plates. Plates are suspended on individual sliding racks (one set of plates per rack) which are easily pulled out without danger of buckling or scratching. Smooth sheets are stored in wooden racks and cabinets under conditions favorable to stability in size. Plate racks for classified chart plates have swinging gates which lock for security.

"Standard" copies, in current samples are stored in a separate building where one copy of every chart published is available for ready reference. All standard copies are mounted on canvas.

The engraving of chart originals on copper was abandoned 30 years ago. The Japanese, in spite of crude methods of drawing originals, claim that well preserved compilation drawings are equally as satisfactory as copper engravings. It is interesting to note this progressive abandonment of copper engravings, in spite of the fact that they have not yet drafted originals on ducoed metal or stable plastics.

The Hydrographic Department did not operate branches. Distribution was handled outside TOKYO by district naval authorities and sales agents. However, charts were compiled and printed by other establishments under naval fleet command in Surabaya and Shanghai. Although details were not available in TOKYO it is known that some personnel and equipment were furnished by the Japanese Hydrographic Department. The Surabaya plant was the larger of the two and had three offset presses; the Shanghai plant operated two offset presses. Both had small letterpress equipment. It was customary to issue in the field ammonia prints (ozalid type) of hasty or provisional charts compiled locally. No information was available on facilities or personnel devoted to compilation and drafting.

General comments on nautical survey operations are as follows: For charts of Japan, control is that established and used by the Imperial Land Survey. There is little or no additional coast control by Navy survey parties. South Pacific Island control was established by the Navy.

Navy survey in Saipan and Truk had marked stations, although very rough and simple surveys. Palau survey had no marked stations.

There are very few astronomically determined positions in the Carolines and Saipan.

Under SCAP Directive #2, all data available on positions and triangulation was submitted to the Office of the Chief Engineer, Intelligence Division of GHQ. The balance was destroyed by bombings.

There are no descriptions of triangulation stations in Pacific Islands. All stations used are plotted on finished charts.

All survey data is recorded in books with tracings, giving the key to triangulation.

Japanese Army authorities have the index of triangulation points of their survey of home islands.

Printed charts and survey tracings will have to be relied on if the recovery of marked stations is sought, since no descriptions are available.

In making soundings, a three point fix is taken on every sounding.

ENCLOSURE (A)

QUESTIONNAIRE SUBMITTED TO THE JAPANESE HYDROGRAPHIC DEPARTMENT

1. History of Japanese Hydrographic Department.
 - A.
 - a. Date of founding.
 - b. Place.
 - c. Initial size.
 - d. Dates of major building expansions.
 - e. Dates of major organizational expansions.
 - B.
 - a. Assistance, if any, rendered by other nations. Which nations?
When?
2. Objectives of Japanese Hydrographic Department.
 - A.
 - a. Primary objectives with reference to peace and war.
 - b. Secondary objectives.
3. Organization of Japanese Hydrographic Department.
 - A. External.
 - A-1 What were relations with
 - a. Other Government departments. e.g. Army, Air Forces, Land Surveys.
 - b. Navy.
 - c. Merchant Marine.
 - d. Private establishments, e.g. yachting.
 - B. Internal
 - B-1 Concerning the main establishment; submit organization chart, showing:
 - a. All Divisions, Sections, etc.
 - b. Key Personnel:
Names.
Positions (present time).
Duties.
Salaries.
 - B-2 Concerning Branches:
 - a. Names.
 - b. Locations.
 - c. Objectives.
 - d. Duties.
 - e. Number of personnel, their pay (Before, after, and during war).
 - f. Present condition. (Ref. bombing etc.)
4. Finance.
 - A. Source of funds.
 - B. Budgeting and Operating Statements for 1925, 1930, 1935, 1940, 1945.
5. Operational procedure, methods, and processes.
 - A. Sources of information, e.g., number of survey ships and their bases of operation; tide stations; weather and meteorological stations.
 - B. Manner in which information is collected and compiled.
 - C. Standards of cartography and editing.

ENCLOSURE (A), continued

- D. Final drafting.
 - E. Manner of reproduction and methods used.
 - F. Corrections.
 - G. Distributions.
 - H. Improvements in methods since 1925.
 - a. Manner of preparing and preserving boat sheets.
 - b. Manner of preparing and preserving smooth sheets.
 - c. Manner of preparing and preserving drafting originals.
 - d. Manner of preparing and preserving printing plates.
 - e. New materials used in preparation of originals.
 - f. Reproduction process improvements.
6. Concerning equipment used for manufacturing (in all offices.)
- A. Inventory prior to war damage, indicating
 - a. Present condition.
 - b. Manufacture, Model Number, and date of manufacture.
 - c. Original cost in Yen.
 - d. Productive capacity.
 - e. Special productive advantages and disadvantages.
7. Consumable supplies including paper.
- A. List of items used and manufacturer.
 - B. Samples of items used in main office and branches.
 - C. Chemical formulae.
 - D. Notation of special advantages and disadvantages of material used and reason for selection.
8. Production.
- A. Flow charts for all operations.
 - B. Building plans and floor layouts prior to damage.
 - C. Production totals, e.g. total number of charts compiled and printed; total number of plates used for printing and prepared for printing for the years 1925, 1930, 1935, 1940, 1945.
 - D. Production rates and standards, e.g. number of impressions printed per hour.
 - E. Analysis of productive and non-productive or direct and indirect labor and material charges in Yen over the period 1925, 1930, 1935, 1940, and 1945.
9. Research
- A. Past major programs and results over period 1925 - 1945.
 - B. Present status of any major unfinished program.

ENCLOSURE (A), continued

- C. Intended programs and objectives.
 - D. Number, names, positions, and salaries of personnel engaged in B and C.
 - E. List of reports, titles, subjects, dates, and findings.
 - F. Facilities available for conducting research.
10. Products.
- A. List of all general categories, e.g. surface navigation charts, air navigation charts, ocean bottom charts, wind charts, current charts, plotting charts.
 - a. When production of each category started.
 - b. Totals of production for 1925 - 1945.
 - c. Distribution analysis for 1925 - 1945.
11. Personnel Before Damage.
- A. Total number by Divisions and Sections, indicating pay grades and salaries.
 - B. Training.
 - a. General policy.
 - b. Specific courses employed.
 - C. Sources from which personnel are drawn.
 - D. List of training manuals used.
12. Specific Items Required.
- A. Catalogues and indices of all charts and publications.
 - B. List of material not included in A.
 - C. Ten copies of all classified material.
 - D. Five copies of Harmonic Tidal Constants. (All Stations.)
 - E. Ten copies of all manuals.
 - F. Two copies of topographic and geodetic information on Korea, China, and the Pacific Islands previously occupied by the Japanese.
 - G. Black and white and green prints of all charts printed from now onwards.
13. Plans for the future employment of the facilities of the Japanese Hydrographic Department.
- A. Buildings and equipment.
 - B. Personnel.
 - C. Budget.
 - D. Jurisdiction.

ENCLOSURE (B)

REPLY TO QUESTIONNAIRE - DETAILED DESCRIPTION OF HYDROGRAPHIC DEPARTMENT

1. History of Hydrographic Department.

- A.
- a. Date of founding - July 28, 1871.
 - b. Place - 5 Chome, TSUKIJI, Kyobashi Ward, TOKYO.
 - c. Initial size - Belonged to the principal parts of the Navy Department of the Military Office, commanded by Yuetsu YANAGI (later Rear Admiral) and chiefly engaged in investigation, research, and organization with poor equipment in comparison with the American and British systems.
 - d. The principal parts of the institution were burned out in the Great Earthquake in Sept. 1923, but it was revived successfully thereafter and completed in May 1933. Extended the buildings, such as the second printing work and a storehouse, in 1938, operating rooms for oceanographic and meteorological observation in 1940, and for surveying by aero-photographing, in 1942. Many works excepting the principal building, founding work and several annex buildings were destroyed by the air-raid on 10 March 1945. (See attached special sheet No. 1.)
 - e. Separated into seven divisions such as First, Second, Third, Fourth, Fifth, and Accounts, in the past, but in May 1941, revised its organization as follows, namely, Executive Accounts, First Division (First and Second Section), Second Division (Third, Fourth, and Fifth Section), Third Division (Sixth and Seventh Section), and Hydrographers Training School. Besides, the Third Division became independent as the Naval Meteorological Department in 1944 and separated from its constitution.
Then, on 28 November 1945, transferred from the control of the Navy Ministry to the Ministry of Transportation.
- B. We asked for no assistance from other nations excepting the co-operation of HMS SYLVIA for surveying in a part of Honshu from 1870 to 1871. But many apparatuses for surveying and observation operations were purchased from various countries.

2. Objectives of Japanese Hydrographic Department.

- A.
- a.
 - i. Preparation of hydrographic and aeronautical publications.
 - ii. Survey, observation and research etc., with reference to (1).
 - iii. Preparation of notices to mariners and aviators.

Note: Our objectives in peace and war time are the same.

- b.
 - i. Training for hydrographic engineers.
 - ii. Printing for other offices.

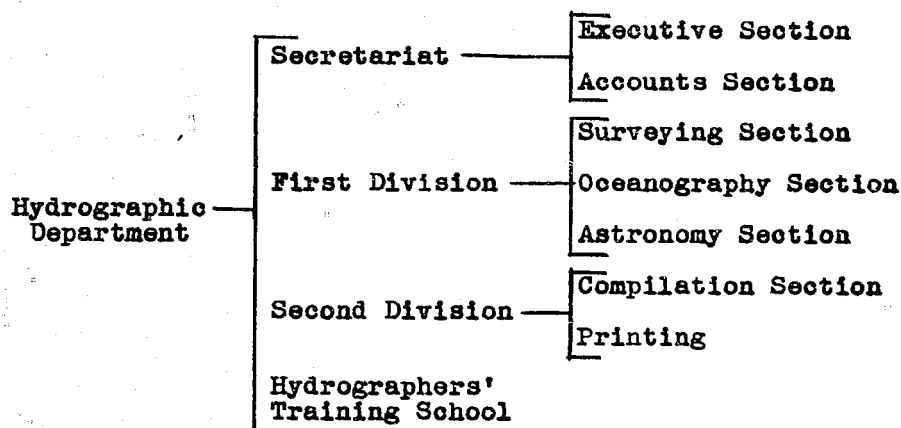
3. Organization.A. External.

- a.
 - i. No connection existed with other agencies - exchange only.
 - ii. We were under the immediate control of the Ministry of the Navy up to 28 November 1945.
 - iii. Under the immediate control of the Ministry of Transportation since 28 November 1945, when the transfer was effected and the new organization established.
 - iv. Had no connection with private establishments.

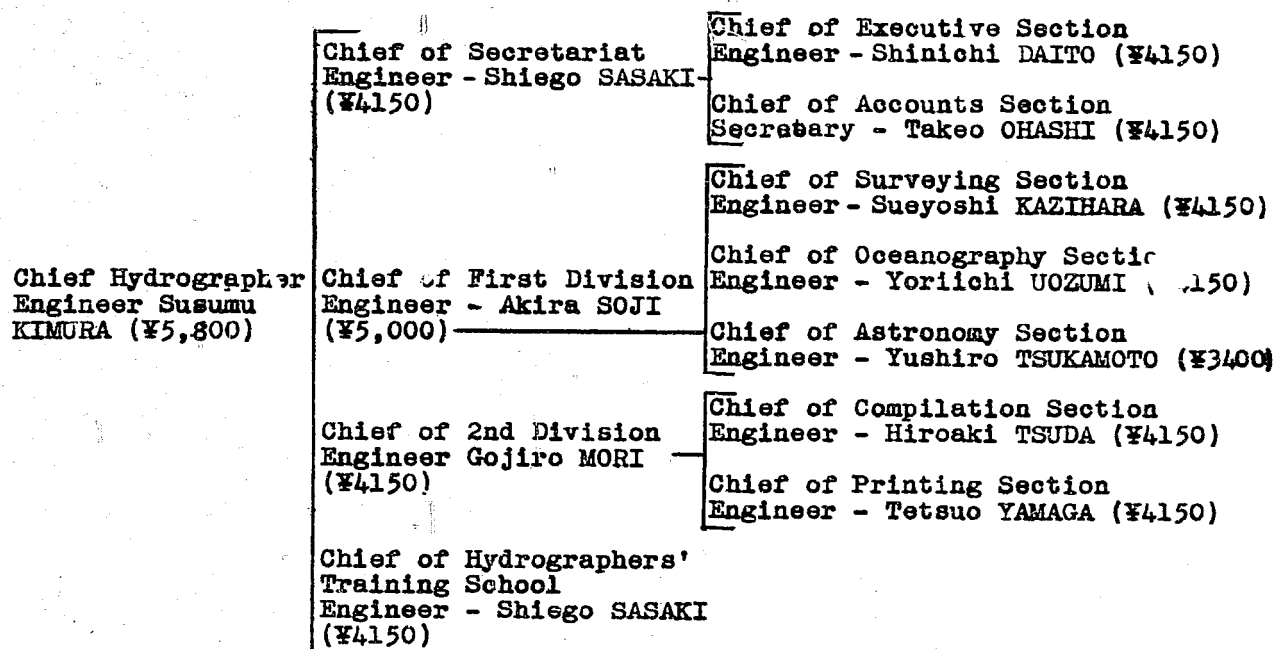
ENCLOSURE (B), continued

B-1 The following shows the organization and personnel as of 28 Nov. 1945, namely, at the time of transfer from the control of the Ministry of the Navy to the Ministry of Transportation.

a.



b.



2. Branches. No branches exist. Indeed, we had some connections with two hydrographic offices, one was the Shanghai Hydrographic Office which belonged to the Chinese District Fleet and the other was the Southern Hydrographic Office which belonged to the Southwest (Surabaya) District Fleet. Though we had no connection with them concerning organization, we assisted in technical distributions and supplies of persons, apparatus, etc., during the war.

ENCLOSURE (B), continued

4. Finance

- a. National funds were provided for operation.
 b. Budgeting and operating statement.

Fiscal Year	Established Budget	Received Budget	Expenditure	Remainder
1925	¥ 1,081,887.310	¥ 1,052,715.425	¥1,048,746.910	¥ 3,968.519
1930	1,072,734.590	1,039,442.015	1,009,912.256	29,529.759
1935	1,121,076.130	1,089,289.019	1,082,705.300	6,583.719
1940	7,223,219.264	7,028,876.574	5,093,711.120	1,935,165.454
1945	29,426,434.620	17,247,799.435	15,461,343.910	1,786,455.543

The figures for the 1945 fiscal year cover only the period up to 9 Nov. 1945.

5. Operational procedure, methods, and processes.A. Sources of information.

- a. Main sources of information under the command of the Hydrographic Department :

Sources	1926	1931	1936	1938	1940	1942	1943	1945
Survey Ships	4	4	4	4	5	5	4	*0
Sounding Ships					4	3	5	3
Oceanographic Observation Ships				12	53	60	25	Discontinued
Oceanographic Observing Stations				2	6	18	18	Discontinued
Meteorological Observation Ships					11	16	34	**
Meteorological Stations			13	17	29	10	***	
Stations of Terrestrial Magnetism	4	4	4	5	5	6	7	****
Tidal Stations	1	1	1	1	6	11	13	****

*Sunk or changed to other duties.

**Transferred to the Naval Meteorological Department. Besides, a part of our observations have been entrusted to about one hundred ships of pelagic fishery (ocean fishing vessels) every year since 1938.

***Assigned to the Fleet Meteorological Corps.

****Short period observations were operated in all places every year.

- b. Sources of information beyond the command of the Hydrographic Department.

ENCLOSURE (B), continued

Type of Information	Sources
Hydrographic, Meteorological and Oceanographic matters etc.	Naval ships and boats. Headquarters of every fleet. Southern Hydrographic Office. Shanghai Hydrographic Office. Naval Officers. Home and foreign ships. Domestic authorities. Government General of Korea and Formosa. The South Sea Islands Government Office. Kwantung Leased Territory Government Office. Foreign notices to Mariners.
Meteorology	The Central Meteorological Observatory. The Army and Navy Meteorological Department. Naval Air Corps.
Aviation	The Government Aviation Bureau. Naval Air Corps. Civil Air Corporations.
Lighthouse	The Lighthouse Bureau. Ships and boats.

B. Means for collection of information and compilation.

a. Collection:

- i. Our own investigations on hydrographic surveys etc.
- ii. Reports from harbor authorities and other organs concerned.
- iii. Reports from vessels: e.g. Report on condition of navigation, hydrographic notes, views of land, etc.
- iv. Foreign publications exchanged.

- b. Compilation: Our own publications have principally been compiled from our own investigations; while publications pertaining to foreign areas have been made from materials of the sovereign countries or those of the United States of America and Great Britain

C. Standards of Cartography and Editing.

- a. We provide the plan sheets showing graphically the smooth sheets and other sources which were adopted as necessary in the area to be covered.
- b. Secondly, we provide the necessary tables which indicate the computed values reduced from meridional parts for the spheroid, size of chart, all classification of sources and other details required in cartographing.
- c. Setting up the original points, scales, outline, etc., on the kentish paper affixed to the drawing board.
- d. Enlarging or reducing the smooth sheets and other sources by way of photography or pantography.
- e. Next, we draw the above-mentioned data on the tracing-paper with pen and black ink, fixing the enlarged or reduced papers on the drawing board.

D. Final Drafting.

We call the final draft the tracing sheet produced by the procedure outlined in the preceding paragraph.

ENCLOSURE (B), continued

E. Manner of reproduction and methods used.

- a. Tracing: Directly printing the final draft on the zinc plate.
- b. Orthophotographing: After photographing the final draft or the smooth sheet directly, the negative is printed on the zinc.

Next, setting the zinc plates on the plate-printing machine, the drafts that are to be published as charts are reproduced.

F. Corrections.

- a. Corrections are reported by "Notices to Mariners" for the present and corrections are made by the users themselves.
 - i. Simple notices are to fill in or eliminate from the chart, directly by user.
 - ii. Complex notices are to correct a part of the chart, consulting the appended plan.
 - iii. In the case of complex notices involving difficult corrections, the appended plan itself is pasted on the charts.
- b. Corrections made in the Hydrographic Department.
 - i. Simple corrections are made at the necessary points on the zinc plate.
 - ii. Complex correction in large areas involve rewriting the drafting paper and reproducing the original zinc plate.

G. Distributions.

Distributions of publications is as follows:

- a. For Navy: The necessary charts and books are sent to the bureau of munitions in each Naval Station from whence they are distributed to forces afloat under the control of each Naval Station. Locations of these stations are YOKOSUKA, KURE, SASEBO, and MATZURU.
- For Civil: The required charts and books are delivered to the civil selling agencies of hydrographic publications and these agencies sell directly to requesters.

Names and locations of the above mentioned agencies are as follows:

- i. NIPPON YUSEN & Co. Ltd. (N.Y.K.) - Home office in TOKYO and Branches of YOKOHAMA, NAGOYA, KOBE, MOJI, NAGASAKI, SHANGHAI, DAIREN, HAKODATE, OTARU, KIRUN, FUSAN, TAKAO, and HONGKONG.
- ii. Nippon Marine Transportation League (KAIUN KYOKAI) - TOKYO Home Office and Branches of KOBE and UJINA.
- iii. Marine Transportation League (KAIUN KYOKAI) - in TOKYO.
- iv. SENRYUDO Book Store in TOKYO.

Some of these agencies have been destroyed by bombing or have changed their locations.

ENCLOSURE (B), continued

H. Improvements in methods since 1925.

- a. No special matters of improvement in the manner of preparing and preserving boat sheets.
- b. Concerning preserving smooth sheets (if it means original surveyed plan), we have preserved them in a room of the original plates storehouse since 1932. This special structure is kept at constant temperature and humidity, and provide protection against fire and earthquake.
- c. As one method of preparing drafting originals, we adopted the Baraita Paper Method which is handy (for correcting and preserving).
- d. Preparing and preserving of printing plates.
 - i. In the preparation of them, we have used the lithographic deep-etch process since October 1930, but since it was difficult to readjust the plate, we gave it up in June 1942 and afterward used only the ordinary printing plates.
 - ii. To preserve them, we built the special storehouse in March 1932, of which convenience mention is made in item (b) above. Since all of them have been preserved in this storehouse.
- e. New material used in preparing originals. No special matters except the above mentioned baraita paper which coated barium sulphate on the paper, bought from Germany in Oct. 1930.
- f. No improvement in reproduction process.

6. Inventory of equipment used for manufacturing (in all offices.)A. Works of Home Office.

Machine	Manufacture	Model No.	Date of Manuf.	Original Cost	Capacity per Hour	Advantage
Lithographic offset printing machines	HAMADA Printing Co Ltd.	(1)	Oct '44	¥ 35,000	3000 sheets	For printing large quantities
		(2)	Oct '44	35,000	3000 sheets	
		(3)	Mar '45	45,000	1300 sheets	For printing small quantities
Lithographic offset proof machines	KOMORI Printing Co Ltd.	959	Apr '40	Obscure	Each 20 sheets	For proofs and plate proofs
	HAMADA Co. Ltd.	1134	Feb '44			
	(Germany)	1006	Mar '31			
		4215	Oct '29			
Printing Machine for Lithography (Vacuum frame)	HAMADA Printing Co. Ltd.	1580	Dec '34	Obscure	10 plates per day	For offset plate
Camera boxes	ROKUOSHA	(1)		Obscure	2	
		(2)		Obscure	2	

ENCLOSURE (B), continued

B. Works in SHIBAURA Branch (Half destroyed).

Machine	Manufacture	Model No.	Date of Manuf.	Original Cost	Capacity per Hour	Advantage
Printing Press	SAITO Iron Works		Apr	Obscure	1500 sheets	For etching
	NAKAMA Works		Apr '44	Obscure	1800 sheets	For pages
	KITAKATA Works			Obscure	1500 sheets	For leaves
Type Caster	RINESHA	845	May '43	¥ 1200	4000	To produce small type
		399	'36	Obscure	4000	
	NIPPON Type-writer Co. Ltd.	662	Apr '39	Obscure	2000	Damaged (repairing now)
		1030	May '43	9,500.00		
		663	Apr '39	Obscure	2000	
		1043	Aug '43	9,500.00	2000	
Gilotin Cutter	HASHIMOTO Works	215	Jun '44	Obscure		Very good
Wire Stitch Machine	MINAMI Works	194	Nov '38	Obscure	6000	For thin stitching
Press Proof Machine	NAKAMA Works	8512	'37	Obscure		Good

C. Works of the First Branch in OFUNA

Machine	Manufacture	Model No.	Capacity per Hour	Advantage
Lithographic offset printing machines	NAKAJIMA Printing Machine Co. Ltd.	(1)	1800 sheets	Average
		(2)		
		(3)		
		(4)	1500 sheets	Inferior
		(5)		
Lithographic offset proof machine	Dresden Lipiges Schriell Pressen Gaburis A.C.	4216	15 sheets	Average
Printing Machine for Lithography	NAKAMURA Works	(1) (2)		Average
Printing press	SAITO Works		1800	Very good
Camera Box	Wesell Co. in U.S.A.		2	

The above inventories show equipment... The total number of machines prior to war damage was as follows.

- a. Lithographic
- b. Printing presses
- c. Gilotin cutters
- d. Type casters

16
9
6
14

ENCLOSURE (B), continued

e.	Vacuum printing frames	3
f.	Bookbinding machines	5
g.	Camera boxes	3
h.	Lithographic plate grinding machines	2
i.	Lithographic offset proof machines	6
j.	Printing machines for lithography	4

7. Consumable supplies.

A & B Items used in all offices.

ITEM	MANUFACTURER	LOCATION
Potassium Bromide	KAWAGUCHI Industry Co. Ltd.	4-1 MUROMACHI, NIHONBASHI
Potassium Iodide	NIPPON Chem. Co. Ltd.	157 HIGASHI-KATAMACHI
Sodium Sulphite	Sodium Industry Co. Ltd.	1-6 MARUNOUCHI
Sodium Cyanide	KONISHI Co. Ltd.	2 HONCHO, NIHONBASHI
Sodium Carbonate	KONISHI Co. Ltd.	2 HONCHO, NIHONBASHI
Sodium Sulphite	DAITOA Chem. Co. Ltd.	4-1 MARUNOUCHI
Sodium thio Sulphite	KONISHI Co. Ltd.	2 HONCHO
Phosphoric Acid	NIPPON Chem. Co. Ltd.	157 HIGASHI-KATAMACHI
Boric Acid	TAKEDA Chem. Co. Ltd.	1-1 GEFUKUBASHI
Tannic Acid	DAITOA Chem. Co. Ltd.	2-5 HONCHO
Acetic Acid	KONISHI Co. Ltd.	2 HONCHO
Nitric Acid	TABE Industry Co. Ltd.	(Indistinct)
Hydrochloric Acid	Sodium Industry Co. Ltd.	1-6 MARUNOUCHI
Iodine	NIPPON Chem. Co. Ltd.	157 HIGASHI-KATAMACHI
Ferrous Sulphate	DAITOA Chem. Co. Ltd.	2-5 HONCHO
Copper Sulphate	KONISHI Co. Ltd.	2 HONCHO
Silver Nitrate	KONISHI Co. Ltd.	2 HONCHO
Potassium Ferric Cyanide	OKUNA Co. Ltd.	(Indistinct)
Amm. Bichromate	KONISHI Co. Ltd.	2 HONCHO
Amm. Ferric Citrate	KONISHI Co. Ltd.	2 HONCHO
Amm. Nitrate	KONISHI Co. Ltd.	2 HONCHO
Amm. Phosphate	KONISHI Co. Ltd.	2 HONCHO
Borax	TAKEDA Co. Ltd.	1-1 GOFUKUBASHI
Cadmium Iodide	KONISHI Co. Ltd.	2 HONCHO
Acetate	The 1st Org. Com. Co. Ltd.	(Indistinct)
Hydroquinine	KAWAGUCHI Industry Co. Ltd.	4-1 MUROMACHI
Metel	KAWAGUCHI Industry Co. Ltd.	4-1 MUROMACHI
Mg. Carbonate	KONISHI Co. Ltd.	2 HONCHO
Powder Calcium Carbonate	KOMUNE Chem. Works	2-9 HONCHO
Alum	DAITOA Chem. Co. Ltd.	2-5 HONCHO
Quick Lime	DAITOA Chem. Co. Ltd.	2-5 HONCHO
Absorbent Alcohol	KOMUNE Chem. Works	2-9 HONCHO
Chrome Alum	KOMUNE Chem. Works	2-9 HONCHO
Albumen Dry	Agriculture Industry Co.	1-1 KOISHIKAWA
Egg	Agriculture Industry Co.	1-1 KOISHIKAWA
Collodion	YAMATO Photo Chem. Works	4-168 MATUBARACHO
Fish Glue	YAMATO Photo Chem. Works	4-168 MATSUBARACHO
Hydrogen Fluoride	KONISHI Co. Ltd.	2 HONCHO
Paraffin	Distribution Co. of P.	1-1 KOBUNECHO
Glue	NIPPON Glue Co. Ltd.	(Indistinct)
Powder Sulphur	KONISHI Co. Ltd.	2 HONCHO
Potassium Chloride	M. SUZUKI	(Indistinct)
Fridin	KONISHI Co. Ltd.	2 HONCHO
Benzine	KONISHI Co. Ltd.	2 HONCHO
Benzol	TANBAYA Shop	(Indistinct)
Formaline	OSAKI Chem. Shop	(Indistinct)
Ether	Ether Sell. Co. Ltd.	(Indistinct)

ENCLOSURE (B), continued

Tincture	YAMAMOTO Ink Co. Ltd.	1782 MINAMI HAMAKAWA
Tint White Ink	YAMAMOTO Ink Co. Ltd.	1782 MINAMI HAMAKAWA
Gum Arabic	YAMAMOTO Ink Co. Ltd.	1782 MINAMI HAMAKAWA
Rosin	(Indistinct)	(Indistinct)
Ammonia	SUZUKI Co. Ltd.	(Indistinct)
Tark Powder	(Indistinct)	(Indistinct)
Zinc Oxide Powder	(Indistinct)	(Indistinct)
Stone Powder	TERAYAMA Works	(Indistinct)
Dextrine	KONISHI Co. Ltd.	2 HONCHO
Wheat Starchy	Control Co. of Starch	1-2 TORI
Starch	Control Co. of Starch	1-2 TORI
Canada Valsum	INAHATA Industry Co. Ltd.	DOJIMA, OSAKA
Glycerine	Control Co. for Glyceline	(Indistinct)
Tansha Hanbetsu	YAMATO Chem. Co.	528 TOTSUKAMACHI
Dryer	NIPPON Paint Co. Ltd.	4-600 MINAMI SHINAGAWA
Victoria White Ink	YAMAMOTO Ink Co. Ltd.	1782 MINAMI HAMAKAWA
Dry Furcata	(Indistinct)	(Indistinct)
Volatile Oil	Distribution Co. for Oil	1-9 YURAKUCHO
Machine Oil	Distribution Co. for Oil	1-9 YURAKUCHO
Caster Oil	(Indef.)	(Indef.)
Machine Oil	Bur. of Munitions in YOKOSUKA Harbor	1-9 YURAKUCHO
Petroleum	Distribution Co. for Oil	(Indistinct)
Terebein Oil	(Indistinct)	(Indistinct)
Varnish	(Indistinct)	(Indistinct)
Offset Ink	YAMAMOTO Ink Co. Ltd.	1782 MINAMI HAMAKAWA
Transfer Ink	YAMAMOTO Ink Co. Ltd.	1782 MINAMI HAMAKAWA
Printing Paper	MITSUBISHI Paper Co.	TAKASAGO, HYOGO
Thin Print, Paper	OJI Paper Co.	(Indistinct)
Gaslight Paper	FUJI Film Co. Ltd.	2-3 NISHI GINZA
Positive Sensitizing Paper	RIKEN Optic Industry Co.	2-3 ASAKUSABASHI
Oil Paper	SAKURAI Industry Co.	(Indef.)

C. Standards of Chemical Composition for Compounds used in reproducing.

<u>Name</u>	<u>Chemicals</u>										
a. Iodide preparation for reproducing lined drawing.	<table border="0"> <tr> <td>Cadium Iodide</td> <td>7 g</td> </tr> <tr> <td>Ammonium Iodide</td> <td>3 g</td> </tr> <tr> <td>Ammonium Bromide</td> <td>1.2 g</td> </tr> <tr> <td>Alcohol Anhydrate</td> <td>1750cc</td> </tr> </table>	Cadium Iodide	7 g	Ammonium Iodide	3 g	Ammonium Bromide	1.2 g	Alcohol Anhydrate	1750cc		
Cadium Iodide	7 g										
Ammonium Iodide	3 g										
Ammonium Bromide	1.2 g										
Alcohol Anhydrate	1750cc										
b. Iodide Preparation for Half-Tone etching.	<table border="0"> <tr> <td>Cadium Iodide</td> <td>20 g</td> </tr> <tr> <td>Ammonium Iodide</td> <td>16 g</td> </tr> <tr> <td>Ammonium Bromide</td> <td>1.6 g</td> </tr> <tr> <td>Strontium Chloride</td> <td>3.5 g</td> </tr> <tr> <td>Alcohol Anhydrate</td> <td>400cc</td> </tr> </table>	Cadium Iodide	20 g	Ammonium Iodide	16 g	Ammonium Bromide	1.6 g	Strontium Chloride	3.5 g	Alcohol Anhydrate	400cc
Cadium Iodide	20 g										
Ammonium Iodide	16 g										
Ammonium Bromide	1.6 g										
Strontium Chloride	3.5 g										
Alcohol Anhydrate	400cc										
c. Silver Accelerator (for new preparation)	<table border="0"> <tr> <td>Silver Nitrate</td> <td>100 g</td> </tr> <tr> <td>Distilled Water</td> <td>1000cc</td> </tr> <tr> <td>Nitric Acid</td> <td>1-3 drops</td> </tr> </table>	Silver Nitrate	100 g	Distilled Water	1000cc	Nitric Acid	1-3 drops				
Silver Nitrate	100 g										
Distilled Water	1000cc										
Nitric Acid	1-3 drops										
d. Developing Solution (for Half-Tone etching and lined drawing)	<table border="0"> <tr> <td>Water</td> <td>1000cc</td> </tr> <tr> <td>Ferrious Sulphate</td> <td>40 g</td> </tr> <tr> <td>Copper Sulphate</td> <td>12 g</td> </tr> <tr> <td>Acetic Acid</td> <td>10cc</td> </tr> <tr> <td>Alcohol</td> <td>40cc</td> </tr> </table>	Water	1000cc	Ferrious Sulphate	40 g	Copper Sulphate	12 g	Acetic Acid	10cc	Alcohol	40cc
Water	1000cc										
Ferrious Sulphate	40 g										
Copper Sulphate	12 g										
Acetic Acid	10cc										
Alcohol	40cc										
e. Fixative of Potassium bromide (used generally)	<table border="0"> <tr> <td>Potassium Cyanide</td> <td>1 volume</td> </tr> <tr> <td>Water</td> <td>40 volume</td> </tr> </table>	Potassium Cyanide	1 volume	Water	40 volume						
Potassium Cyanide	1 volume										
Water	40 volume										

ENCLOSURE (B), continued

<u>Name</u>	<u>Chemicals</u>
f. Fixative of Copper bromide (for effective power)	Water 1000cc Copper Sulphate 100 g Potassium Bromide 30 g
g. Iodide preparation for cutting	Water 4000cc Potassium Iodide 200cc Iodide 70 g
h. Blackening accelerator	Sodium Sulphide 50 g Water 1000cc
i. Accelerator for protecting sensitive screen	Gum Arabic or Glue 88-150 g. Water 1000cc
j. Adjusting Accelerator	(i) Nitric Acid 5pc Alum saturated Solution 50cc Water 500cc (ii) Citric Acid 5cc Water 100cc
k. Sensitizer for orthophotographing	Alubumen 1200cc Amm. Bichromate 120 g Gum Arabic 50 g Water 500cc Ammonia Water 20-30cc
l. Developing Ink	(i) Soap 10 g Alcohol 500cc (ii) Asphalt 20 g Benzol 250cc (iii) Transfer-Ink 75 g Printing-Ink 350 g Terebein Oil 1000cc
m. Arabic Gum Etch	Gum Arabic 10,000cc Amm. Phosphate 170 g Amm. Nitrate 170 g Tannin 30 g Calcium Chloride 70 g
n. Tincter	Asphalt 40 g Beeswax 40 g Rosin 40 g Benzol 100cc Terebein Oil 100cc
o. Sensitizer for Tracing	Amm. Bichromate 40 g Gum Arabic 50 g Glue 150cc Water 1,750cc
p. Adjusting Accelerator enforced for readjustment	Alum (saturated solution) 400cc Nitric Acid 20cc Water 580cc

ENCLOSURE (B), continued

Name	Chemicals
q. Adjusting Accelerator weakened for readjustment	Alum (saturated solution) 100cc Nitric Acid 10cc Water 890cc
r. Re-Transferring Ink	Suet 2 Asphalt 1 Soap 1 Black Ink printing 8
s. Substitute Gum	(i) Water 10,000cc Dry Furcata 800 g Dextrin 250 g (ii) Dry Furcata 18 g Dextrin 160 g Water 2,000cc
t. H Gum	Amm. Phosphate 30 g Amm. Nitrate 80 g Tannin 50 g
u. Sensitizer for orthographing	Albumen 100 g Amm. Bichromate 30 g Gum Arabic 5 g Ammoniac Water Several drops Water 4,000cc
v. Sensitizer for tracing	Glue 125 g Amm. Bichromate 13 g Dry Furcata 13 g Water 2,000cc
w. Enforcement for developing	Water 1,000cc Copper Sulphate 100 g Calcium Bromide 18 g Hydrochloric Acid 7cc
x. Iodine for enforcement	Water 9,000cc Iodine 519 g Sodium Thio-sulphate 650 g

D. Note of Special Materials

Materials	Reason for Selection	Advantage
Dry Furcata	As substitute for Arabic Gum	A slight advantage
Glue	As substitute for Fish Glue	A slight advantage
Solvent Naphtha	As substitute for Terebin Oil or Benzine	Very advantageous
Viscose Sponge	As substitute for Sponge	Very advantageous

8. Production.

- A. Flow charts for operation are shown in the attached Special Sheets No. 2 a-d.

ENCLOSURE (B), continued

- B. Building plans and floor layouts prior to damage are shown in the attached Special Sheet No. 1.
- C. Production totals are shown in the attached Special Sheet No. 3.
- D. Production rates of each machine are shown as capacity per hour in A. B. and C. of Item 6.
- E. Analysis of labor and material charges in Yen follows:

Year	Labor Charge		Material Charge	
	Indirect	Direct	Indirect	Direct
1925	¥ 34,554.180	¥ 103,662.540	¥ 20,778.504	¥ 31,167.756
1930	32,345.575	114,679.765	20,404.906	27,048.363
1935	30,609.394	115,149.626	20,168.343	24,650.197
1940	34,485.132	195,415.748	75,139.428	40,459.692
1945	(Unavailable due war disaster)			

9. Research. General description of the investigational organization in Hydrographic Department.

We had no special organization for researches and studies in the past, because we conducted them chiefly in the respective sections. We organized a bureau for studies and researches in 1944. It consisted of appointed personnel selected by each section to conduct investigations, experimentations and inspections referring to the following, but no special results are at hand because of the short time.

- A. Charts and books.
- B. Founding and printing.
- C. Surveying.
- D. Astronomy.
- E. Oceanographical phenomena.
- F. Organization and institution.

Besides activities mentioned above, the Chief Hydrographer has participated as a member of the NIPPON Science Promotion Society and the Council of Scientific Studies, and some personnel have served as committees at sectional meeting of these organizations, but we have had no special results until the present.

A. Outline of items and results of researches in the Hydrographic Department.

a. From 1925 to 1934

This department was seriously damaged by the Great Kanto Earthquake in 1923, and we were busy returning to normal up to the restoration in 1933, while mainly engaged in survey, observation

ENCLOSURE (B), continued

and compilation of astronomical data for the restoration.

Accordingly we could conduct only incidental researches.

Results of researches obtained in that time are as follows:

i. Concerning founding and printing. (1926)

- (a) By using new "Typon" paper, provided directly the original paper for printing zinc plate.
- (b) By painting varnished celluloid on the tracing paper, promoted its power without difficulty for tracing and corrections.

Note: Conducted by Tokusaburo MATSUSHIMA. Retired in 1937. Present president of Shubido Printing Co. Ltd.

ii. Concerning founding and printing. (1927)

- (a) Researches on resurfacing negative plates (method of using negative plate instead of original plate).

Operating with blue-print, printed from negative plate, made the corrections on the negative plate which had been made on the zinc plate in the past.

- (b) Researches on adaptation of the lithographic deep-etch process.

By shallow hollowing the figures on the plate, prolonged its preserving period, and by using offset printing machine, obtained the printed matters such as copper deep-etch plate.

Note: Conducted by Commander Yukitaka KOKUSHO. Retired at Captain.

iii. Magnetic instrument (Japanese Hydrographic Department Type). (1930)

Designed a magnetic instrument and by testing its errors compared to others, obtained results better than those obtainable with previous instruments available.

Note: Conducted by Engineer Asaichi MURAMOTO. Died in 1933.

iv. Research on the growth of coral. (1930)

In consequence of researches in Palao district, we had results which showed the velocity of coral growth in this area should be 4.4 centimeters annually.

Note: In charge of South Sea Surveying Team.

v. Concerning founding and printing. (1930)

Researches on founding resulted in the adoption of "Baraita"

ENCLOSURE (B), continued

papers and celluloids, confirmed the profitable results, and eliminated complicated and expensive operations.

Note: Conducted by Engineer Tokusaburo MATSUSHIMA.

vi. Concerning founding and printing. (1931)

(a) Pointed out the elemental points of attention in operations, as a result of comparative studies on the original plates preserved.

(b) Without fading of blue-print, researches that it can be substituted for silver printing obtained considerable results.

Note: Conducted by Engineer Tokusaburo MATSUSHIMA.

vii. On the high-sea marigraph. (1932)

This is a self-recording apparatus for measuring tide curves in the ocean; achieved its purpose within the depth of 150 meters.

Note: Conducted by Commander Tamejiro KONDO. Retired as Captain, IJN.

viii. Concerning Cartographing. (1932)

Increased tracing efficiency by use of a new planned ruler for drawing the magnetic compass on the paper.

Note: By Operator Jugoro SHIBAZAKI. Retired in 1933.

ix. New astronomical table for navigation. (1932)

This is known as "Akiyoshi Table" which added improvements and some research results to the former table.

Note: Prepared by Captain Toshio AKIYOSHI. Retired as Rear Admiral. (Later edited as a publication).

x. Concerning Oceanography. (1933)

Obtained data from the investigation of oceanographic phenomena in the South Sea Area of Japan from 1925 to 1928 by HIJMS MANSHU.

Note: By Captain Ryoichi SHIGEMATSU. Died after retirement. (Printed in Bulletin of Hydrographic Department No. 6).

xi. Concerning founding and printing. (1934)

Conducted researches for the improvement of ferrous oxide and the restoration of soiled zinc plates; obtained some fair results.

Note: Conducted by Engineer Tokusaburo MATSUSHIMA.

ENCLOSURE (B), continued

xii. Concerning Oceanography. (1935)

Produced good results for correction of the soundings obtained from echo sounding machines.

Note: Conducted by Commander Saburo KISHINDO. (Retired as Rear Admiral).

- b. After 1937, when the China incident occurred, we continued the researches with difficulty up to the day of the end of the war in 1945.

Main results are as follows:

1. Concerning founding and printing. (1937)

Completed the production of ointment available for printing by tracing method, owing to the researches which made "Baraita" paper clear.

Note: Conducted by Engineer Tokusaburo MATSUSHIMA.

ii. Concerning Cartography. (1937)

In preparing of drafting originals, used several draftsmen for tracing, though they had been traced by one draftsman in the past, and stuck them to one sheet for making the orthographic copy.

Note: By all the persons concerned.

iii. Concerning oceanographic phenomena. (1938)

Investigated current computations by dynamic meter and intended them for practical use in the investigation of Black Current (Japan Current).

Note: Conducted by Captain Saburo KISHINDO.

iv. On surveying. (1938)

- (a) Conducted investigations of coast surveying, using aero-photography and have continued them with confidence in their practical use.

Note: Conducted by Engineer Shizuo YOKOU. (Retired in 1945).

- (b) By studying methods of computing velocities of sound waves in the sea and of sound velocities in soundings, calculated the correction values in computation of mean perpendicular sound wave and of echo sounding under a certain assumption.

Note: Conducted by Engineer Sasumu KUWABARA. (Present member of our office).

- v. Improvement on the calculation method in the compilation of astronomical almanacs. (1939)

ENCLOSURE (B), continued

Researched the calculation method of astronomical observation and revised numbers used from logarithm to real number, brought conspicuous results in preventing errors and economizing labors.

Note: Conducted by Engineer Yushiro TSUKAMOTO. (Present chief of the section). Unpublished.

vi. On surveying. (1939)

From the oceanographical point of view, or for the purpose of sounding sailing, prepared a sounding chart drawn by same depth lines.

Note: By Engineer Susumu KUWABARA. Published as a chart.

vii. Surveying of Longitude and Latitude. (1940)

Using a small theodolite, completed the special star table for use in surveying of longitude and latitude based on the Fixed Altitude Method through Several Stars.

Note: By Engineer Yushiro TSUKAMOTO. (Printed in Bulletin of H. D. No. 9).

viii. On oceanographic phenomena. (1940)

Conducted studies of the temperatures and currents at the sea bottom in the western area of the North Pacific Ocean.

Note: By Captain Saburo KISHINDO.

ix. On surveying. (1940)

(a) Saved the surveyors' labors by researching the bearings system for measuring spherical coordinates on charts.

(b) Conducted researches on radio acoustic ranging, by measuring the transmission period of the sound, fixed the ship bearings and measured the length of its base or obtained a point for sounding. They could have achieved considerable precision in practical use.

(c) Conducted researches on self-recording echo sounding for deep sea; could self-record in depths of 100 m.

Note: By Engineer Susumu KUWABARA. (Uncompleted and not published).

x. On oceanographical phenomena. (1941)

(a) Conducted research on the errors of current indicators caused by the rolling of ships and pointed some notes on the operation of Ekman-Merz's current indicator.

Note: Conducted by Engineer Kozi FUKUTOMI. Present Professor of HOKKAIDO Imperial University.

ENCLOSURE (B), continued

- (b) Conducted measurements for pressure coefficient of depressed reversible thermometer.

Note: By Engineer Kaoru YAMASHITA. Died.

- (c) On computing the comparative values of temperature and salinity in the sea, solved complicated integral calculations by a simple graph.

Note: By Engineer Kaoru YAMASHITA. Died.

xi. Surveying of Longitude and Latitude. (1942)

Completed a table of star pairs for the surveying of longitude and latitude by the Equal Altitude Method through

Several Stars, using a small theodolite.

Note: By Engineer Keishin SUZUKI. Present member. Printed in Bulletin of Hydrographic Department No. 10.

xii. Table of Astronomical Observation for Air-Navigation. (1943)

To avoid complicated calculations in aerial navigation produced a computation table of three arguments in a special arrangement, and its efficiency made air-navigation easy.

Note: By Engineer Yushiro TSUKAMOTO.

xiii. Ship Bearings by Radio. (1943)

Completed a chart drawn by globular circles.

Note: By Engineer Moriichi SEII. Retired in 1945.

xiv. On founding. (1944)

Researched an excellent sensitizer in photographing by using dry furcata or glue as a substitute for arabic gum.

Note: By Assistant Engineer Hiroshi MIDORIKAWA. Died 1945.

xv. Research for a calculation method for an astronomical almanac. (1944)

Conducted a research for a calculation method of sensible position of solar and lunar eclipse, and fixed stars, which were excluded from research in 1939. In this method was adopted the integral calculation system, which assured its effective results.

Note: By Engineer Keishin SUZUKI. Unpublished.

xvi. On surveying. (1945)

Researched the horizontal transmission course of the sound in the water by three processes of refraction, surface and bottom reflection.

Note: By Engineer Susumu KUWABARA. Published as a table for hydrophone.

ENCLOSURE (B), continued

B. Present status of major unfinished researches

a. Concerning astronomical sailing.

Setting the ship constantly on the line of bearings which runs through the principal positions, we intended to make her definitely reach her destination. We were researching this special sailing (namely "Locus Sailing"), but to our regret, these data were destroyed by fire following an air-raid.

Note: By Engineer Yushiro TSUKAMOTO.

b. On refraction upon the sea surface.

Though we were researching the influence on Dip and the first visible distance caused by abnormal refraction of light, these data were destroyed by fire.

Note: By Engineer Yushiro TSUKAMOTO.

c. Surveying of Longitude and Latitude.

In surveying of longitude and latitude by a small theodolite, we are studying how to cut down labor and hours by adopting the Fixed Altitude Method through Different Stars, but these data were destroyed by fire.

Note: By Engineer Keishin SUZUKI.

d. On the sonic depth finder in the water. Admitting the suitability of its instrument, we have not obtained any result of this research.

Note: By Engineer Ryoshichi KOMUKAI.

e. On pressure against the sea-bed caused by sailing ships.

Started experimental observation on this problem by the tidal inspection appliance made by the Hydrographic Department in July 1945 but the result fell short of our expectations.

Note: By Engineer Mitsutoshi NAKAMIYA.

C. Intended programmes and objectives

a. Forecasting tidal currents.

Intended to forecast mainly the Black Current in order to make sailing easy.

b. Observing the illumination efficiency in water obtained by the electric lighting fixtures. Tried to observe exactly the clarity of sea-water.

D & F On these questions refer into data given previously.

ENCLOSURE (B), continued

E. List of reports, titles, dates

No.	Titles of Reports	Publication	Date
1.	The Magnetic Instrument Created by Hydrographic Department (By Eng. A. MURAMOTO.)	"The Reports of Astro and Geophysics"	1930
2.	On the Dip of Sea Horizon Observed on the Sea South of Honshu. (By Capt. T. AKIYOSHI)	"Hydrographic Bulletin" Vol. 15 No. 6	June 1936
3.	The Method of Calculation for Velocity and Sounding of Sound-Wave in the Water.	"Hydrographic Bulletin" Vol. 17 No. 10-12	Oct. & 1938 Dec.
4.	The Revision of Sounding Figures Caused by Water Density in the Pacific Ocean. (By Eng. S. KUWABARA)	"Hydrographic Bulletin" Vol. 19 Extra Number	Nov. 1940
5.	The Basic Theory for Observation of Ship Bearings. (By Eng. Y. TSUKAMOTO)	"Hydrographic Bulletin" Vol. 19 Extra Number	Nov. 1940
6.	About the Observation Error of Current Indicator Caused by The Rolling of Ship. (By Eng. K. FUKUTOMI)	"Hydrographic Bulletin" Vol. 20 No. 1	Jan. 1941
7.	Leading the Average Temperature of the Water into the Intergration of Vertical Calculation and its Examples. (By Eng. K. YAMASHITA)	"Hydrographic Bulletin" Vol. 20 No. 2	Feb. 1941
8.	Simplification of Sounding Calculation by the Depressed Reversible Thermometer.	"Hydrographic Bulletin" Vol. 20 No. 2	Feb. 1941
9.	On the Table for Simplified Calculation of Specific Volume of Sea-Water. (By Eng. K. YAMASHITA)	"Hydrographic Bulletin" Vol. 20 No. 3	Mar. 1941
10.	Observation for Pressure Coefficient of Depressed Reversible Thermometer. (By Eng. K. FUKUTOMI)	"Hydrographic Bulletin" Vol. 20 No. 5	May 1941
11.	About the Alti-Observation of Astronomy. (By Eng. Y. TSUKAMOTO)	"Hydrographic Bulletin" Vol. 20 No. 5	Oct. 1941
12.	Discussion on the Variations of Sea-Water. (By Eng. K. YAMASHITA)	"Hydrographic Bulletin" Vol. 21 Extra No.	Jan. 1943
13.	Basic Problems of the Calculation System of Astronomical Observation. (By Eng. Y. TSUKAMOTO)	"Hydrographic Bulletin" Vol. 21 Extra No.	Jan. 1943

ENCLOSURE (B), continued

14. On the Calculation of Corpuscular "Hydrographic Bulletin Jan. 1943
Solar Eclipse. (By Eng. K. SUZUKI) Vol. 21 Extra No.

10. List of all general categories

- A. Category Year production started
- Navigation Charts and Books Charts Oct. 1871
(Ordinary) Books June 1872
- Navigation Charts and Books Prior to 1906
(Confidential)
- Air Navigation Charts and Books Sept. 1932
- Sounding Charts Sept. 1936
- Meteorological Charts Feb. 1881
- Current Charts July 1915
- Wave Charts Dec. 1941
- Tidal Charts Nov. 1903
- B. Information relative to production totals is given in paragraph C of item 8.
- C. Distribution analysis for 1925----1945.

The amounts of navigation and aviation charts and books, supplied for the Navy and civilian use from April 1925 to August 1945 are as follows:

Total Charts 36,076,891 sheets

Total Books 1,843,546 sheets

Note: For detail, see the following table.

Year	For	Charts	Books	Air-nav- igation Charts	Air-nav- igation Books	Total	
1925	Navy	105,462	20,325			125,787	236,809
	Civilian	96,352	14,670			111,022	
1926	Navy	85,373	23,601			108,974	286,461
	Civilian	158,227	19,260			177,487	
1927	Navy	68,979	16,054			85,033	211,756
	Civilian	111,103	15,620			126,723	
1928	Navy	83,151	17,473			100,624	186,801
	Civilian	68,937	17,240			86,177	
1929	Navy	100,694	17,600			118,294	231,941
	Civilian	95,559	18,088			113,647	
1930	Navy	97,230	21,762			118,992	269,433
	Civilian	126,271	24,170			150,441	
1931	Navy	119,795	24,860			144,655	278,292
	Civilian	108,932	24,705			133,637	
1932	Navy	81,489	22,908			104,397	228,364
	Civilian	97,207	26,760			123,967	
1933	Navy	109,650	22,559			132,209	247,350
	Civilian	96,791	18,350			115,141	

ENCLOSURE (B), continued

Year	For	Charts	Books	Air-nav- igation Charts	Air-nav- igation Books	Total
1934	Navy Civilian	113,736 107,415	28,750 25,900	6,656 1,472	3,395 230	152,537 135,017
1935	Navy Civilian	136,811 169,877	20,389 20,005	9,809 3,286	3,650 240	170,659 193,408
1936	Navy Civilian	192,773 149,932	25,053 26,855	28,311 2,185	4,591 150	250,728 179,122
1937	Navy Civilian	179,628 235,708	34,714 25,755	13,156 3,261	5,102 150	232,600 264,874
1938	Navy Civilian	456,917 245,763	35,640 34,755	51,336 3,531	5,227 220	549,120 289,120
1939	Navy Civilian	143,705 269,813	40,347 35,366	28,349 5,580	3,030 ---	215,431 310,759
1940	Navy Civilian	2,432,390 174,746	78,136 42,540	289,931 5,106	7,005 269	2,807,462 242,661
1941	Navy Civilian	4,482,722 256,069	109,728 58,560	775,190 2,880	19,412 160	5,387,052 317,669
1942	Navy Civilian	3,415,767 381,013	135,876 66,885	506,901 11,373,250	11,952 515	4,070,496 12,021,663
1943	Navy Civilian	1,009,680 713,486	100,653 76,686	743,489 14,418	16,019 ---	1,869,841 804,559
1944	Navy Civilian	1,765,079 1,629,858	159,385 91,697	954,580 6,806	15,381 ---	2,894,425 1,728,361
1945	Navy Civilian	386,438 ---	102,707 ---	186,880 ---	4,461 ---	680,486 ---
Total		20,860,528	1,742,387	15,216,363	101,159	37,920,437

ENCLOSURE (B), continued

11. Personnel

A. The following table shows personnel, by Divisions and Sections, as of 1 March 1945 when the Hydrographic Department was fully active (before the air raid of 10 March 1945). Pay grades and salaries are given.

Rank	Pay grades	Salary per month	Secretariate Div.	Accts. Div.	1st. Div.		2nd Div.			Training school	Total
					1sec	2sec	3sec	4sec	5sec		
Chief Hydrographer	Vice Admiral	¥ 483									1
Chief of 2nd Div.	Rear Admiral	417									1
Chief of 1st Div.	Captain	346									1
Chief of the others	Captain	346	1	1							2
Chief of Sections	Captain	346					1				1
Engineer	3rd of A	283						1			1
Naval Officers	Captain	346								1	1
Naval Officers	Commander	268	3		1						4
Naval Officers	Lt. Comdr.	194		1	1				1		3
Naval Officers	Lieutenant	130	2	4					1	1	8
Naval Officers	Sub. Lt.	80			1	1	17	6	11	5	42
Engineers	4th of A	254					1				1
Engineers	5th	231				1	1	1			4
Engineers	6th	202			2		2				6
Engineers	7th	197			2	2	2	1			7
Engineers	9th	138			1		1	5			7
Engineers	10th	123						1			1
Civil officials	4th of B	202			2						2
Civil officials	6th of B	151	1								1
Civil officials	4th of C	151			1						1
Civil officials Assist. Engineers (in junior class)	1st	145	2		4	1	1	1			9
	2nd	125	3	1	8	5	3		2		22
	3rd	110	1	4	20	10	6	2	4	3	50
	4th	95	1	2	13	8	5	2	5	1	41
	5th	85		2	6	6	5	2	6		27
	6th	75			5		1	1	3	1	11
	7th	65			1		4		10		15
Employees		over ¥ 150	1				2	1			4
		150-100	2			27	3	1	12		45
		100-50	84	32	25	209	121	18	166	8	663
		less than 50	12	15	338	315	320	235	324		1864
TOTAL			288	192	436	585	500	280	546	20	2846

ENCLOSURE (B), continued

B. Training

a. General policy.

In the past, we adopted the graduates of universities or colleges and gave them technical training in each division. But in 1941, we established a training school for hydrographic engineers, and arranged for the systematic and more essential education of the internal operators chosen from graduates of middle or elementary schools. In the future, this institution will become the main source of hydrographic engineers. Objectives of this training school are as follows:

- i. Education for those who engage in compilation of hydrographic publications (charts and books).
- ii. Education for those who engage in cartography, photography, founding and printing.
- iii. Education for those engaged in surveyings and observations of astronomy, tide, current and other oceanographical phenomena.

b. Courses given in the training school are as follows:

- i. Elementary Course: To give basic training to the pupils who attended elementary schools for three years. (91 pupils at present).
- ii. Normal Course: To give one year of general training in technical studies to pupils who graduated the middle schools. (None at present).
- iii. Specific Course: To provide basic and professional education for students selected from among the Assistant Engineers in the Hydrographic Department, and to enable them to prepare themselves to become excellent engineers in the future. (Five students at present).

C. Sources from which personnel are drawn

- a. Engineers appointed are Navy officers and civilians who have graduated from universities or colleges and have acquired technical knowledge concerning hydrographical studies.
- b. Assistant engineers are drawn from among graduates of universities, colleges and Hydrographers Training School.
- c. Secretaries are naval officers, graduates of universities or colleges and other middle class schools.
- d. General employees are selected from the public in general.

D. List of training manuals used

- a. Hydrographic Surveying.

ENCLOSURE (B), continued

- b. Textbook of Oceanography.
- c. The System of Oceanographic Observation.
- d. Planning Methods For Charts and Air Navigation Charts.
- e. Methods of Preparing Notices to Mariners.
- f. Methods of Cartography for Charts.
- g. Methods of Cartography for Air Navigational Charts.
- h. Method of Compilations for Hydrographic Books.
- i. Methods of Spherical Projection.
- j. Manual of Founding.
- k. Manual of Printing.
- l. Manual of Photography.
- m. Mechanics.
- n. Textbook on General Theory of Natural Geography.

Note: In addition to the above, we are using textbooks on the English language, Japanese literature, geography, history, mathematics, physics and chemistry in the elementary course. These are the same books as those used in public middle schools.

12. Specific items requested are furnished as follows:

- A. Catalogue and indexes of all charts and publication are presented in Annex I.
- B. About the material excluded in A, we have none in fact.
- C. Some of required copies have already been presented to Colonel Moore (GHQ, SCAP).
- D. Harmonic Tidal Constants are presented in Annex II.
- E. Manuals presented are:
 - Manual for Marine Meteorological Observation
 - Manual for Compilation of Hydrographic Charts and Books
 - Manual for Treatment of Hydrographic Charts and Books
- F. We have no topographic or geodetic data on Korea or China in this office. A few of this series will be presented in Annex III.

ENCLOSURE (B), continued

- G. Prints of all charts printed will be presented from now onward, two sheets of all products en bloc for the previous month, at the beginning of the month.

13. Plans for the future.

- A. Buildings: We intend to restore the parts of offices and works destroyed by war disaster as fast as possible.

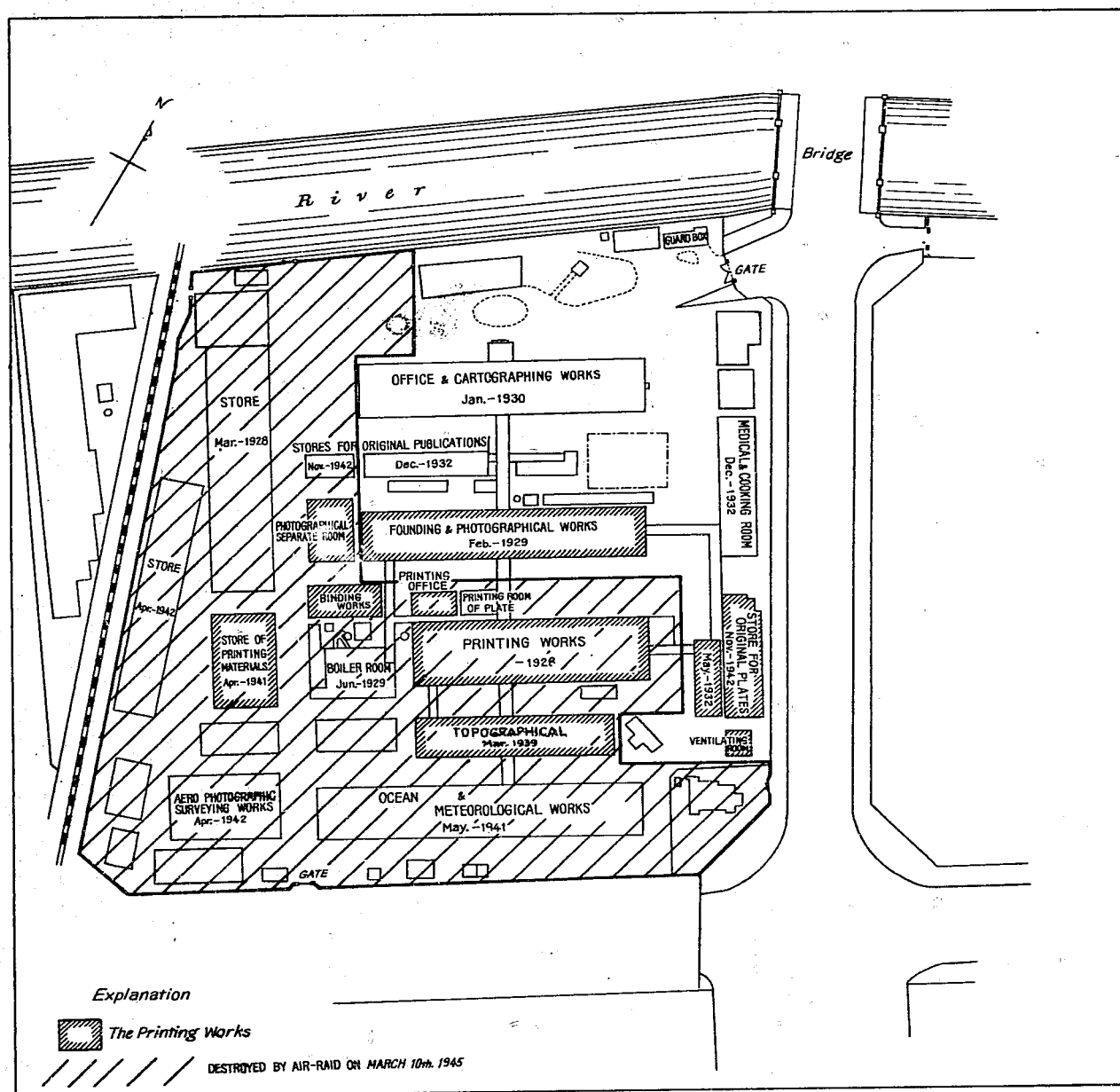
Equipment: We intend to replace destroyed items of equipment after collecting those dispersed during the war.

- B. Personnel: We intend to continue our operations and business with the present numbers of personnel.

- C. Budget: From the end of the war until March 1946, our budget is at the rate of ¥ 1,310,000.000 per year. Total amount for the 1946 fiscal year is unsettled, but we anticipate that it will be increased to a large figure.

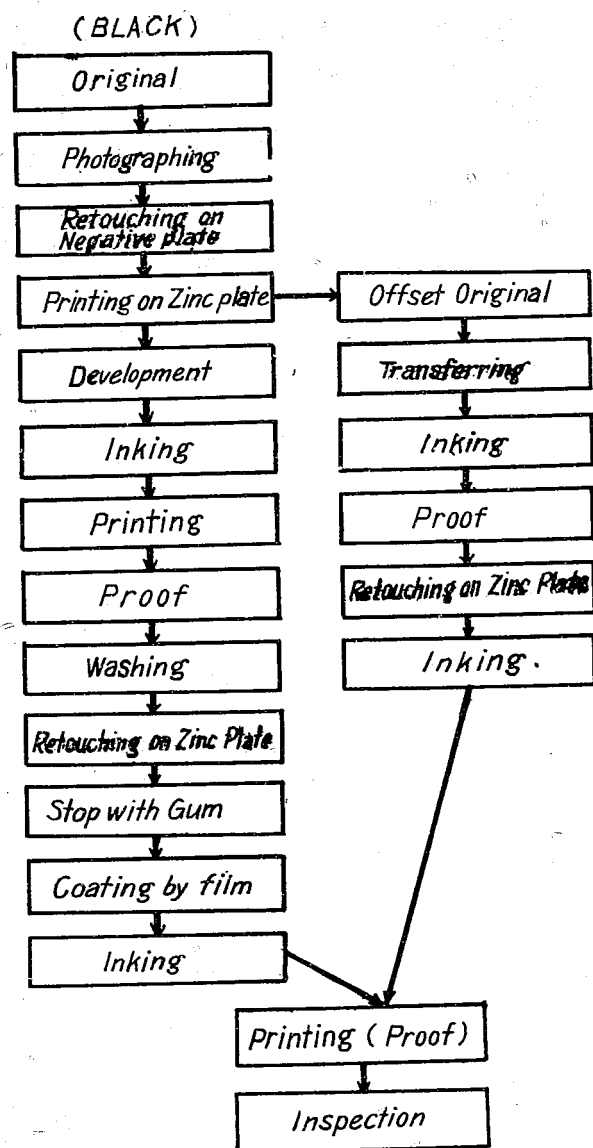
- D. Jurisdiction: Under the jurisdiction of the Ministry of Transportation as it stands.

ENCLOSURE (B), continued



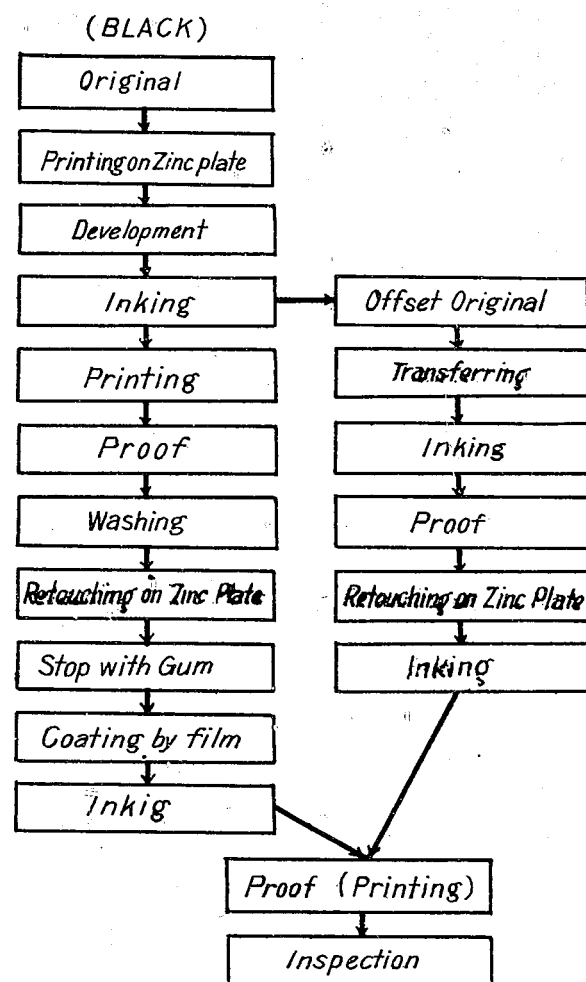
SPECIAL SHEET NO 1
GROUND PLAN OF THE HYDROGRAPHIC DEPARTMENT

ENCLOSURE (B), continued



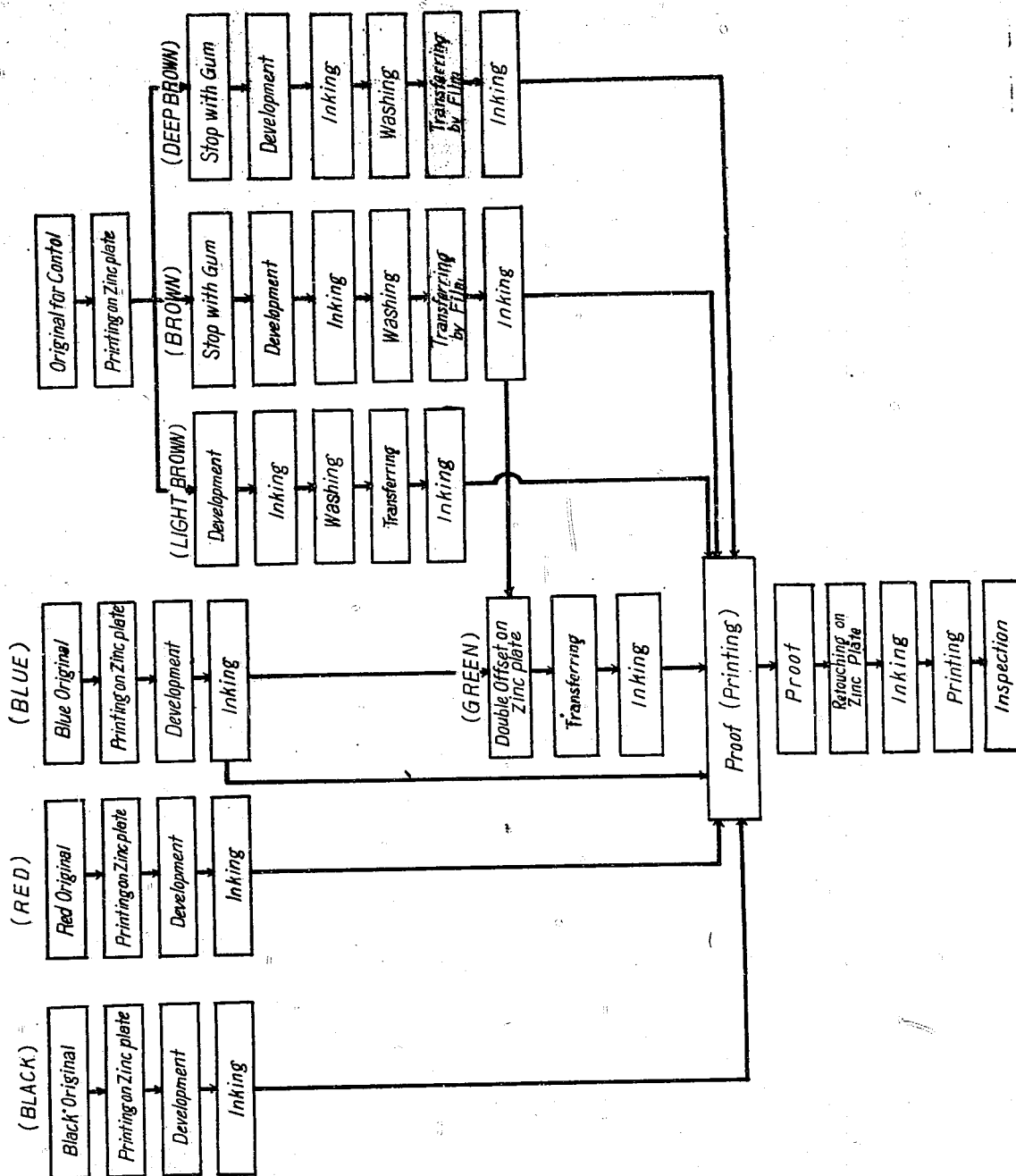
SPECIAL SHEET NO 2-a
ORTHOGRAPHIC PRINTING OPERATION
OF NAVIGATION CHART

ENCLOSURE (B), continued



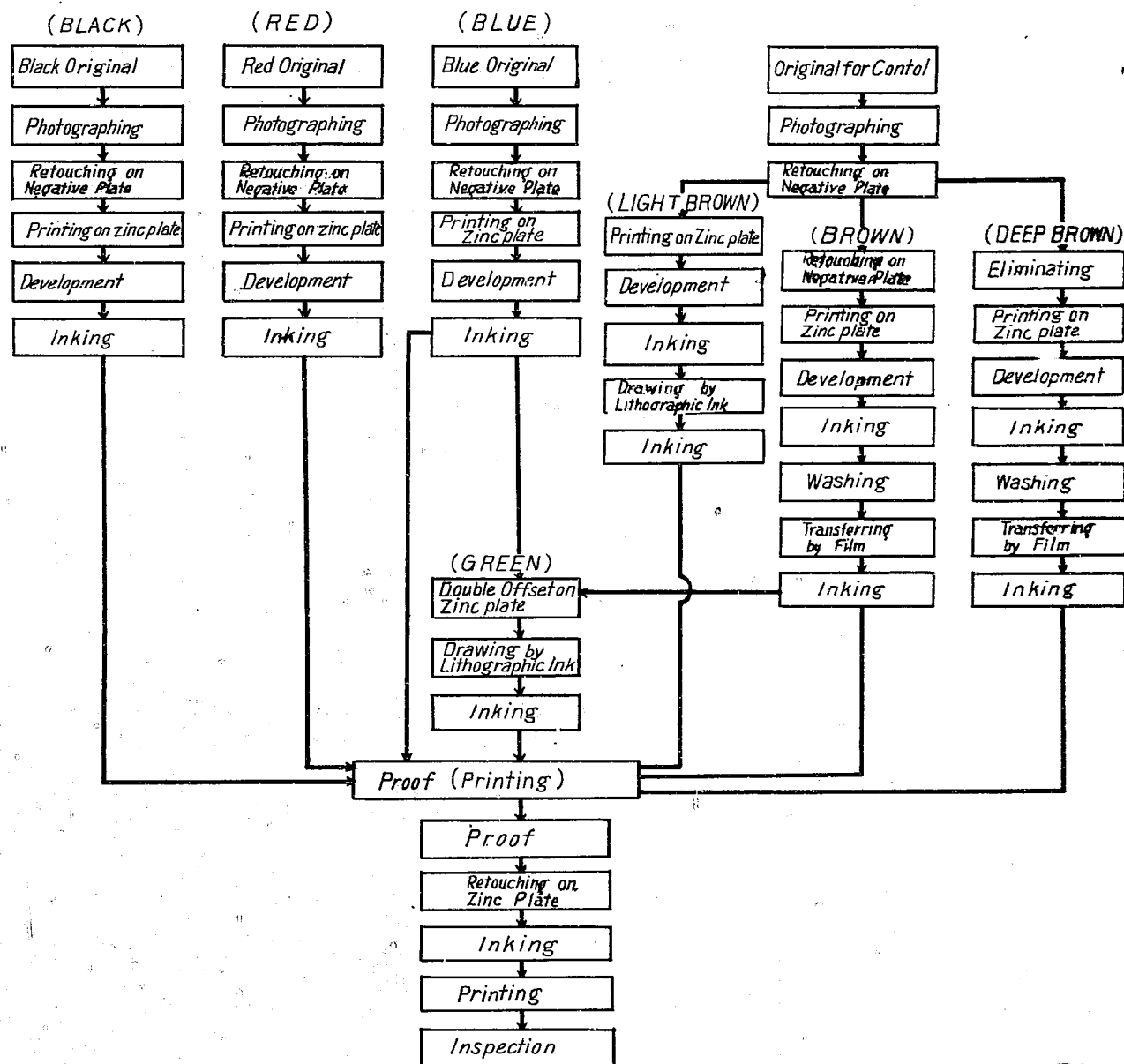
SPECIAL SHEET NO 2-b
PRINTING OPERATION OF NAVIGATION
CHART BY TRACING

ENCLOSURE (B), continued



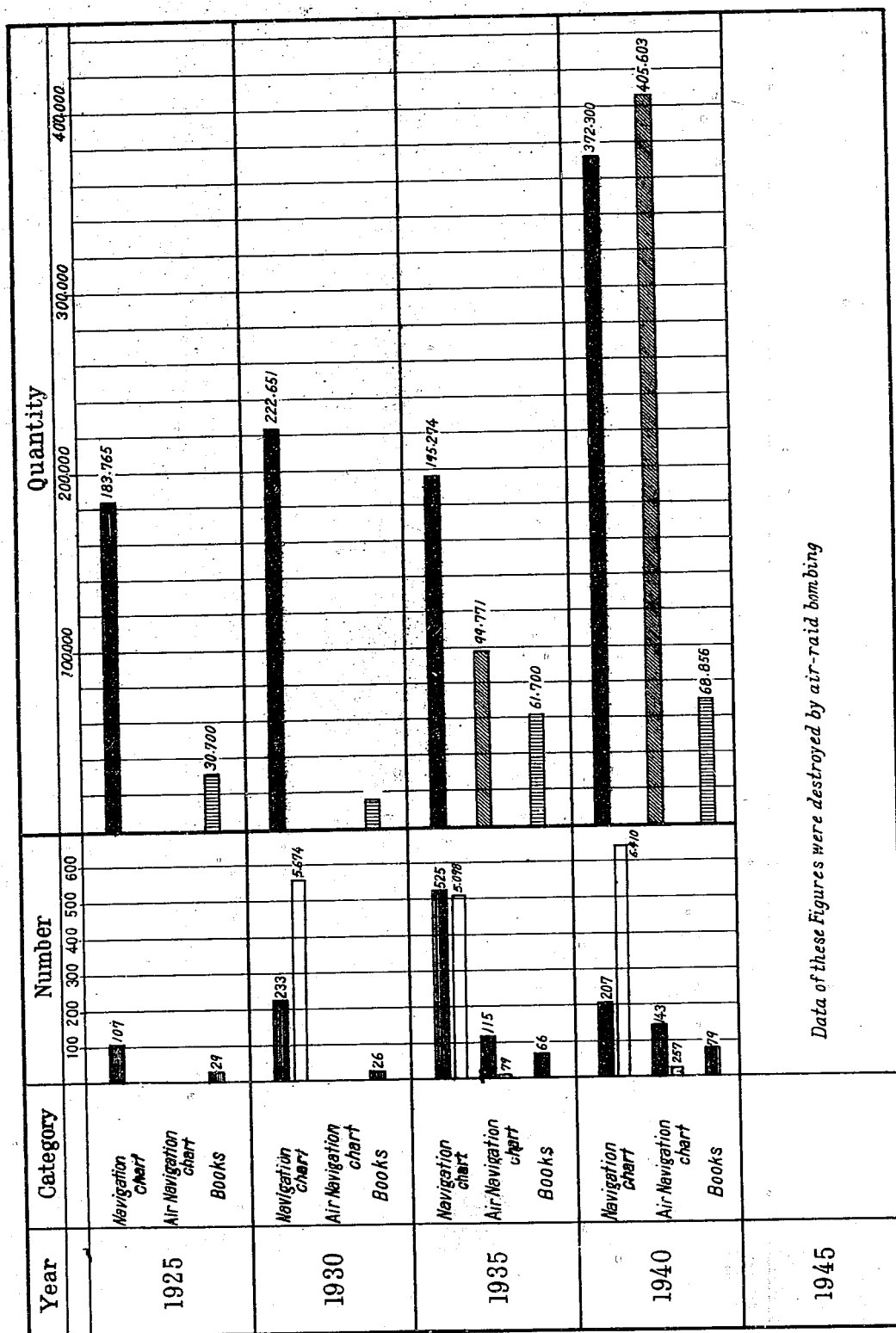
SPECIAL SHEET NO 2-c
PRINTING OPERATION OF AIR NAVIGATION CHART BY TRACING

ENCLOSURE (B), continued



SPECIAL SHEET NO 2-d
 ORTHOGRAPHIC PRINTING OF AIR NAVIGATION CHART

ENCLOSURE (B), continued



SPECIAL SHEET NO 3
TABLE OF PRODUCTION TOTALS

ENCLOSURE (B), continued

ANNEX I

CATALOGUE OF CLASSIFIED HYDROGRAPHIC CHARTS AND BOOKS

Top Secret No.	Top Secret No.
203 SHIMUSHU Is. & Approach	241 HITONOSE fuel storage quay, Diagram
204 PARAMUSHIRO Strait	242 KANOGAWA-UCHI
205 KITOKAPU Bay	243 Naval Fueling Jetty & Neighborhood
206 AKKESHI Harbor	244 TOKUYAMA Bay, OSHIMA Jetty and Neighborhood
211 OMINATO Harbor	245 TOKUYAMA Bay & Approach
212 OMINATO Inner Harbor	246 TOKUYAMA Bay
213 YOKOSUKA Naval Port (approach)	249 SASEBO Naval Port Approach
214 Western part of YOKOSUKA Naval Port	250 TERASHIMA Roads & Approach
215 Eastern part of YOKOSUKA Naval Port	251 Northern Part of SASEBO Harbor
216 HABU Harbor	252 Southern Part of SASEBO Harbor
217 CHICHI JIMA & Approach	253 OMURA Bay
218 HABA JIMA & Approach	254 HARIO Narrows
220 IWO JIMA	255 KUJUKUSHIMA Bay
221 YOKOSUKA Naval Port (approach)	256 WAKAMATSU Narrows & TAKIGAHARA Narrows
222 KURIHAMA Bay	257 NARU Narrows, TANOURA Narrows
230 Western Point of ARIKAWA	258 TOMIE Bay (NAGASAKI Area)
231 KURE Harbor Approach	259 KUSADOMARI Approach
232 KURE Harbor	261 TAMANOURA
233 Northern Part of HIROSHIMA Bay	262 TSUSHIMA-MIDDLE Part
234 KUBA Bay & Approach	263 OSAKI Bay Approach
235 ETAUCHI & Approach	264 TAKESHIKI Harbor
236 HIRO Bay	266 MIURA Bay & Approach
237 HAYASE Narrows	276 AMAMI OSHIMA Strait
238 ONDO Narrows	277 AMAMI OSHIMA Strait & Approach
239 KURE Harbor & Approach	278 YAKIUCHI WAN Harbor
240 "SHINGU" fuel storage quay, Diagram	279 KUJI Bay

ENCLOSURE (B), continued

Top Secret
No.

280 SATSUKAWA Bay
281 KASARI Bay
282 NAKAGUSUKU Bay
283 Omitted
284 HATTE Chain of Islands
285 BOKO Harbor
286 BOKO Harbor
287 MINAMI Bay
288 TAKAO Harbor to HOBITO
289 SE Part of BOKO Chain of Islands
290 SW Part of BOKO Chain of Islands
291 N. Part of BOKO Chain of Islands
292 MAIZURU Bay
293 MAIZURU Naval Port
294 OBAMA Harbor
295 SHIMAMAE
296 MAIZURU Bay Approach
297 NANAQ N. Bay ANAMIZU-WAN
300 TAKAO Bay
301 TAKAO Harbor Approach Sheet No 1
302 TAKAO Harbor Approach Sheet No 2
303 TOKO Anchorage
304 EIKO Bay
310 MAZANHO or VAZANHO and
KAWASHIMA Roads
311 CHINKAI Bay Approach
312 CHINKAI Bay
313 TOEI Harbor to CHIKURINHO

Top Secret
No.

314 KE-NYARAN Straits
325 HAKKOHO
332 CHINKAI Harbor
338 RYOJUN Harbor
339 HUANGCHENG TAO Channel
340 MYOTO Anchorage & Approach
341 KOROTO Harbor
342 From KYAUCHAU WAN to TASTZUKOW
343 Middle Part of RICHIOZAN Chain
of Islands
351 SAIYOTO Anchorage TAISEIYOZAN
352 GAZEN Bay
355 KIMONTO Anchorage
364 MAMIYA Strait Sheet No 1
365 MAMIYA Strait Sheet No 2
366 MAMIYA Strait Sheet No 3
367 MAMIYA Strait Sheet No 4
368 MAMIYA Straits, Various Harbor
Anchorage
369 KOKURTU River Estuary
370 AVACHINSKAYA Bay
371 Approach of AVACHINSKAYA Bay
372 KAMCHATKA Southern Part
373 KAMCHATKA E. Coast Plan
376 TUMUIN R. Approach, SOVYIETSKAYA
374 DE-KASTRI Bay
377 MOSOLOVA B. SYURKUM Road
401 JALUIT Is.
402 North-East Channel and Approach
JALUIT Hr. Approach

ENCLOSURE (B), continued

Top Secret
No.

- 403 South-East Part of JALUIT Is.
- 404 TRUK Is. - North Part
- 405 TRUK Is.
- 406 South-East Part of TRUK Is.
- 407 Central Part of PALAU Is.
- 408 West Channel of PALAU
- 409 Approach of MAKARAKAL Is.
- 410 PONAPE Harbor
- 411 Approach to PALAU Harbor
- 412 SAIPAN Is and Its Approach
- 413 SAIPAN Harbor
- 414 OLOL Is.
- 415 MAJURO Is.
- 416 East Part of WOTJE
- 417 MORTLOK Is.
- 418 MELEYON (WOLEAI) Is.
- 419 TINIAN Hr. RAURAU WAN
- 420 North Part of SATOWAN Is.
South Part of SATOWAN
- 421 WOTJE Is, ERIKUB Is.
- 422 ULITHI Is.
- 423 North Part of ULITHI Is.
- 424 RONGELAB Is.
- 425 BROWN Is. and Road
- 426 OROLUK Is.
- 427 ROTA Is.
- 428 Approach to TRUK Harbor
- 429 N.E. Channel, South Channel
- 430 PAGAN Is, MANGU Is.

Top Secret
No.

- 431 Plans of PONAPE Is.
- 432 HELLEN Reef
- 433 Approach of SAIPAN Harbor
- 434 LIKIEB Is.
- 435 MOLOWLAB Is, AURH Is.
- 436 AILINGLABLAB Is.
- 437 ARUNO Is.
- 438 MIRE Is.
- 439 NW Part to MIRE Is. Channels
- 440 Central Part of AILINGLABLAB
- 441 Northern Is. of MARSHAL No. 2
- 442 KWAJALEIN Is.
- 443 Road of KWAJALEIN Is,
Its Approach
- 444 NW Part of MOLOWLAB Is.
- 445 NAMO Is.
- 446 PALAU Is.
- 447 PONAPE Is.
- 448 KOSSOL Passage
- 449 Plans of CAROLINE Is.
- 450 N. Part of PALAU Is.
- 451 HALL Is.
- 452 South Part of ULITHI
- 453 NGULU Is.
- 454 West Part of TRUK Is.
- 455 PALAU Harbor
- 456 ARUMIZU PASSAGE
- 457 UJELANG Is.
- 458 BIKINI Is.

ENCLOSURE (B), continued

Top Secret
No.

459 SE Part of RONGELAB Is.
460 NE Part of RONGELAB Is.
461 Road of RUOTTO Is., Its Approach
462 Central Part of ARUNO Is.
463 Central Passages of KWAJALEIN Is.
464 NW Part of LIKIEB Is.
465 BIKAR Is. POKAAP Is.
466 AILUK Is.
467 UTILIK Is., TAKE Is.
468 East Part of KWAJALEIN Is.
469 West Part of WOTJE
470 DENGES Passage and Its Approach
472 Road of NOMWIN Is.
473 West Part of MURILO Is.
474 South Part of MURILO Is.
475 ANTU Is.
476 South Part of NUGULU Is.
477 North Part of NUGULU Is.
480 GARASMAO Road
481 GATUREL Road and
N. GADARAK Road
482 South Passage of PALAU Is.
512 AMUR River
515 ANADYR Bay
516 NAVARIN Cape to ANADYR Bay
521 NOKKENSCHO (North Danger)
522 NAGASHIMA Approach
ITSUABA Island
523 SENRYTAI & Other Reefs
524 South CHINA ARCHIPELAGO

Top Secret
No.

525 Plan of South CHINA ARCHIPELAGO
555 Current Chart of Japan
Approaches
562 South Sea of Japan Chart
of Depths Sheet No. 2
571 Isodepth Chart of
TERASHIMA Roads
581 Japanese Merchant Ships
Numbers and Ranks (above
indicating graph) Sheet No. 1
582 Japanese Merchant Ships
Numbers and Ranks (above
indicating graph) Sheet No. 2
583 Japanese Merchant Ships
Numbers and Ranks (above
indicating graph) Sheet No. 3
584 Japanese Merchant Ships
Numbers and Ranks (above
indicating graph) Sheet No. 4
755 Reference Chart for South
Sea Isles
820 PALAU North Channel
821 APRA Harbor (GUAM)
910 BROWN Island - Southern Point

RESTRICTED

X-12-1

ENCLOSURE (B), continued

More Secret
No.

- 47 RENAN Harbor
- 51 BAAN Chain of Islands
- 52 KAKAKU Chain of Islands
- 53 CHOTO Harbor Approach.
- 54 BAAN Chain of Isles to SENZAN Islands
- 57 SHICHIKOYO Anchorage
- 65 NANWO Island Approach
- 66 TOSA Island (PRATAS Isle)
- 67 TOSA Island Anchorage
- 73 SANTSAN TAO to MANCHAN Is.
- 81 NINCHIAO SHAN Road
- 82 SHANGCHIWAO Road
- 83 PUTSIEN Bay
- 84 HOWSHUI Bay
- 89 KUANJIN CHIAO to PINGMA CHIAO
- 99 NANZAN CHIAO to NIUCHI CHAW
- 160 HAINAN Strait
- 301 OSHIMA
- 404 OKINO TORI SHIMA
- 605 N. Side of SUMEITO (near SHANGHAI)
- 406 S. Side of SUMEITO (near SHANGHAI)
- 407 TSUSHU Road & Approach
- 408 FU-CHIANGSHA, KIANGWIN
- 409 BATE Point to TASHA
- 410 BATE Point to YUNGANCHOW
- 411 YUNGANCHOW to TSIAOSHAN
- 412 TASHA to SHIHESHWEI

More Secret
No.

- 413 TSIAOSHAN Crossing, CHIN-CHIANG
- 414 SHIHHERWEI to TIENHOKO
- 415 TIENHOKO to NANKING
- 416 NANKING to SHANG-SAN SHAN
- 417 SHANG SANSHAN to HUANGSHOW HSINTAN
- 418 HUANGSHOW HSINTAN to KUANG-BU-CHI
- 419 KUANG-BU-CHI to HEISHA-CHOW
- 423 TIEH-PAN-CHOW to HSIN-KAI-KOW
- 424 HSIN-KAI-KOW to KUANG-FENWEI
- 426 FUKANGWEI to PEISHIHCHI
- 427 PEISHIHCHI to HSIANKUSHAN
- 428 HSIANKUSHAN to PALIKIANGKOU
- 429 PALIKIANGKOU to KINKIANG
- 441 KUKOW to KINGZE
- 445 -----
- 451 KAPSHAYMUN to BOCAITIGRIS (North Part)
- 452 KAPSHAYMUN to BOCAITIGRIS (South Part)
- 453 CHUKIANG No. 2
- 454 CHUKIANG No. 3
- 455 CHUKIANG No. 4
- 456 CHUKIANG No. 5
- 457 HWANGPU to CANTON, No. 1
- 458 HWANGPU to CANTON, No. 2
- 459 CANTON Harbor
- 470 North Part of TAYA WAN
- 471 TAYA WAN
- 472 Approach of AMOY Is.

ENCLOSURE (B), continued

More Secret
No.

474 Approach of SANTSAO
 475 MANSHAN Is. (LADRONE Is.)
 477 HAICHOU Bay
 478 TSINGTAN Harbor
 480 NE Part of ANNAN WAN
 481 SANCH Hr. and Approach of
 YULIN Hr.
 482 PAICHUCHIAO to SHUIKON Harbor
 469 -----
 483 HAIKOW WAN
 484 HAIKOW Harbor
 490 YINGTON Pt. to NANSHAN CHIAO
 495 Central Part of HAINAN Strait
 496 East Part of HAINAN Strait
 497 South Channel of HAINAN Strait
 498 Passages of East Part of
 HAINAN Strait
 499 HIONG-PO Harbor
 500 YINGTON Pt. to NANSHAN CHIAO
 Approach
 1020 Mouth of MUROLAN
 1080 KUNDA Bay to MIYAZU Bay
 1366 POAS Harbor Road, BOKEI Harbor
 1400 ALEUTIAN-HOLTZ Bay.
 CHICHAGO Harbor
 1411 SUBIC Bay
 1414 CAVITE Harbor N. Channel
 1445 NANKOURI Harbor
 1540 AMBON Bay
 1541 AMBON Harbor

More Secret
No.

1750 RINGA (PHILIPPINES) Anchorage
 (Sketch)
 1751 PARAMUSHIRO Strait & Anchorage
 1752 Anchorage
 1755 Anchorage Chart of MUTSU Bay
 1770 Anchorage Chart SANJAKU
 1771 Anchorage Chart of SINGAPORE
 Merchant Ship Harbor
 1772 Anchorage Chart of SINGAPORE
 Harbor
 1773 PENANG Harbor Anchorage
 1774 GUIMARAS N. Anchorage Sketch
 1775 GUIMARAS S. Anchorage Sketch
 1801 ASAHI Bay
 1802 SURIBACHI Bay & OTSUMAE
 Bay Approach
 1803 MUSASHI Bay
 1804 MATSUWAJIMA
 1920 TAOITAOI Bay
 1921 BONGAWO Anchorage
 1922 "BATO BATO" Anchorage & "ROCK"
 Anchorage
 1924 GUIMARAS Strait N. Port
 1925 GUIMARAS Middle Port
 1926 GUIMARAS South Port
 1927 IROIRO Strait & GUIMARAS
 Strait (Middle Part)
 1928 DAVAO Harbor & Approach
 1935 POMARA Approach (CELEBES)
 1940 PUKKETO Harbor & Approach (BURMA)
 1941 SENTOMASHUZU Island & Approach
 BENCHINKU Island Approach

ENCLOSURE (B), continued

More Secret
No.

1943 MERUGI Harbor (MELGI)
 1942 MERUGI (MERGUI) Harbor & Approach
 1944 TABOI Island & Approach (BURMA)
 1948 CAMPBELL Bay, GVATIA Bay
 1950 BELLAWA River Estuary Approach
 1951 AL Bay (SUMATRA)
 1952 TOPANURI Bay and MANOARAU
 Island
 1953 PAVAU (SUMATRA) & Approach
 1960 BEGA Harbor (TANABATA WAN)
 1964 BELL Island (GILBERT Isle)
 1965 APAMAMA Isle
 1966 MAKIN Island
 1968 BALIKPAPAN Harbor (BORNEO)
 1969 BALIKPAPAN Harbor
 1970 PANTAI River Estuary Approach
 1971 BAYOLE River Estuary Approach
 1972 SANGA SANGA to BAYOLE River
 Estuary to PEGO River Estuary
 1973 SAMARINDA to SANGA
 1974 BAEKAPAI River Estuary Approach
 1975 BEGA River Estuary Approach

Secret
No.

1 SUKUMO Bay & Approach
 2 SUKUMO Harbor & Approach
 3 SURUGA Bay
 4 TACHIBANA Bay
 5 KANOYA Harbor Approach

More Secret
No.

1976 ST THOMAS Harbor
 1977 BAROKA Approach (BISMARCK)
 1979 ISABELLE Channel
 1980 QUEEN CAROLA Harbor and
 Approach (SOLOMONS)
 1981 KIETA Harbor Approach (SOLOMONS)
 1982 KIETA to FRIENDSHIP Peninsula
 1985 BANRA Strait (N. CELEBES)
 1986 SURABAYA Anchorage
 1987 SURABAYA Straits
 1988 RABAU Harbor
 1989 MASSAKA Anchorage (BISMARCK)
 1990 DUKE OF YORK ARCHIPELAGO
 1991 KABIEN Harbor
 1992 KABIEN Harbor and STEPHEN
 Strait Approach
 1993 SCHOTLAND ISLE Approach
 and Anchorage (SOLOMONS)
 1994 BUKA Strait and Approach
 1995 BUKA Strait
 1996 STALIN Bay (?)
 1997 KENNARY Bay (?)
 1998 TARAUA (GILBERT Isles)

Secret
No.

6 YAMAKAWA Harbor
 7 RASHIN Bay Approach
 8 SAEKI Bay
 9 ARIAKE Bay
 11 TAISHIN River Estuary
 to SHINNO Island

ENCLOSURE (B), continued

Secret
No.

- 12 SHINNO Is. to KORO Is.
- 13 SHINNO Is. Approach
- 14 RYOTO Gulf, Various Sketches
- 15 HIYAMA Approach
- 16 KANEDA Bay Approach
- 17 URAGA Harbor
- 19 GUNCHUKO Harbor Approach
- 20 AGENOSHO Bay NAGAHAMA Harbor Approach
- 21 KIIRUN Harbor Approach (FORMOSA)
- 22 KIIRUN Harbor
- 28 SHIMONOSEKI Strait, Middle Part
- 32 ZOZAN Bay
- 33 RASHIN Bay Approach
- 71 Southern Sea of JAPAN Soundings Chart
- 72 SUKUMO Harbor Isodepth Chart
- 85 Current Chart of S. CHINA Sea
- 101 Chart of Tidal Currents in PHILIPPINE Islands
- 406 EASTERN CHINA Sea Soundings Reference Chart Sheet No. 1
- 407 YELLOW Sea Soundings Reference Chart Sheet No. 2
- 408 WESTERN Part of YELLOW Sea Soundings Reference Chart
- 410 KAKKEN Chain of Islands
- 412 ENSHU NADA Soundings Chart
- 461 General Plan of Wireless Stations No. 1
- 462 General Plan of Wireless Stations No. 2

Secret
No.

- 463 General Plan of Wireless Stations No. 3
- 501 HUKOW to PINGFENGSHAN
- 502 PINGFENGSHAN to TANGPIEWSHAN
- 509 Depth Chart of ANNAN-KAI-WAN
- 513 CHU-KIANG to HAINAN I.
- 515 South Part of HAINAN I.
- 517 Depth Chart of POYANGFU
- 518 YANKISIEN Bay
- 519 CHUAN CHOW Harbor
- 525 Omitted { Chart of Upper
Wind at KOREA, MANSU
and CHISHIMA
- 531 HANSUI Harbor to SIANGYANG
- 532 Reference Chart for Pilotage of Middle Part of YANGTSE
- 561 Current Chart of N. Part of E. CHINA Sea and YELLOW Sea
- 562 Current Reference Chart of S.W. Islands Approaches
- 563 Current Reference Chart of S.W. Islands Approaches
- 565 Range Finder Adjuster Chart for use in MAIZURU Bay Approach
- 566 Range Finder Adjuster Chart for use in SUKUMO Bay
- 567 Range Finder Adjuster Chart for use in MIKAWA Bay
- 2152 BUNGO Roads
- 2246 Eastern Sea of FORMOSA Sounding Charts
- 2250 Eastern Sea of FORMOSA Sounding Charts, LUZON Isle Sheet No. 2
- 2251 Eastern Sea of FORMOSA Sounding Charts, South Part of SW Isles

ENCLOSURE (B), continued

Secret No.	Secret No.
2255 Eastern Sea of FORMOSA Sounding Charts, N. Part of W. CAROLINE Is.	2657 KISKA Harbor Approach
2256 Eastern Sea of FORMOSA Sounding Charts, W. Sea of OGASAWARA Group	2658 KISKA Harbor
2505 RONKO Harbor	2559 CONSTANTINE Harbor
2550 Southern Part of S. CHINA Sea.	2660 AOAKU Roads to ATOKA Roads
2551 GUMARAS Roads.	2661 AOAKU Roads Approach, Sketches
2600 BAKKO Anchorage	2662 EYLANOT Bay (ALEUTIANS)
2618 CHIRACHAPU Harbor (JAVA S. Coast)	2663 CROOK Bay and Approach
2620 RANGUKAI Isle to SHIMIRAN Isle (BURMA)	2664 LITTLE TANAGA Island to TAGARAKU Island
2621 HASTINGS Harbor & Approach	2665 GREAT SHITOKUI Island to TAGARAKU Island
2622 RADELLLO Roads & BERISFORD Roads (NICOBAR)	2666 CHUGURU Isle to ATOKA Isle
2623 BERISFORD Roads	2667 VURUNAKU Roads and Approach
2624 EXPEDITION Harbor & GRAND Harbor	2668 SURVEYOR Bay to GURIRYAKU Bay
2625 IHABANDIFU Atoll	2669 EAGLE Bay to PROTECTION Bay
2626 HORSEBUG Atoll	2670 CHERONOFISKY Harbor to SUKAN Bay
2627 LANGDON Harbor and Approach (AUSTRALIA)	2671 MATIN Bay
2630 South Sea Islands Various Plans (i)	2672 KOBURIZUKA Peninsula
2631 South Sea Islands Various Plans (ii)	2673 BEAVER Bay
2632 South Sea Islands Various Plans (iii)	2678 CANTON Isle Approach
2633 West Channel of PALAU	2679 PEARL Harbor
2634 North Channel to HARUJIMA South Channel to NATSUSHIMA (TRUK Isle)	2680 KANEOHE Bay
2640 KOKURYU River Chart Sheet 1	2681 French Frigate Reef
2641 KOKURYU River Chart Sheet 2	2682 GRASHIOSA Bay
2656 KISKA Isle to SEMINSOPO-CHICUSI Is. (ALEUTIANS)	2683 PORT MORESBY Approach
	2684 CANTON Island
	2685 JEHOL River Estuary
	2686 JEHOL River Estuary Strait No. 1
	2687 JEHOL River Estuary Strait No. 2
	2688 JEHOL River Estuary Strait No. 3

ENCLOSURE (B), continued

Secret
No.

- 2689 JEHOL River Estuary Strait No. 4
- 2690 JEHOL River Estuary Strait No. 5
- 2691 JEHOL River Estuary Strait No. 6
- 2692 Great Northern East Channel
(N. Part)
- 2693 Great Northern East Channel
(S. Part)
- 2694 SEWA (NEW GUINEA) Harbor
- 2695 ARUEM Bay & Approach
- 2696 PORT DARWIN
- 2697 BATHO Harbor & PATTERSON
Harbor Approach
- 2698 NAPIER BROOM Bay
- 2699 SINGAPORE Naval Base
- 2745 Wave Chart of N. Pacific
A-L Ocean January - December
- 2785 OAHU South Coast Anchorage
- 2775 Graph for use with Hydrophone
- 2776 Graph for use with Hydrophone
(Approaches to JAPAN)
- 2806 Sounding Chart of Pacific
Ocean, Sheet No. 1
- 2807 Sounding Chart of Pacific
Ocean, Sheet No. 2
- 2808 Sounding Chart of Pacific
Ocean, Sheet No. 3
- 2809 Sounding Chart of Pacific
Ocean, Sheet No. 4
- 2810 Sounding Chart of Pacific
Ocean, Sheet No. 5
- 2842 Sept. 1942 Current Chart of
Southern Sea of JAPAN
- 2849 Sept. 1942 Current Chart of
E. Sea of JAPAN
- 2910 ONNEKOTAN Strait Approach
Sounding Chart No. 1

Secret
No.

- 2911 ONNEKOTAN Strait Approach
Sounding Chart No. 2
- 2912 AKESHI Sounding Chart
- 2913 TSUGARU Strait Sounding Chart
- 2914 NOJIMAZAKI to OMAEZAKI
Sounding Chart
- 2918 SAIPAN Island Approach
Sounding Chart
- 2940 JOHNSON Island & KINGMAN Reef
- 2941 RANKAI (North PENAN) Anchorage
- 2942 PUKETT Anchorage
- 2963 Current Chart of Southern
Sea of JAPAN

Top Secret
No.

- 601 Catalogue for Secret Chart
and Books
- 605 Top Secret Hydro-Books Vol. (i)
(JAPAN Proper-South JAPAN
Islands, Inner Sea (NAIKAI),
HOKKAIDO, KARAFUTO S. Part;
- 606 Top Secret Hydro-Books Vol. (ii)
(KYUSHU), SW Islands, FORMOSA,
KOREA, N. Shore of YELLOW Sea)
- 8003 Top Secret Hydro-Books Vol. (iii)
South Sea Isles, GILBERT Isles
- 608 Top Secret Hydro-Books Vol. (iv)
(E. Coast of SIBERIA, MANCHURIAN
Coast, Coast of CHINA, PRATTAS Is)

Secret
No.

- 16511 JAPANESE Sea and OHOTSUKAI Port
and Harbor Guide Book Vol. (i)
- 16512 JAPANESE Sea and OHOTSUKAI Port
and Harbor Guide Book Vol. (ii)

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No.

- 551 Hydrographical Reference Book for
E. Coast of SIBERIA

ENCLOSURE (B), continued

Top Secret
No.701 Reports of Navigation in YANGTSE
River Vol. 1Secret
No.161 KANTON, HONGKONG, HAINAN Strait,
Hydrographical Reference Book.Secret
No.164 Hydrographical Reference Book &
Book of Vontes for SEIKOMost Secret
No.8105 Northern Sea Reference Book
Vol. (I)8106 Northern Sea Reference Book
Vol. (II)8100 Southern Sea Reference Book
Vol. (I)8100 Southern Sea Reference Book
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Vol. (III)8103 Southern Sea Reference Book
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617 Tidal Currents in Outer
SASEBO Harbor

618 Tidal Currents in BUNGO Roads

619 Tidal Currents in BOKO Chain
of Islands ApproachSecret
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Tide Book Vol. II8984 1B (Appendix) 1944 and 1945
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Japanese Approaches

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10001A Secret Light Tables Appendix
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RaidsSecret
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167 HAINAN Island Silhouettes from Sea

135 Table of Radio Station

8252 ARCTIC Ocean Reference Book Vol. I
about 1879Top Secret
No.621 Catalogue of Wrecks & Obstructions
to Naval Shipping

ENCLOSURE (B), continued

ANNEX II
HARMONIC CONSTANTS OF TIDES

Place	Period of Observation	No. Days	Ao	Latitude deg. min.	Longitude deg. min.	M ₂ Hm cm	M ₂ Km deg	S ₂ Hs cm	S ₂ Ks deg	K ₁ H ¹ cm	K ₁ K ¹ deg	H ₀ cm	K ₀ deg
<u>East Coast of HONSHU</u>													
YAMADA Harbor	20 July - 18 Aug 1940	30	0.9	39 28	141 58	31 110	14 144	23 168	19 147				
NAKAMUNATO Harbor	1 Oct - 30 Oct 1941	30	0.8		140 35	34 142	11 181	22 171	17 145				
HIRERASAKI (Nagasaki)	29 Apr - 11 June 1931	44	0.9	35 42	140 51	32 128	14 164	23 172	20 157				
KATSURIRA	14 Apr - 9 July 1931	87	0.9	35 8	140 19	35 142	15 174	22 175	18 158				
TOKYO Bay (Toukaiji)	1 Sept - 30 Sept 1942 1 Apr - 30 Apr 1943 1 Jan - 30 Jan 1944 1 May - 30 May 1938	120	0.2	35 40	139 47	50 163	24 190	25 181	19 167				
YOKOSUKA Harbor	1 June - 30 Nov 1938	180	1.1	35 17	139 39	42 153	21 185	24 176	18 155				
URAGA Harbor	5 Apr - 30 June 1939	90	1.0	35 14	139 44	39 148	18 180	21 177	19 156				
<u>South Coast of HONSHU</u>													
OKITSU Harbor	14 Jan - 29 Jan 1943	15*	1.0	35 14	139 31	37 165	23 190	26 185	16 69				
SHIMIZU Harbor	11 Nov - 10 Dec 1943	30	1.0	35 0	138 31	42 167	19 193	23 189	16 163				
KIHO	10 Jan - 2 Mar 1943	45*	1.0	35 0	138 32	42 165	19 194	23 184	16 158				
SAGARA Harbor	12 Jan - 6 Feb 1943	15*	0.9	34 41	138 14	39 168	18 185	22 184	13 177				
FUKUE Harbor	1 June - 30 June 1939 1 Jan - 30 Jan 1940	60*	1.2	34 38	137 7	59 171	28 204	22 192	19 177				
TOYOHASHI	1 June - 30 June 1939 1 Jan - 30 Jan 1940	60*	0.9	34 46	137 38	46 209	17 244	14 207	8 201				
MOESHIBA	1 June - 30 June 1939 1 Jan - 30 Jan 1940	60*	1.0	34 47	137 21	52 188	20 224	17 195	11 186				
KAMAGORI	20 July - 18 Sept 1942	60	1.4	34 49	137 14	62 178	26 204	26 186	18 167				
SHINOSHIMA	14 June - 11 Oct 1942	120	1.3	34 41	137 1	60 179	28 204	25 186	18 162				
KATANOHARA	2 Apr - 1 June 1941	60*	1.3	34 47	137 10	60 177	29 210	22 188	19 172				
TAKATAYA	9 Sept - 8 Nov 1941	60*	1.3	34 51	136 56	62 191	23 213	26 182	13 180				
HISHIURA	17 May - 4 Oct 1942	150*	1.4	36 28	137 9	65 179	28 209	25 186	19 167				
YOKKAICHI	1 June - 1 Dec 1936	183	1.3	34 57	136 29	62 180	28 208	23 192	18 168				
TSU Harbor	1 Jan - 30 Oct 1939	30*	1.4	34 43	136 32	59 178	26 187	22 200	16 162				
JINJA Harbor	19 Apr - 10 June 1937	52*	1.2	34 31	136 45	59 185	26 218	21 191	17 171				
HOMOSHIMA	22 Sept - 4 Dec 1941	43*	1.2	34 33	136 59	53 180	23 212	25 190	15 166				
TANABE Bay	16 May - 13 Aug 1944	90	1.1	33 44	135 22	50 172	20 200	22 189					
UNO Harbor	1 June - 30 June 1939 1 Dec - 30 Dec 1939	60*	1.4	34 29	133 58	66 324	19 352	29 233	21 211				
TSURASHIMA	2 Apr - 30 Jan 1942-43	300*	1.8	34 31	133 45	89 335	35 14	33 240	22 221				
OKADA Harbor (Oshima)	21 Mar - 20 Apr 1940	30*	1.0	34 47	139 24	36 146	16 174	24 175	19 155				
YUO Harbor	11 May - 1 June 1934	22	0.6	24 47	141 18	27 203	11 239	16 200	11 178				
WAKAYAMA Harbor	1 Jan - 30 Nov 1939	330*	1.1	34 11	135 11	43 194	21 220	24 191	17 170				
SAGANOSEKI (Shitaura)	20 May - 19 July 1940	60	1.2	33 15	131 53	58 222	23 247	24 199	19 177				
TOKORIGAUCHI	9 Apr - 12 May 1941	30*	1.2	33 8	131 54	54 224	21 249	24 199	20 180				
SAHEKI Bay (Razu)	22 Apr - 21 May 1940	30	1.1	32 59	131 54	48 228	21 232	22 199	14 202				
OSHIMA	15 Apr - 13 June 1941	60*	1.0	32 58	132 4	45 206	19 238	22 197	17 180				
YOBOKARI	15 May - 13 June 1941	30*	1.5	33 23	132 5	73 240	29 275	26 198	20 189				
IYO KUSHI	16 May - 14 June 1941	30*	1.3	33 22	132 3	65 219	26 249	24 183	18 180				
HANABE Harbor	23 Apr - 19 Sept 1940	150*	1.1	32 48	131 56	52 176	23 205	20 192	16 172				
TSUKUMI	20 Oct - 29 Nov 1930	40*	1.2	33 4	131 52	51 221	22 241	26 203	20 175				

* Constant in station is not indicated in the Bulletin of the Hydrographic Department Volume VII (1938).

ENCLOSURE (B), continued

Place	Period of Observation	No. Days	Ao	Latitude deg min	Longitude deg min	M ₂ Hn cm	S ₂ Km deg	Hs cm	Ks deg	K ₁ Hn cm	F ₁ deg	Ho cm	Lo deg
<u>Eastern Part of</u>													
SUMATO Harbor	6 Sept - 21 Nov 1933	75	0.9	34 21	134 21	31 185	17 214	25 208	19 186				
OSAKA Harbor	12 Dec - 9 Feb 1937-38	60	1.0	34 39	135 27	34 210	18 226	28 204	21 182				
HISHIWADA Harbor	6 Sept - 22 Nov 1933	78*	1.0	34 28	132 22	32 210	18 223	28 205	20 180				
AKASHI Harbor	10 Sept - 20 Nov 1933	72	0.8	34 28	135 0	16 246	10 238	28 221	21 184				
SHIMOTSU	27 June - 12 Oct 1943	135*	1.8	34 26	133 49	90 336	33 6	31 237	26 218				
<u>Western Part of NAIKAI</u>													
INNOSHIMA	3 Oct - 1 Nov 1931	30*	2.0	34 16	132 12	105 224	40 356	40 243	22 208				
NAGAHAMA	11 Dec - 25 Dec 1932	15*	1.9	34 13	132 37	101 272	40 313	32 220	20 187				
ETAJIMA	30 Aug - 14 Sept 1930	15*	1.9	34 10	132 28	90 281	46 321	31 214	22 199				
MURAHASHIJIMA (Moronoo)	6 Sept - 30 Oct 1934	55*	1.9	34 6	132 33	94 277	38 303	31 218	23 190				
SAKIOKU	25 Apr - 21 Sept 1939	150*	1.9	34 9	132 32	100 279	39 312	31 215	24 196				
KURE Harbor	1 May - 30 May 1942 1 Jan - 30 Jan 1943 1 Mar - 30 Apr 1943	120*	2.0	34 14	132 33	104 278	41 310	31 204	23 194				
MITSUHAMA Harbor	21 Apr - 19 June 1939	90	1.9	33 52	132 43	103 263	40 291	30 212	22 188				
HIROSHIMA Harbor	1 June - 30 June 1939 1 Dec - 30 Dec 1939	60*	2.0	34 21	132 21	90 283	40 317	22 283	16 151				
AGENOSHO	12 May - 28 Sept 1939	140*	1.8	33 54	132 17	86 258	36 287	30 206	23 183				
NAGOHAMA Harbor	1 Aug - 30 Sept 1939	60	1.8	33 37	132 29	39 257	34 284	34 199	23 182				
SAGANOSEKI (Hamura)	26 June - 25 Aug 1940	60	1.2	33 15	131 53	57 241	24 271	26 205	21 189				
TOKUYAMA Harbor	12 Nov - 16 Jan 1932-33	66	1.8	34 2	131 45	90 253	40 283	30 210	23 185				
UBE Harbor	1 Mar - 31 Jan 1939-40	240*	2.0	33 56	131 15	105 253	47 283	29 209	22 186				
HINODE Harbor	19 Nov - 18 Dec 1938	30*	1.3	33 22	131 32	60 241	24 267	27 205	21 183				
OITA Harbor	1 Mar - 30 Mar 1932 1 July - 30 July 1932 27 Oct - 25 Nov 1932	90*	1.3	33 15	131 36	59 242	24 269	26 208	19 183				
<u>Northwest Coast of HONSHU</u>													
TSUCHISAKI Harbor	2 July - 24 Aug 1939	54	0.2	39 45	140 4	5 96	2 131	5 357	4 323				
FUKAKANA Harbor	28 July - 26 Aug 1939	30	0.2	39 52	139 41	5 81	2 132	6 358	5 324				
KOTCHARI Bay	18 May - 14 Oct 1941	150*	0.2	41 8	140 18	8 95	3 132	4 6	5 332				
HAGI Harbor	31 May - 26 Oct 1936	148	0.5	34 26	131 25	17 315	6 348	8 345	10 315				
EZAKI Harbor	23 May - 26 Oct 1936	156	0.4	34 38	131 39	12 332	6 348	8 345	10 315				
HAMADA Harbor	15 May - 17 Sept 1936	125	0.2	34 54	132 4	8 350	4 40	7 0	8 326				
ONSENITSU Harbor	24 June - 4 Sept 1935	72*	0.3	35 6	132 21	7 2	3 13	7 3	8 333				
ETOMO Harbor	17 Apr - 15 Aug 1935	120*	0.2	35 31	132 59	6 38	2 52	5 344	4 314				
SAKAI Harbor	25 Apr - 24 June 1935	60	0.1	35 33	133 14	4 69	1 81	4 1	4 330				
KAIZURU Harbor	31 July - 24 Nov 1939	116	0.2	35 27	135 19	7 69	3 84	5 349	5 311				
TAKAHAMA Harbor	1 Aug - 29 Oct 1943	90*	0.2	35 29	135 35	7 74	3 91	5 349	5 311				
ICHINOHIYANURA	19 Apr - 15 Sept 1934	150*	0.2	36 56	136 46	6 75	2 102	6 348	6 317				
WAJIMA	20 Apr - 16 Sept 1934	149	0.2	37 24	136 54	6 79	2 104	6 347	6 321				
NANAO Bay	18 Apr - 13 Sept 1931	148	0.2	37 24	136 57	7 81	3 110	5 351	6 320				
FUSHIKI Harbor	25 May - 24 June 1945	120	0.2	36 48	137 4	6 81	2 113	6 348	5 321				
SAKATA Harbor	16 May - 24 June 1945	40*	0.2	38 55	139 49	6 86	2 131	6 353	6 325				

* Constant in station is not indicated in the Bulletin of the Hydrographic Department Volume VII (1939)

ENCLOSURE (B), continued

Place	Period of Observation	No. Days	Ao	Latitude		Longitude		M ₂		S ₂		K ₁		O	
				deg	min	deg	min	Hm cm	Km deg	Hs cm	Ks deg	H' cm	K' deg	H _o cm	K _o deg
<u>North Coast of HONSHU</u>															
HOROZAKI	9 May - 6 Oct 1941	150*	0.3	41	13	140	33	16	103	7	139	3	168	2	172
OMA	8 Aug - 6 Sept 1941	30	0.5	41	38	140	55	21	105	10	139	9	154	7	145
<u>East Coast of HOKKAIDO</u>															
NEJURA Harbor	18 Apr - 14 Sept 1935	150	0.9	48	20	145	35	31	106	14	150	23	173	18	145
<u>South Coast of HOKKAIDO</u>															
OCHIISHI	24 Apr - 22 June 1935	60	0.8	43	11	145	31	30	108	13	151	20	165	21	164
AKKESHI Bay	13 Aug - 11 Sept 1932	30	0.8	43	2	144	6	27	123	12	161	22	172	16	161
AKKESHI Bay	15 Apr - 11 Sept 1932	150	0.8	43	2	144	51	31	105	13	149	24	162	18	150
KUSHIRO Harbor	16 May - 13 Sept 1932	121	0.8	42	58	144	25	31	105	13	143	23	167	21	142
MURORAN Harbor	1 July - 23 Sept 1943	90	1.0	42	21	140	59	34	104	16	142	24	164	20	145
HAKODATE Harbor	24 June - 29 Oct 1942	128	0.6	41	47	140	42	23	112	9	148	13	173	10	163
TOI	28 May - 26 July 1938	60*	0.9	41	43	141	0	29	114	13	153	24	174	20	158
KOBUJ	25 July - 22 Oct 1942	90*	0.9	41	46	141	8	31	107	13	141	24	172	19	153
<u>West Coast of HOKKAIDO</u>															
MOTSUMAE	5 June - 2 Oct 1941	120*	0.2	41	25	140	5	8	127	3	161	6	279	6	263
<u>East Coast of KYUSHU</u>															
SAKITA Bay	26 Mar - 15 Apr 1940	21*	1.1	31	25	131	15	49	188	23	214	18	207	15	173
<u>South Coast of KYUSHU</u>															
YAMAKATA Harbor	21 Apr - 18 Aug 1938	120	1.5	31	12	130	38	77	205	32	234	25	199	21	182
FURUE Harbor	23 Apr - 9 Aug 1938	90*	1.6	31	24	130	46	78	205	33	235	26	197	22	182
<u>West Coast of KYUSHU</u>															
IOSIMA (Faunatu)	14 Apr - 30 June 1933	78*	1.6	32	42	129	47	84	229	35	263	25	204	20	189
OMODAKA Bay	25 Apr - 21 Oct 1940	180*	1.8	33	4	129	41	88	238	38	266	26	206	22	194
TIANOURA	25 Nov - 26 Dec 1941	30*	1.6	33	5	129	45	86	233	32	260	23	224	18	154
KODAIN	29 Nov - 28 Dec 1941	30*	1.6	33	4	129	45	88	244	29	227	30	187	16	190
FURUSATO	27 Nov - 26 Oct 1941	30*	1.3	33	4	129	46	69	237	25	261	18	229	13	150
KUSUDOMARI	24 Apr - 20 Oct 1940	180	1.6	33	13	129	35	89	240	41	263	24	214	19	195
SASEBO Harbor	21 Apr - 16 Nov 1940	210	1.6	33	10	129	43	87	242	39	271	25	211	18	196
OTUHARA Harbor	2 Mar - 31 Mar 1944	30	1.0	34	12	129	18	57	255	27	284	9	206	6	210
MIZUNOURA	16 Apr - 30 June 1933	76	1.6	32	45	129	52	87	229	34	262	25	203	21	189

ENCLOSURE (B), continued

Place	Period of Observation	No. Days	Ao	Latitude		Longitude		M2		S2		K1		O		
				deg	min	deg	min	Hm	Km	Hs	Ks	H'	K'	Ho	Lo	
Southwest Islands																
OKINAWA	Nakagusuku Bay	26 Apr - 24 July 1935	90	1.2	26	11	127	47	59	185	22	213	22	202	18	186
	Naha Harbor	1 May - 29 July 1935	90	1.2	26	12	127	40	57	199	24	224	20	24	16	189
	Ishigoki	18 Apr - 16 July 1934	60	1.0	24	20	124	10	44	186	18	223	18	221	17	201
MARIANAS	Pagan	6 Sept - 5 Oct 1932	30	0.5	18	9	145	46	18	216	6	229	18	209	11	188
	Saipan (Shicyosanbashi)	1 Nov - 28 Feb 1940-41	120	0.5	15	12	145	43	18	221	7	256	13	217	10	175
	Saipan Harbor	27 Nov - 25 Mar 1940-41	149	0.5	15	13	145	44	19	225	6	252	16	210	11	186
	Tinian	28 Nov - 27 Mar 1940-41	120*	0.5	14	58	145	37	16	228	5	252	17	212	11	186
	Guam (Port Apra)	15 Mar - 5 June 1944	83*	0.5	13	28	144	41	21	222	7	252	15	214	5	214
MASYARU	Mire	26 June - 22 Dec 1941	150	1.0	6	14	171	48	57	115	31	132	7	251	6	215
	Wottie	22 June - 21 July 1935	30	0.9	9	28	170	14	50	108	26	131	7	234	5	211
	Wozzye Orimen	18 Sept - 15 Oct 1940	60*	0.9	9	33	170	9	48	144	27	145	9	256	6	228
	Maroerappu	26 July - 24 Aug 1935	30*	0.9	8	54	170	51	52	110	27	126	8	237	6	209
	Rikieppu	18 May - 16 July 1935	30*	1.0	10	2	169	1	45	103	27	133	9	239	5	203
	Yaruto (Zyaboru)	5 Sept - 4 Oct 1935	30*	1.0	5	55	169	39	56	114	31	132	10	238	6	209
	Yaruto	8 June - 25 Oct 1941	150*	1.0	5	58	169	39	57	116	31	131	9	243	6	205
	Huezzerin	15 July - 7 Oct 1940	85	0.9	5	44	167	44	48	105	25	127	9	235	7	209
	Nimuru	14 May - 9 Dec 1940	180	0.9	9	24	167	29	49	133	25	153	10	250	6	221
	Enemato	16 July - 30 July 1940	15*	0.9	9	7	167	19	45	131	27	150	10	249	6	226
	Airukku	27 July - 10 Aug 1932	16*	0.9	10	13	169	59	47	102	30	136	7	237	4	213
	Eonibize	12 June - 19 Oct 1941	139*	0.9	8	42	171	14	50	111	28	130	8	243	3	212
	Antsu	24 Aug - 1 Oct 1941	90*	0.8	6	46	158	0	28	106	20	120	17	234	10	203
KARORIN	Ponape	21 Aug - 17 Jan 1941	150*	0.8	7	0	158	14	28	85	20	98	17	225	10	197
	Natsushima (Torakku Harbor)	2 Jan - 31 Jan 1943 1 Mar - 30 Mar 1943 1 May - 30 May 1943 1 Apr - 30 Apr 1944	120*	0.5	7	22	151	54	7	78	11	94	19	216	12	196
	Harushima	16 July - 15 Mar 1941-42	240*	0.5	7	27	151	51	7	70	10	92	19	211	12	194
	Kinyo	13 July - 12 Aug 1930	30*	0.5	7	20	151	34	8	100	10	91	17	213	11	197
	Fuyushima	26 Aug - 25 Sept 1931	30*	0.5	7	18	151	53	7	75	11	84	18	213	12	190
	Mereyon	9 June - 1 July 1933	22*	0.6	7	22	143	55	23	229	8	241	20	214	13	199
	Kurru	15 June - 6 Aug 1934	52*	0.9	8	18	137	29	44	211	16	238	18	213	12	192
	Parao Harbor	1 May - 22 June 1938	60*	1.0	7	45	134	38	50	202	22	233	18	215	14	198
	Urukutaburu	5 June - 5 July 1930	30*	1.0	7	15	134	27	53	199	17	231	19	213	15	205

* Constant in station is not indicated in the Bulletin of the Hydrographic Department Volume VII (1938)

ENCLOSURE (B), continued

Place	TOKYO BANK (YOKOSUKA Harbor)		TOKYO BANK (TSUKIJI)		WEST COAST KYUSHU (ITSUKARA Harbor)		SHINONOSEKI STRAIT (HESAKI - AOHAMA)		KARORIN ISLAND (TORAKKU Harbor)	
Latitude	35°	17'N	35°	39.6'N	34°	11.7'N	33°	56.9'N	7°	22.4'N
Longitude	139°	40'E	139°	46.3'E	129°	17.6'E	131°	1.2'E	151°	54.0'E
Period	Jan 1936 - Jan 1937		Jan 1937 - Jan 1938		Apr 1943 - Apr 1944		Dec 1935 - Jan 1937		Dec 1942 - Dec 1943	
Tide Gauge	Ales Type		Ales Type		Pressure Type		William Thomson Type		Ales Type	
Designation	H cm	K deg	H cm	K deg	H cm	K deg	H cm	K deg	H cm	K deg
Sa	6.6	136.5	12.5	146.8	11.4	154.1	18.1	160.4	2.2	285.6
Saa	1.6	212.8	2.9	143.3	1.8	262.5	7.7	92.6	0.5	309.0
Mm	0.8	38.4	1.9	213.2	0.6	95.8	1.9	318.1	0.5	176.6
Mf	1.4	139.9	0.7	125.3	1.2	129.9	0.8	64.5	1.5	57.9
MSf	1.1	352.4	2.1	353.0	17.0	146.5	1.6	368.0	0.3	131.6
Ki	24.4	178.5	25.0	181.6	8.5	205.1	28.6	207.9	18.6	230.6
Oi	19.5	160.9	19.5	165.4	5.6	200.8	21.2	187.6	10.1	169.0
Pi	8.0	171.7	7.3	177.1	2.7	202.2	8.0	204.6	0.7	200.6
Qi	3.9	151.2	3.7	164.2	12.6	177.7	4.0	164.5	1.7	350.6
Ji	1.4	19.2	1.3	207.2	0.4	219.3	1.5	241.6	0.8	90.5
Mi	1.4	321.5	0.4	354.1	0.3	183.1			0.7	24.0
Si	0.3	256.2	1.1	264.5	0.7	74.1	0.4	26.9	0.3	68.5
M2	43.0	154.6	52.1	161.5	56.3	254.2	106.0	253.6	7.1	55.4
S2	20.8	183.3	24.9	191.2	26.6	281.4	45.9	289.3	10.3	92.2
N2	6.0	147.6	7.4	156.6	10.3	251.6	16.8	235.8	1.5	274.4
K2	5.7	180.3	6.6	184.1	7.5	275.5	13.7	283.9	3.1	110.9
V2	1.9	131.2	1.6	123.3	2.5	208.6	8.8	204.6	0.3	6.8
U2	1.0	170.1	1.2	193.9	2.8	210.3	3.2	230.6	0.5	59.4
I2	1.4	151.4	1.0	152.1	2.0	211.9	3.3	309.0	0.4	179.8
T2	1.1	155.5	2.4	166.7	1.9	282.6	2.2	241.9	0.2	87.8
R2	0.5	58.3	0.6	67.3	0.8	207.3	1.5	170.1	0.4	183.3
M3	0.9	149.3	1.0	179.7	1.2	340.7	0.7	295.3	0.4	93.9
2SM2	0.9	24.2	1.4	15.1	0.9	262.3	2.1	202.2	0.3	323.7
M4	1.0	97.5	1.2	142.0	1.2	188.5	1.6	4.5	0.2	157.7
MS4	2.2	130.7	3.1	149.5	3.0	224.0	2.0	226.8	0.2	55.2
S4	0.2	82.1	0.3	307.5	0.2	257.0	0.5	62.8	0.0	277.6
M6	0.1	118.5	0.2	177.9	0.5	216.1	0.5	66.1	0.1	339.5
S6	0.1	298.0	0.2	208.6	0.1	190.7	0.1	358.7		
Ao (m)	1.1		1.2		1.0		2.1		0.5	

ENCLOSURE (B), continued

ANNEX III

CATALOGUE OF CLASSIFIED AIR NAVIGATION CHARTS AND BOOKS

(TRANSLATED)

HI Confidential
 GUNGOKUHI Secret
 GUNKI Top Secret

(Numerical designation is SUIRO HI or SUIROBU HI. All Charts are indicated Japanese text to be full sheet size).

HI (Confidential) Aeronautical Charts (Unregistered)

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
201	Approaches to TOKYO KAIWAN	Oct. 1938
202	TOKYO KAIWAN to OGASAWARA GUNTO	July 1940
203	E. MANCHOUKUO to OGASAWARA GUNTO	Mar. 1941
204	MANCHOUKUO	Jan. 1940
205	TAIWAN to PALAU Is.	Mar. 1939
208	S. CHINA	Jan. 1941
209	N. SOUTH CHINA SEA	Dec. 1940
210	S. SOUTH CHINA SEA	Aug. 1941
212	HANKOW to CHUNGKING	Oct. 1939
214	HANKOW to YUNNAN	Dec. 1939
215	HANKOW to LAN-CHOU	Nov. 1939
219	KWANTUNG to YUNNAN	May 1940
221	CENTRAL KARAFUTO	Dec. 1937
222	Approaches to MAMIYA KAIKYO (Straits of TARTARY)	Dec. 1937
223	Approaches to DATAN KAIWAN (Gulf of TARTARY)	Dec. 1937
229	DAIREN to TSINGTAO	Aug. 1940
230	TSINGTAO to WOOSUNG	July 1940
231	LIAOTUNG Gulf	Mar. 1938
232	PO-HAI (Gulf of CHIKLI)	Mar. 1938
233	Approaches to TSINGTAO	Mar. 1938
234	HAI-CHOU (TUNG-HAI) to NANKING	Mar. 1939
235	SHANGHAI and Approaches to NANKING	July 1938

ENCLOSURE (B), continued

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
236	K'ANG-CHOU to FU-CHOU	Feb. 1939
237	FU-CHOU to SHAN--T'OU	Sept. 1939
238	HSIA-MEN to HONGKONG	June 1938
239	HONGKONG to HAINAN Strait	Sept. 1938
240	Approaches to HAINAN Is.	Sept. 1938
241	KARAFUTO and Approaches	June 1938
243	FENG-YUAN to CH'ING-CHIN	Aug. 1939
244	Sea of JAPAN	Jan. 1938
247	TAIWAN to HAINAN Is.	Dec. 1939
249	CHINGKING to LAN-CHOU and TA-LI	Sept. 1939
1001	HAINAN Is. to BANGKOK	June 1940
1002	BANGKOK to SINGAPORE	May 1940
1011	LU-SHUN to HARBIN	Oct. 1941
1012	HARBIN to MAN-CHOU-LI	May 1940
1025	PARAMUSHIRO Is. to AVACHINSKAYA Bay	July 1940
1026	SHASUKOTAN Is. to SHIMUSHU Is.	July 1940
1027	SHIMUSHIRU Is. to SHASUKOTAN Is.	May 1940
1028	ETOROFU Is. to SHIMUSHIRU Is.	Aug. 1940
1029	NEMURO HANTO to ETOROFU Is.	June 1940
1030	MUTSU KAIWAN to NEMURO HANTO	July 1940
1031	OTARU KO to OTOMARI KO	Aug. 1940
1032	OTOMARI KO to KITA-SHIRETOKO MISAKI	June 1940
1045	KAGOSHIMA KAIWAN to SAISHU Is.	July 1940
1046	SASEBO KO to S. Coast of CHOSEN	July 1940
1051	OGASAWARA GUNTO	June 1940
1061	CHICHI JIMA to SAIPAN	May 1940
1062	SAIPAN to PALAU Is.	June 1940
1063	SAIPAN to PONAPE	May 1940
1064	PONAPE to MARSHALL Is.	June 1940

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ENCLOSURE (B), continued

<u>BT No.</u>	<u>Title</u>	<u>Published</u>
1065	PALAU Is. to PALAWAN	Jan. 1942
1066	MINDANAO to TIMOR	Feb. 1942
1067	Approaches to JAVA Sea	Sept. 1941
1068	PALAU Is. to TANINBAR Is.	Mar. 1942
1069	E. NEW GUINEA	Sept. 1942
1070	TIMOR to W. Part of N. AUSTRALIA	Sept. 1942
1071	NEW BRITAIN to SANTA CRUZ Is.	Mar. 1942
1072	NEW GUINEA to E. Part of N. AUSTRALIA	Sept. 1942
1073	NEW GUINEA to TOWNSVILLE	May 1942
1091	SOUTH CHINA SEA	Sept. 1941
1092	E. EAST INDIES	May 1941
1093	E. CAROLINES to NEW GUINEA	Sept. 1942
1094	SINGAPORE to COLOMBO	Sept. 1941
1095	JAVA to FREMANTLE	Mar. 1942
1096	ARIANA Is. to PHILIPPINE Is.	Nov. 1944
1097	OGASAWARA GUNTO to MARSHALL Is.	Aug. 1941
1098	MARSHALL Is. to MIDWAY Is.	April 1941
1099	MARSHALL Is. to CHRISTMAS Is.	Aug. 1941
1100	MIDWAY Is. to HAWAIIAN Is. and CHRISTMAS Is.	Mar. 1941
1101	E. CAROLINES to NEW CALEDONIA	Feb. 1942
1102	MARSHALL Is. to FIJI Is.	Jan. 1942
1103	NEW GUINEA to BRISBANE	Sept. 1942
1104	W. NEW GUINEA to CENTRAL AUSTRALIA	Sept. 1942
1105	PHOENIX Is. to FIJI Is.	Dec. 1941
1106	CHRISTMAS Is. to TUAMOTU ARCHIPELAGO	July 1941
1107	HANOI to COLOMBO	Mar. 1942
5051	TOKYO KAIWAN to SHIONO MISAKI	Nov. 1944
5052	ISENO UMI to BUNGO SUIDO	Nov. 1944

ENCLOSURE (B), continued

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
5053	TOKYO KAIWAN to SUMISU SHIMA	Nov. 1944
5055	KYUSHU Coast	Nov. 1944
5056	TOKYO KAIWAN to ISHINOMAKI WAN	Nov. 1944
5057	ISHINOMAKI WAN to MUTSU KAIWAN	Nov. 1944
5059	NIIGATA KO to MUTSU KAIWAN	Nov. 1944
5060	MAIZURU KO to NIIGATA KO	Nov. 1944
5062	TSUSHIMA KAIKYO	Nov. 1944
5063	SUMISU SHIMA to CHICHI JIMA	Nov. 1944
5065	SAGOSHIMA KAIWAN to AMAMI GUNTO	Nov. 1944
5066	AMAMI GUNTO to OKINAWA GUNTO	Nov. 1944
5068	TAIWAN Coast	Nov. 1944
5076	CHINKAI WAN to GENZAN KO	Nov. 1944
5079	W. Coast of CHOSEN	Nov. 1944
5080	N. YELLOW SEA	Nov. 1944
5081	Central CHOSEN	Nov. 1944
5082	MUTSU KAIWAN to TEURE SHIMA	Nov. 1944
5180	TAKAO to N. LUZON	Nov. 1944
5191	TOKYO KAIWAN to HOKKAIDO	Nov. 1944
5192	TOKYO KAIWAN to TSUSHIMA KAIKYO	Nov. 1944
5193	CHOSEN	Nov. 1944
5194	YING-K'OU to SHANGHAI	Nov. 1944
5199	TAIWAN to LUZON	Nov. 1944
5203	KYUSHU to TAIWAN	Nov. 1944
5252	TRUK Is. to RABAU	Oct. 1938
5258	MIDWAY Is. to FRENCH FRIGATE SHOAL	May 1942
5259	FRENCH FRIGATE SHOAL to HAWAII	May 1942
5262	RANGOON to CALCUTTA	June 1944
5271	KING Inlet to SHARK Bay	April 1944

ENCLOSURE (B), continued

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
5276	SOLOMON Is. to NEW CALEDONIA	June 1942
5277	NEW CALEDONIA to FIJI Is.	July 1942
5278	FIJI Is. to SAMOAN Is.	May 1943
5279	S. MARSHALL Is. to GILBERT Is.	May 1943
5281	PHOENIX Is. to SAMOAN Is.	April 1943
5282	GILBERT Is. to PHOENIX Is.	Aug. 1943
5283	CANTON Is. to CHRISTMAS Is.	June 1944
5284	CHRISTMAS Is. to MANIHIKI Is.	June 1944
5301	HOKKAIDO and KARAFUTO	May 1942
5401	HOKKAIDO to OGASAWARA GUNTO	Sept. 1944
5403	BISMARCK ARCHIPELAGO to NEW CALEDONIA	May 1943
5404	SOLOMON Is. to SAMOAN Is.	Mar. 1943
5405	NEW GUINEA and N. AUSTRALIA	April 1943
5410	HAWAIIAN Is.	July 1942
5416	BATAVIA to COCOS Is.	April 1942
5417	COLOMBO to CAPO GUARDAFUI	May 1942
5420	NEW CALEDONIA to SYDNEY	June 1942
5421	NEW CALEDONIA to NEW ZEALAND	May 1942
5422	SYDNEY to TASMANIA and ADELAIDE	Aug. 1942
5423	FREMANTLE to ADELAIDE	Aug. 1942
5426	CHAGOS ARCHIPELAGO to MADAGASCAR	Sept. 1942
5448	CHISHIMA RETTO to W. ALEUTIAN Chain	June 1943
5523	SOLOMON Is. to CHRISTMAS Is.	July 1944
5524	TOKYO to MIDWAY Is.	June 1943
5525	ALEUTIAN Chain to HAWAIIAN Is.	Mar. 1943
5528	HAWAII to TUAMOTU ARCHIPELAGO	April 1943
Miscellaneous Confidential Aeronautical Charts (Unregistered)		
271	Overall Chart of Airfields in the Homeland	Jan. 1938
301	E. CHINA (Aeronautical reference chart)	Sept. 1937

ENCLOSURE (B), continued

Provisional Confidential Charts (Unregistered)

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
601	SOVIETSKAYA Harbor to Approaches to Khabarovsk	Aug. 1938
602	PRITONYAK Harbor to Approaches to Iman	Aug. 1938
603	ORIGI Bay to Approaches to Voroshilov	Aug. 1938
604	Approaches to Vladivostok	Aug. 1938
605	Vladivostok to Approaches to Khabarovsk	Aug. 1938
606	E. Amur River	Nov. 1939
607	Central Amur River	March 1940
608	W. Amur River	Oct. 1939
610	Man-chou-li to Irkutsk	Sept. 1939
615	S. Kamchatka	Oct. 1940
616	NE. Kamchatka	April 1942
617	Approaches to NW. Kamchatka	April 1942
651	Nanking to Hankow	Dec. 1938
653	Shanghai to Hong Kong	Dec. 1938
654	Hankow to Hong Kong	Nov. 1938
656	Chungking (Pa-hsien) to Yunnan (K'un-ming)	Oct. 1938
659	Hankow to Peking	April 1939
660	Shanghai to Hsi-an (Chang-an)	June 1939
661	Hsi-an (Chang-an) to Su-chou (Chiu-ch'uan)	June 1939
662	Tsingtao to Yu-lin	June 1939
665	Bangkok to Mandalay	June 1939
5805	Niihau to Hawaii	May 1942
5831	Tokyo to Amami Oshima	Feb. 1945
5862	Sea of Okhotsk	April 1942
5863	Kamchatka	April 1942
5864	Komandorski Is. to W. Aleutian Chain	March 1942
5866	E. Aleutian Chain	May 1942
5376	Tokyo to Takao	Feb. 1945

ENCLOSURE (B), continued

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
5885	SYDNEY to NEW ZEALAND	Feb. 1942
5886	ARABIAN Sea	May 1942
5887	MOMBASSA to MADAGASCAR	Sept. 1942
5888	MADAGASCAR to CAPETOWN	Sept. 1942
5891	HOKKAIDO to the ALEUTIAN Chain	May 1942
5892	BERING Sea	July 1942
5893	ALEUTIAN Chain to VANCOUVER	July 1942

GUNKI (Top Secret) Aeronautical Publications (Unregistered)

<u>GUNKI No.</u>	<u>Title</u>	<u>Published</u>
1601	Index of Classified Aeronautical Charts and Publications (up to 1 January 1945).	Jan. 1945
9000	Naval Air Bases Data, #2. Covers KARAFUTO and CHISHIMA RETTO.	May 1942
9001	Naval Air Bases Data, #3. Covers NAMPO SHOTO, NANYO GUNTO (Japanese Mandates)	Nov. 1942
9002	Naval Air Bases Data, #4. Covers CHINA, KWANTUNG Leased Territory.	Aug. 1943

(Registered)

1701	Views and Photographs for Air Navigation #1. (Approaches to CHISHIMA RETTO). Includes air and ground photos from S. KAMCHATKA in the north to S. coast of HOKKAIDO in the South. (Data up to March 1937).	Oct. 1937
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GUNGOKUHI (Secret) Aeronautical Publications (Unregistered)

<u>GUNGOKUHI No.</u>	<u>Title</u>	<u>Published</u>
9100	Naval Air Bases Data #1. Covers HOKKAIDO, HONSHU, SHIKOKU, KYUSHU, CHOSEN, TAIWAN, NAMPO SHOTO, NANSEI SHOTO.	March 1942
9111	Army Air Bases Data #1. Covers HONSHU and KYUSHU.	Oct. 1944
9105	Airways Data #1 (reference tables).	July 1944

HI (Confidential) Aeronautical Publications (Unregistered)

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
325	Airways Data #5. (Emergency landing grounds in KINKI area).	April 1935
325.2	Airways Data #5, Part 2. (Airfields and emergency landing grounds in KINKI area).	Sept. 1940

ENCLOSURE (B), continued

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
326	Airways Data #6. (Emergency landing grounds in CHUGOKU and SHIKOKU areas).	Nov. 1935
327	Airways Data #7. (Airfields and ELG in KYUSHU).	Aug. 1936
328	Airways Data #8. (Airfields and ELC in OU area).	Dec. 1936
329	Airways Data #9. (Airfields and ELG in CHOSEN).	Feb. 1938
330	Airways Data #10. (Airfields and ELG in TAIWAN).	April 1940
331	Airways Data #11. (Airfields and ELG in HOKKAIDO).	Mar. 1941
9303	Airways Data #3. (Civilian airfields and ELG in KANTO area (not including strategic base areas)).	Aug. 1943
9304	Airways Data #4. (Airfields and ELG in CHUBU area).	June 1944
9309	Airways Data #9. (Airfields and ELG in CHOSEN).	Sept. 1943

(Registered)

<u>HI No.</u>	<u>Title</u>	<u>Published</u>
351.1	Celestial Navigation Tables lat. 0°-10°	Sept. 1941
351.2	Celestial Navigation Tables lat. 10°-20°	Aug. 1941
351.3	Celestial Navigation Tables lat. 20°-30°	July 1941
351.4	Celestial Navigation Tables lat. 30°-40°	May 1941
351.5	Celestial Navigation Tables lat. 40°-50°	Dec. 1941
351.6	Celestial Navigation Tables lat. 50°-60°	Feb. 1942
351.7	Celestial Navigation Tables lat. 60°-70°	Nov. 1942
9400	MALAYA Air Pilot	Dec. 1942
9401	NETHERLANDS EAST INDIES Air Pilot	April 1942
9402	FRENCH INDO CHINA Air Pilot	March 1943
9403	THAILAND Air Pilot	Sept. 1942
9404	BURMA Air Pilot	Aug. 1942
9405	INDIA Air Pilot	June 1943
9406	AUSTRALIA Air Pilot	July 1943
9407	ALASKA Air Pilot	July 1944
9582	Altitude and Azimuth Tables for 1945 (for Sept. & Oct.)	Aug. 1945
9583	Altitude and Azimuth Tables for 1945 (for Sept. & Oct.)	Aug. 1945

RESTRICTED

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ENCLOSURE (C)

SUPPLEMENTAL REPLY TO QUESTIONNAIRE, ADDITIONAL DESCRIPTION OF HYDROGRAPHIC DEPARTMENT

1. The Hydrographic Department's original size in December 1871 was: (to follow Item 1, A-C)*

A. Number of personnel:

Commander	1	Total 24
Lieutenant Commander	1	
Employees	21	

- B. Equipment: In those days, we had only a few instruments, namely, two theodolites, three chronometers, two sextants, a deckwatch, and a primitive sounding chart printing machine.

2. Organization during the war was as follows: (to follow Item 3, B-1-a)*

Hydrographic Department	{	Executive Division	{	The 1st Section (Compilation)
		Accounts Division		The 2nd Section (Printing)
		The 1st Division		The 3rd Section (Surveying)
		The 2nd Division		The 4th Section (Oceanography)
				The 5th Section (Astronomy)
		Hydrographers' Training School		

Details of the members are shown in the previous statement.

*All parenthetical notations refer to items in original reply dated 26 November 1945.

3. Table for stations of terrestrial magnetism. (to follow Item 5, A-a)

Founded in	1926	1931	1936	1938	1940	1942	1943	1945
Name	JINSEN	1931	1936	1938	1940	1942	1943	1945
	TAIHOKU	1931	1936	1938	1940	1942	1943	1945
	OTOMARI	1931	1936	1938	1940	1942	1943	
	PALAU	1931	1936	1938	1940	1942	1943	
				YALUT	1940	1942	1943	
						MARCUS	1943	
							MATSUWA	
							KATSUURA	
Total	4	4	4	5	5	6	7	4

ENCLOSURE (C)

SUPPLEMENTAL REPLY TO QUESTIONNAIRE, ADDITIONAL
DESCRIPTION OF HYDROGRAPHIC DEPARTMENT

1. The Hydrographic Department's original size in December 1871 was: (to follow Item 1, A-C)*

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2. Organization during the war was as follows: (to follow Item 3, B-1-a)*

Hydrographic Department	{	Executive Division	
		Accounts Division	
		The 1st Division	{ The 1st Section (Compilation)
			{ The 2nd Section (Printing)
		The 2nd Division	{ The 3rd Section (Surveying)
			{ The 4th Section (Oceanography)
			{ The 5th Section (Astronomy)
		Hydrographers' Training School	

Details of the members are shown in the previous statement.

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3. Table for stations of terrestrial magnetism. (to follow Item 5, A-a)

Founded in	1926	1931	1936	1938	1940	1942	1943	1945
Name	JINSEN	1931	1936	1938	1940	1942	1943	1945
	TAIHOKU	1931	1936	1938	1940	1942	1943	1945
	OTOMARI	1931	1936	1938	1940	1942	1943	1945
	PALAU	1931	1936	1938	1940	1942	1943	
				YALUT	1940	1942	1943	
						MARCUS	1943	
							MATSUWA	
								KATSUURA
Total	4	4	4	5	5	6	7	4

ENCLOSURE (C), continued

Remarks:

- a. Observation in JINSEN, TAIHOKU, OTOMARI and PALAU stations are entrusted to each principal meteorological observatory.
- b. Observation in MARCUS Is. and MATSUWA Is. are entrusted to each Naval Meteorological Observatory.
- c. Only the observation in KATSUURA was begun by ourselves.
- d. Position of each station is as follows:

Stations	Address	Position	
		Lat. (N)	Long. (E)
JINSEN	c/o Government general meteorological observatory of Korea at YAMANA Cho, Jinsen, Korea.	37°29'9"	126°37'6"
TAIHOKU	c/o Taihoku airdrome, TAIHOKU City, Formosa	25°02'3"	121°30'8"
OTOMARI	c/o Otomari meteorological observatory, OTOMARI MACHI, Saghalien	46°38'8"	142°46'3"
PALAU	c/o Palau depot of meteorological observatory in the South Sea Island Government Office, Coral Is. Palau Is.	7°20'0"	134°28'8"
YALUT	c/o Yalut depot of meteorological observatory in the South Sea Island Government Office, Yalut Is.	5°55'0"	169°39'0"
MARCUS Is.	c/o Marcus Is. meteorological observatory.	24°17'4"	153°58'7"
MATSUWA Is.	c/o MATSUWA Is. meteorological observatory CHISHIMA Is.	48°03'6"	153°15'8"
KATSUURA	c/o KATSUURA MACHI, HIGASHI MURO GUN, WAKAYAMA Prefecture.	33°37'8"	135°56'9"

ENCLOSURE (C), continued

4. Table of Tidal Stations

Founded in	1926	1931	1936	1938	1940	1942	1943	1945	Position	
									Lat.	Long.
Name	Tokyo (A)	1931	1936	1938	1940	1942	1943	1945	34°40'N	139°46'E
					OTOMARI	1942	1943	1945	46°39'N	142°45'E
					JINSEN	1942	1943	1945	37°25'N	126°37'E
					*Hailow	1942	1943	1945	20°02'N	110°17'E
					*Samah	TOCOTO (B)	1943	1945	34°40'N	139°46'E
					*Chinglan	YOKOSUKA	1943	1945	35°17'N	139°40'E
						KURE	1943	1945	34°12'N	132°28'E
						NAHA	1943	1945	26°12'N	127°40'E
						Truk (C)	1943	TSURA-SHIMA	34°32'N	133°43'E
						Marcus Is. (C)	OMINATO		41°15'N	141°09'E
						Chinglan	SASEBO	1945	33°10'N	129°43'E
							SAEKI	1945	32°59'N	131°54'E
							ITSUHARA	1945	34°12'N	129°17'E
								ETAJIMA	34°13'N	132°28'E
	Total	1	1	1	6	11	13	14		

*Samah (18°16'N, 109°30'E), Chinglan (19°33'N, 110°47'E) and Hailow are in Kainan Tao.

(A) is in the site of Hydrographic Department and (B) is in the site of Naval Paymasters' College at TSUKUJIL (C) Truk (7°22'N, 151°53'E), Marcus Is. (24°16'N, 153°58'E)

ENCLOSURE (C), continued

5. Full Statement of the Expenditure (¥) (to clarify the table in Item 4)

ORDINARY OUTLAY

Fiscal Year	<u>1925</u>	<u>1930</u>	<u>1935</u>	<u>1940</u>	<u>1945</u>
Navy Office Affairs	197.000			291.460	
War Expenditure	630,465.440	661,183.266	700,135.510	2,360,715.220	
Salaries	202,359.040	200,049.010	196,590.010	280,372.040	
Offices	8,015.050	6,675.860	4,732.700	13,277.120	
Incidental	3,129.520	4,782.660	6,974.170	15,743.210	
Repairs	1,369.850	6,212.820	582.710	94,441.730	
Maneuvers	911.000	1,051.830	2,798.190	15,687.860	
Ship-repairs	191.500	179.500	222.350	66.800	
Hydrographics	413,747.080	440,081.956	485,810.530	1,933,834.730	
Surveying	143,574.370	151,545.130	183,746.250	1,414,946.480	
Publication	245,380.950	257,765.936	271,928.980	437,889.870	
Miscellany	24,791.760	30,770.890	30,135.300	80,998.380	
Training	742.400	2,149.630	2,423.220	7,291.730	
The others		680.000	587.500	4,686.000	
Total Ordinary Expenditure	630,662.440	661,863.266	700,723.010	2,365,692.680	

ENCLOSURE (C), continued

5a. Full Statement of the Expenditure (¥) (to clarify the table in Item 4)

EXTRAORDINARY OUTLAY

Fiscal Year	1925	1930	1935	1940	1945
Building		15,000.000			
Affairs				9,207.500	
Facilities for air corps			124.090		
Civil production	101,000.000	100,020.000	127,929.000	172,356.000	
Researches	6,919.290	167.600	417.450		
Chemical researches	165.300	167.600	417.450		
Air navigation researches	6,753.990				
Small maneuvers	12,230.880				
Surveying	85,000.000	83,547.000			
Restoration of the damage by great earthquake	204,690.000	145,569.280			
Special grant for retirement	97,000				
Preservation of MIKASA	87,000				
Unsettled affairs	8,300.000				
Special war outlay	8,052.000				
Dispatches to ships				1,344.000	
Outlay for China Incident		933.300			
Outlay for Manchuria Incident			79,000.570		
Great maneuvers		16,311.810	4,402.190		
Productions of Meteorological Publication			169,665.640	47,343.000	
Extraordinary Guards			443.350		
Total of Extra-ordinaries	418,084.470	348,048.990	381,982.290	230,250.500	
Total of Ordinaries and Extra-ordinaries	1,048,746.910	1,009,912.256	1,082,705.300	2,595,943.180	

ENCLOSURE (C), continued

5b. Full Statement of the Expenditure (¥) (to clarify the table in Item 4)

SPECIAL WAR EXPENDITURE

Fiscal Year	1925	1930	1935	1940	1945
Salaries				49,739.010	520,162.100
Bonuses				1,191.980	1,007,544.860
Offices				12,894.610	20,243.770
Incidental				189,821.260	106,593.760
Clothes & food				57,502.300	324,123.850
Maneuvers				58,269.870	
Patients					
Naval ports					
Ship repairs					
Hydrographics				2,116,480.940	12,461,813.120
Travels				167,754.900	389,969.750
Surveying				923,077.940	5,139,978.200
Publications				981,996.960	5,915,013.710
Miscellany				43,651.140	1,016,051.460
Training					10,744.180
Repairs					42,258.360
Researches					
Buildings				665.980	298.070
Ships & boats					24,223.600
Reception					200.000
Temporary family allowance government for occupied territories				11,082.000	128,061.700
Production for civilians					304,108.980
Meteorologics					400.000
Others					409,705.560
Allowance for long service					100,862.000
Compilation of China Incident History				18.240	
Allowance for China Incident				101.750	
Total				2,497,767.940	15,461,343.910
Sum Total all Expenditures	1,048,746.910	1,009,912.256	1,082,705.300	5,093,711.120	15,461,343.910

ENCLOSURE (C), continued

6. Flow chart for cartographical operation: (to precede Item 8,A)
- A. Smooth sheet
 - B. Projection
 - a. Making of projection chart
 - i. Deciding on chart number
 - ii. Deciding on included area and scale
 - iii. Calculation of scale
 - iv. Compilation of title note
 - b. Making of necessary table
 - i. Computation of latitude and longitude
 - ii. Deciding on data
 - iii. Remarks on compilation of chart
 - iv. Calculation of magnetic variation
 - c. Investigation of place name
 - i. Referring to sailing directions
 - ii. Researches of tide, railway, etc.
 - C. Compilation of chart
 - a. Making of bordering sheet
 - i. Measuring of latitude and longitude
 - ii. Writing of base points
 - iii. Drawing of scale
 - b. Arrangement of drawing data
 - i. Drawing on a scale
 - ii. Enlarging
 - c. Final drafting
 - i. Drawing of sheet borders
 - ii. Drawing of chart
 - iii. Inquiry on Notice to Mariners
 - d. Proofs
 - i. Making of original sheet of colored plate for land and position of lights

ENCLOSURE (C), continued

- ii. Correction of proofs (India-ink and colored sheets)
- iii. Correction of chart arranged as standard
- iv. Completion

D. Printing

Same as the works of the second section of which we reported in advance.

7. ResearchA. Research for giving the clearness to the "Baraita" paper: (to follow Item 9, A-b-(1))

- a. Object: Intend to reproduce the original plate by tracing method simply and economically, using the fundamental sheet which was printed on "Baraita" paper.
- b. Procedure: We prepared the ointment by way of dissolving Terebene oil 1 l. & Resin 10g. Applying this liquid on the back of the fundamental sheet and putting the surface upon the sensitive zinc plate, we can obtain the negative plate after about eight minutes by this means. Then we print this plate upon the tracing paper which has a part of the final draft. From this paper we complete again the printing originals by tracing method.
- c. At present we are not using this method.

B. Research on Sensitizer for plating: (to follow Item 9, A-b-(14))

- a. Object: Intend to produce the new sensitizer by national products, because of difficulty in obtaining glue and arabic gum.
- b. Preparation: We used dry furcata and tile blocked glue as substitutes for arabic gum and fish-glue.

Tile blocked glue 25g.

Amm. Bichromate 7.5g.

Dry furcata 5g.

Water 400cc

- c. At present we are using this sensitizer.

C. More details concerning dynamic meter: (to complete Item 9, A-b-(3)).

We calculate the dynamic meter by the following formula, applying the Bjerkness's circulation theorem.

$$D = p + \int^p \Delta s \tau p dp$$

Where,

$$\alpha_{s, \tau, p} = 1 - \Delta s p = 1 - \frac{\sigma_{\tau} 10^{-3}}{1 + \sigma_{\tau} 10^{-3}} + \sigma_{s, p} + \sigma_{\tau, p}$$

ENCLOSURE (C), continued

$$\sigma_T = (p \cdot \tau - 1) \times 10^3$$

p : pressure

σ_p : Correction term of specific volume in situ by pressure

$\sigma_{s,p}$: Correction term of specific volume in situ by salinity & pressure

$\sigma_{T,p}$: Correction term of specific volume in situ by temperature & pressure

$\alpha_{s,T,p}$: Specific volume

Using the value of dynamic meter obtained from (1), we calculate the velocity of density current by the following formula:

$$v = \frac{\Delta D}{2 L \omega \sin \phi} \quad (2)$$

Here, v : velocity of density current

ΔD : difference of the dynamic meter at the two points

L : distance of the points

ω : angular velocity of rotation of the earth

ϕ : latitude

Captain KISHINDO applied this method to the KUROSHIO considering it as the density current. Figure 1 is the current observed by the Japanese Navy 21st - 24th October, 1936, and Figure 2 to January 1937, by the method mentioned above. The KUROSHIO is definitely the density current.

D. The studies of the temperature and current at the sea-bottom.
(to fill item 9, A-5-(8))

Abstract of "On the bottom temperature and the bottom current in the Pacific". Captain KISHINDO deduced the following result in his work by observing the water temperatures of deep seas (4000m-5800m).

- a. By research of the adiabatic temperature of deep sea:
 - i. In deep layers, the temperature in situ increases with the depth in the adiabatic rate.
 - ii. In the sea where water of low temperature is supplied splendidly as in the South Pacific Ocean, the sea water temperature in situ decreases with the depth and reaches minimum at the bottom.
 - iii. The phenomena in ii. appear even in the southern parts of the North Pacific Ocean.
 - iv. In the northern part of the North Pacific Ocean and in the other part where the figure of bottom is complicated, we see the adiabatic heating of the deep sea water.
- b. The deep sea water of the Pacific Ocean is supplied from the Southern Ocean, and at the bottom near the Southern Ocean, the

ENCLOSURE (C), continued

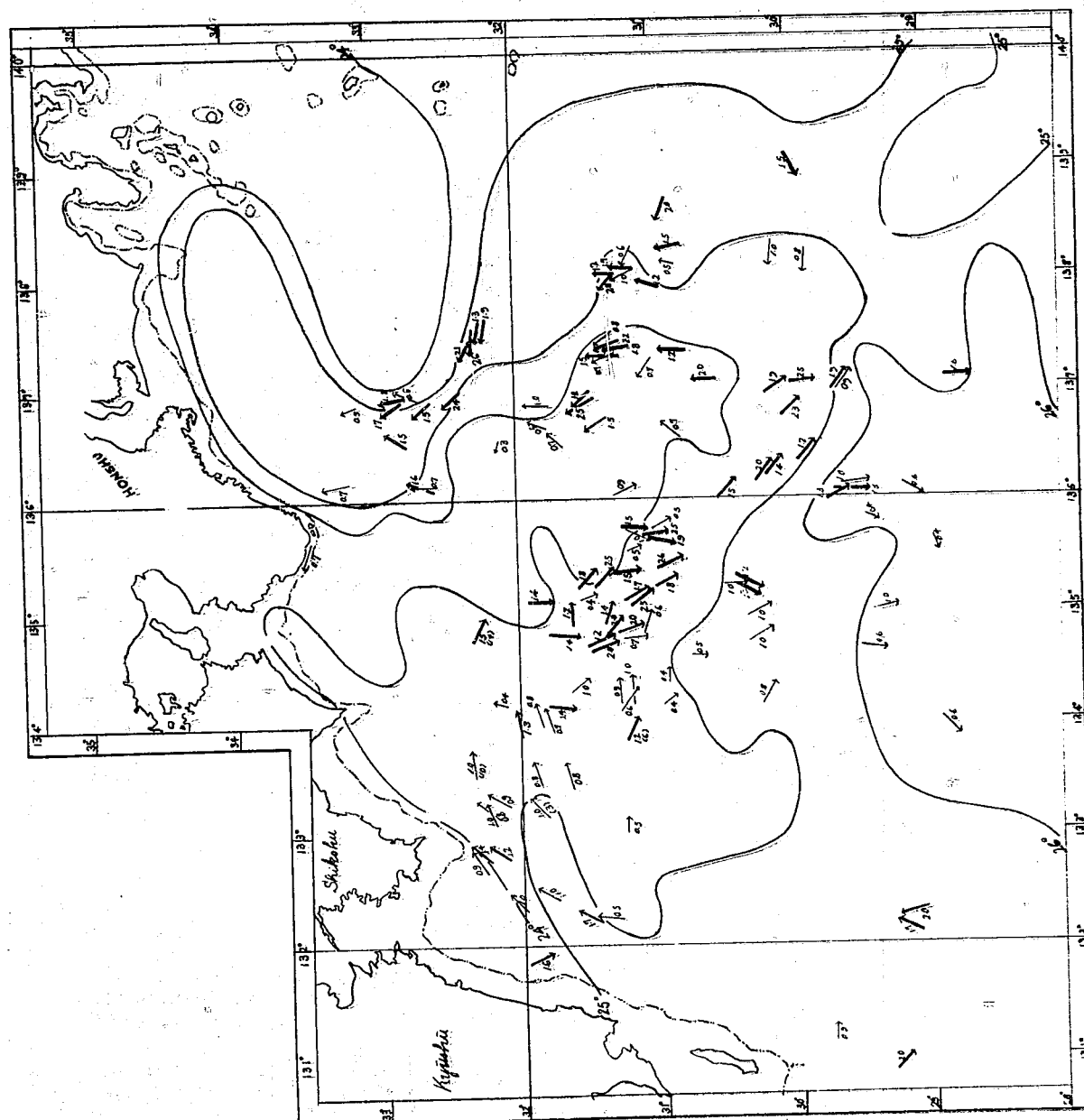


FIGURE 1
KUROSHIO CURRENT (OCTOBER 1936)

RESTRICTED

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ENCLOSURE (C), continued

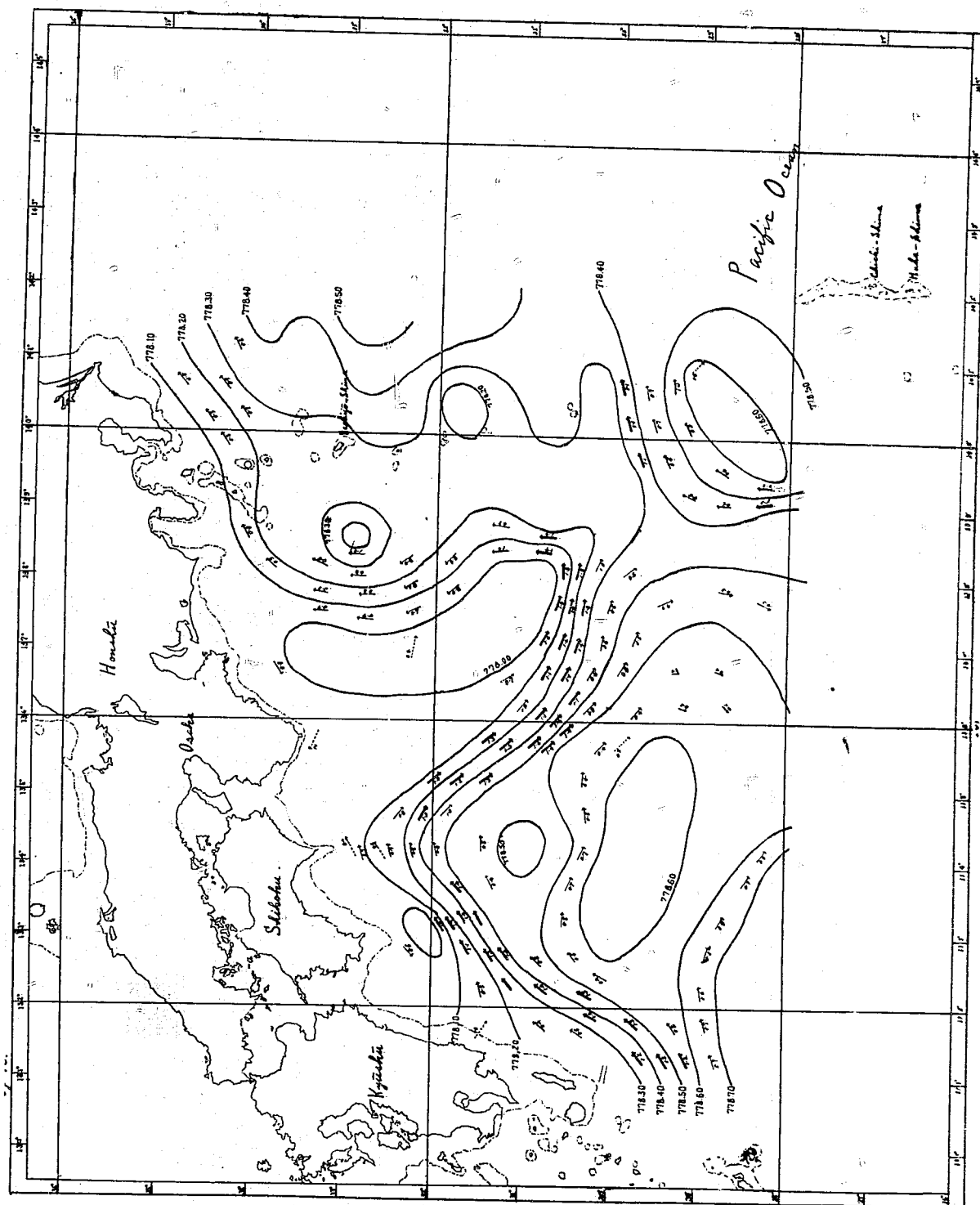


Figure 2
KUROSHIO CURRENT - CHART (DECEMBER 1936 - JANUARY 1937)

ENCLOSURE (C), continued

supply of cool water is splendid and the motion of sea water is evident. This phenomenon becomes obscure in low latitudes.

- c. Figure 3 is the vertical section of sea temperature on the line connecting the observed stations, shown in Figure 4. From this figure he deduced the following:

In the Pacific Ocean, except where the bottom configuration is complicated, the water temperature of the sea bottom increases from the Southern Ocean to the Bering Sea. That is to say, the sea water of the bottom flows from south to north with diminishing velocity.

- E. Pressure against the sea-bed. (to fill Item 9, B-(5)).

Some experiments on the pressure difference caused by sailing ships on the shallow sea bottom were performed. The automatic pressure tide-gauge (HONDA's type) was employed as the apparatus in the experiment, but it did not show the quantitative variation of the pressure difference.

- a. At the bow the pressure becomes maximum.
- b. Near aft of the middle of the ship it becomes minimum.
- c. Eventually the pressure returns to normal.

After research on the character of the automatic pressure tide-gauge in order to get quantitative results, we intended to make a manometer. But before the completion of the apparatus, the war came to an end, so that the experimental investigation had to be abandoned.

- F. Charts for measuring bearings by radio. (to fill Item 9, A-b-(13)).

These charts were made on commission of the Naval General Affairs and they are not in possession of this Department. The original manuscripts are in this Department.

- G. Determination of time (longitude) by method of equal altitudes of different stars. (to fill Item 9, A-b-(7) and (11)).

This method is described in the Bulletins of the Hydrographic Department, Vols. 9 and 10 (Book No. 289 & 290). The Bulletins have been submitted.

- H. On the method of computation for astronomical ephemeris.

On the method of computation for solar and lunar eclipse. On the method of computation for apparent places of fixed stars. (all above to follow Item 9, A-b-(5) and (15)). Unpublished data on these methods were destroyed by fire, and we must undertake the re-computation of the data.

- I. On astronomical navigation.

On astronomical refraction near the sea-surface. On the determination of longitude & latitude. (all above to follow Item 9, B-(1) (2) and (3)). As data and research results were destroyed by fire, we have no information to submit.

ENCLOSURE (C), continued

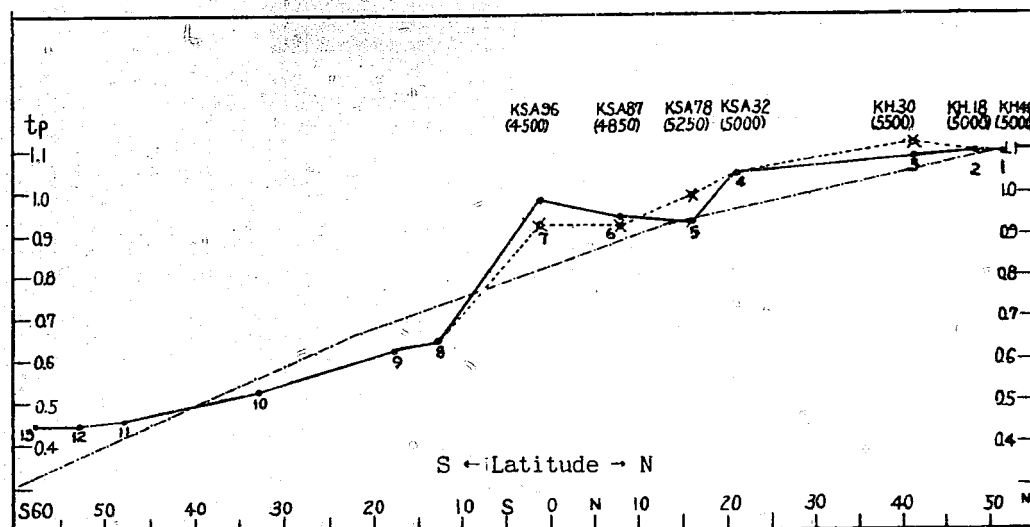


Figure 3
DISTRIBUTION OF t_p IN THE CENTRAL LONGITUDINAL
SECTION OF THE PACIFIC OCEAN

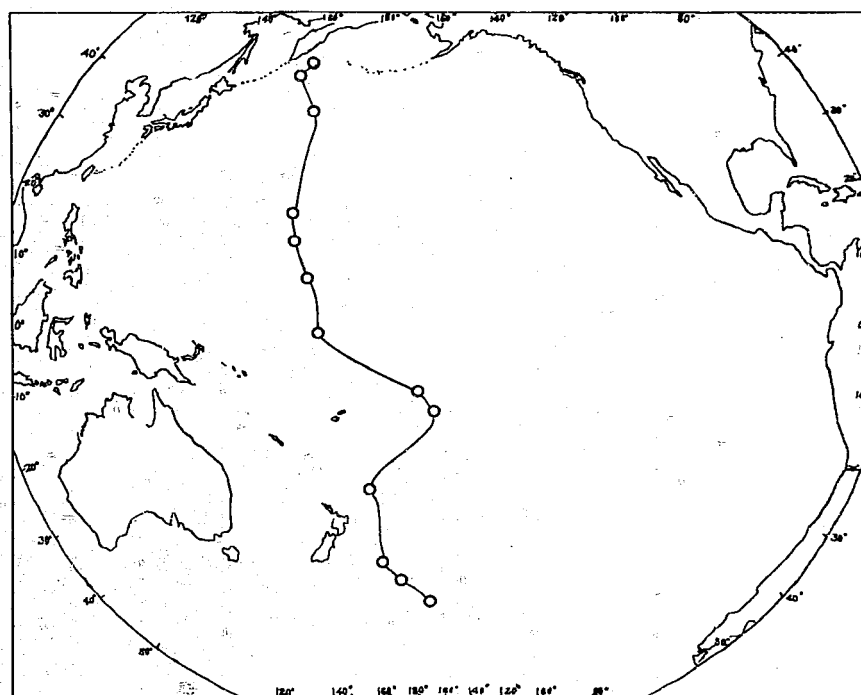


Figure 4
LOCATION OF TEMPERATURE OBSERVATION STATIONS (SEE Figure 3 (C))

ENCLOSURE (C), continued

J. On surveying. (to follow Item 9, A-b-(9))

- a. Using together radio acoustic ranging and navigation on the arc of spherical co-ordinate, we intend to improve the accuracy of sounding bearings.
- b. We succeeded in measuring bearings in about 50 kilometers area by using 1 kg signal gun with 40 w radio, but we got no practical results.
- c. This self-recording echo sounding is a magnetic manner for recording by using iodine starchy paper. We used a transmitter 70 cm in diameter.

K. The sonic depth finder. (to follow Item 9, B-(4))

This depth finder is designed for use in clearing operations. Based on this instrument, fundamental experiments were carried on during the period from 1 November 1944 to 28 February 1945. After 1 March 1945 its reproduction was entrusted to the scientific gauge laboratory of the TOHOKU Imperial University in SENDAI.

8. Printing paper used:

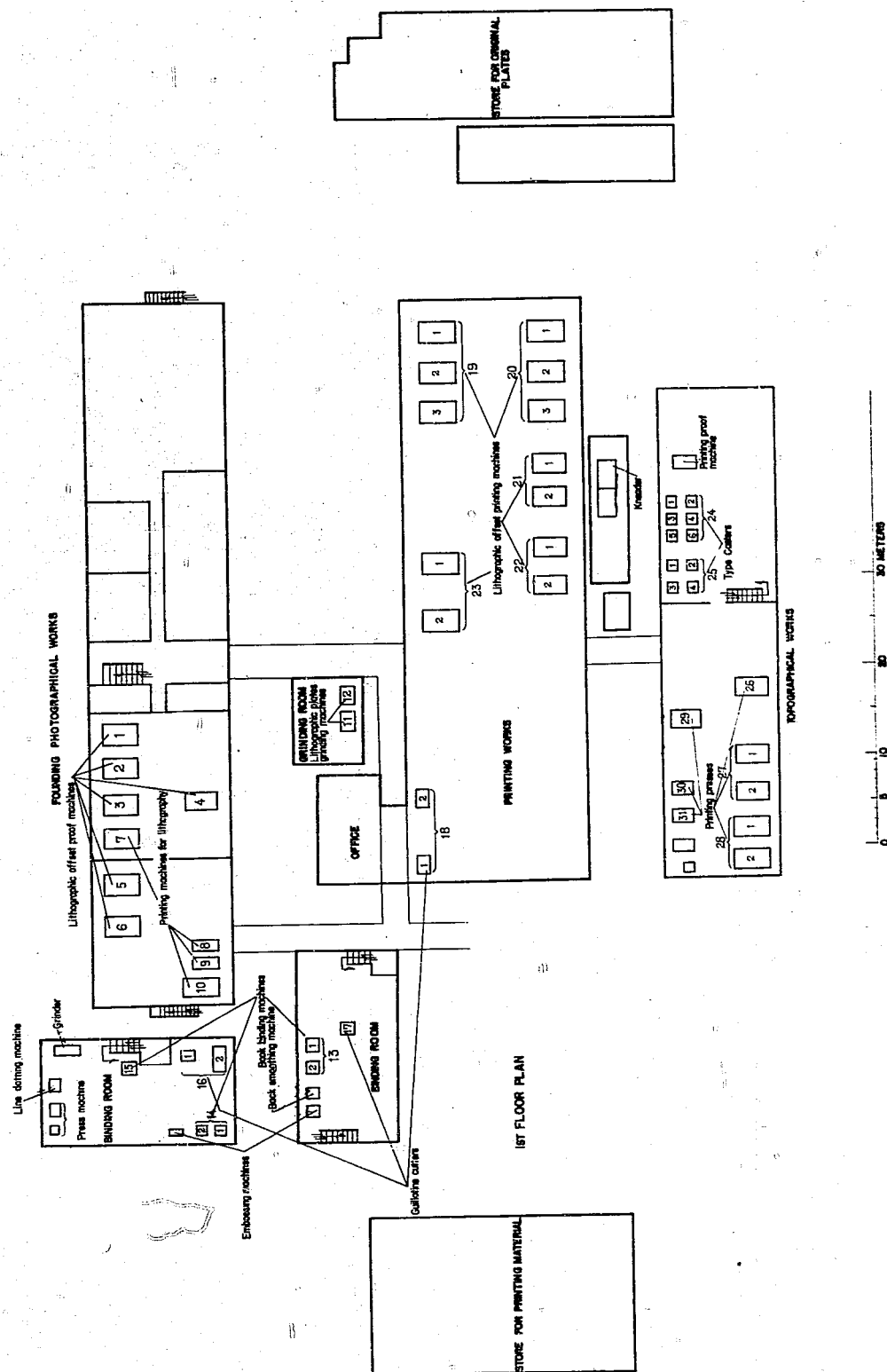
Name	Weight	Size	Uses	Manufacturer
Chart sheet A	68 kg	108 cm x 77 cm	Chart	MITSUBISHI Paper Co.
Chart sheet B	45 kg	110 cm x 79 cm	Air-navigation chart	MITSUBISHI Paper Co.
Chart sheet C	27 kg	110 cm x 79 cm	Miscellaneous	MITSUBISHI Paper Co.
Chart sheet D	23 kg	110 cm x 79 cm	Miscellaneous	MITSUBISHI Paper Co.
Ohofushi Paper	45 kg	110 cm x 79 cm	Appended plan	MITSUBISHI Paper Co.
Imitation Paper B	68 kg	109 cm x 77 cm	Cover	OJI Paper Co.
Imitation Paper B	45 kg	109 cm x 77 cm	Title page	OJI Paper Co.
Imitation Paper B	36 kg	109 cm x 77 cm	List or table	OJI Paper Co.
Imitation Paper B	27 kg	109 cm x 77 cm	Bodies of book	OJI Paper Co.
Imitation Paper B	28 kg	109 cm x 77 cm	Bodies of book	OJI Paper Co.
Imitation Paper C	27 kg	109 cm x 77 cm	Bodies of book	OJI Paper Co.
Imitation Paper C	23 kg	109 cm x 77 cm	Bodies of book	OJI Paper Co.
Imitation Paper C	20 kg	109 cm x 77 cm	Bodies of book	OJI Paper Co.
Type Printing Paper	23 kg	94 cm x 64 cm	Bodies of type printing book	MITSUBISHI Paper Co.
Type Printing Paper	20 kg	94 cm x 64 cm	Bodies of type printing book	MITSUBISHI Paper Co.
Type Printing Paper	15 kg	94 cm x 64 cm	Bodies of type printing book	MITSUBISHI Paper Co.
SHIRO KANABISHI	36 kg	110 cm x 79 cm	Phototype substitute of art	MITSUBISHI Paper Co.
Zara No. 4	---	110 cm x 77 cm	Miscellaneous	OJI Paper Co.
Zara No. 5	---	110 cm x 77 cm	Miscellaneous	OJI Paper Co.
Hatron Paper	---	119 cm x 90 cm	Packing	OJI Paper Co.
Baraita Paper	---	110 cm x 79 cm	Baraita originals	MITSUBISHI Paper Co.

ENCLOSURE (C), continued

9. Inventory of equipment in use prior to war damage, showing its minimum capacity per hour:

Machine	Manufacturer	Number	Capacity per hour
Lithographic offset proof machine	KOMORI Co.	3	3 sheets
Lithographic offset proof machine	Germany	2	4 sheets
Lithographic offset proof machine	HAMADA Co.	1	5 sheets
Printing machine for lithography	HAMADA Co.	4	5 sheets
Plate grinding machine		2	1 sheets
Book binding machine	KATO Works	2	50 volumes
Book binding machine	YOSHINO Works	2	1,500 times
Book binding machine		1	2,500 times
Guillotine cutter	SAITO Works	2	
Guillotine cutter	HASHIMOTO Works	2	
Guillotine cutter		1	
Lithographic offset printing machine	HAMADA Co.	7	450 sheets
Lithographic offset printing machine	Germany	4	450 sheets
Lithographic offset printing machine	TOYO Printing Co.	1	350 sheets
Type caster	RINEISHA Co.	1	2,300 sheets
Type caster	NIPPON Type Co.	1	1,600 sheets
Printing press	U.S.A.	4	1,100-1,500
Printing press	NAKAMA Works	1	1,000
Printing press	Germany	1	1,000
Printing press	HAGA Iron Works	1	1,000
Printing press		1	1,000
Vacuum printing frame	ROKUOSHA Co.	3	1
Camera box	ROKUOSHA Co.	3	1
Photographical type caster	ISHII photo. type caster laboratory	1	

ENCLOSURE (C), continued

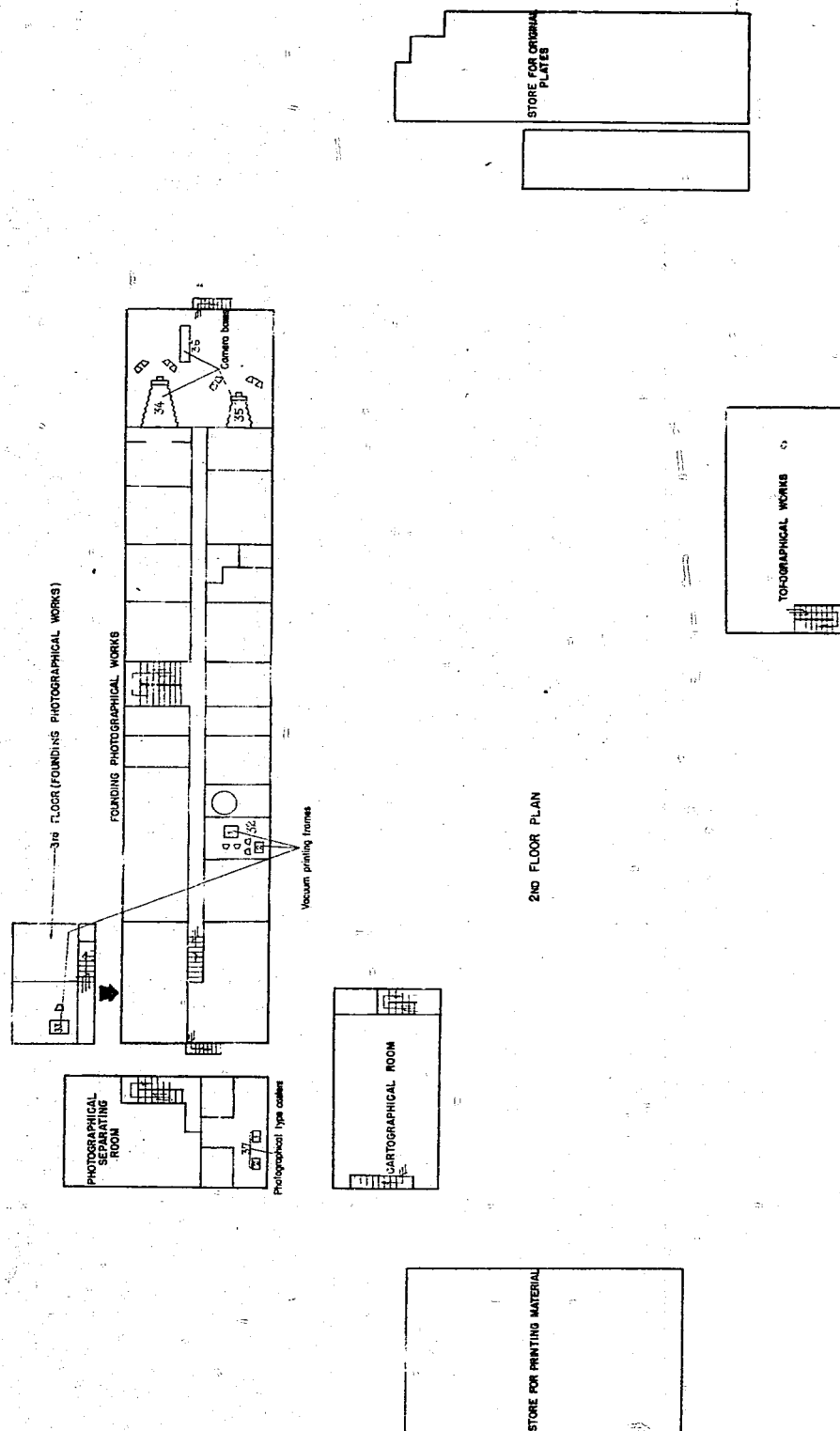


SPECIAL SHEET 1
POSITION OF EACH MACHINE (PLOT TO WAR DAMAGE)

RESTRICTED

X-18-1

ENCLOSURE (C), continued



2ND FLOOR PLAN

SPECIAL SHEET 2
POSITION OF EACH MACHINE

ENCLOSURE (D)

TRANSLATION OF NOTES RELATIVE TO SECRET HYDROGRAPHIC AND AERONAUTICAL
CHART INDEXES, INCLUDING CHART NUMBER CHANGES AND CLASSIFICATION
CHANGES SUBSEQUENT TO 1931

1. Secret Notices. SHOWA No. 39 (Oct. 1929) paragraph 304
 - A. Change of number and classification of confidential H.D. Charts.
 - B. H.D. Chart HI (confidential) 147 (ANADOIL BAY) has been changed to H.D. HI (confidential) 208 and instead of unregistered is now registered.
2. Secret Notices. SHOWA No. 64 (30 Nov. 1931), paragraph 550.
 - A. Change of number and classification of HI (Confidential). H.D. Charts.

Present HI No.	Name	New GUNKI (Top-Secret) No.	Class
86	HITOKAPPU WAN	205	Unregistered
141	Approaches to Avachinskaya Bay	371	Unregistered
142	S. Kamchatka	372	Unregistered
143	Plans of E. Coast of Kamchatka	373	Unregistered
140	Decasri (Castris) Bay	374	Unregistered
144	N. part of Gulf of Tartary	375	Unregistered
145	Approaches to Mouth of Datar (or Tumnin) River & Approaches to Sovietakaya Harbor	376	Unregistered
146	Moslova Bay & Shorkum Anchorage	377	Unregistered
32	Approaches to MAIZURU WAN	296	Unregistered
71	ETAUCHI and Approaches	235	Unregistered
73	Chart of pier of Navy Fuel Depot, TOKUYAMA WAN	243	Unregistered
50	Tide chart for AMAMI KAIKYO	283	Unregistered
205	Sailing Chart for Chao Chiang River (11 sheets bound)	503	Registered
207	Charts of Approaches to Tung-Ting Hu (lake) (29 sheets bound)	504	Registered
208	Anadoil Bay	515	Registered
209	Nabarin Cape to Anadoil Bay	516	Registered
206A	Amur River (from Ekaterino-Nikorskaya to Khabarovak)	511	Registered
206B	Amur River (from Khabarovak to Nikolaivsk)	512	Registered

RESTRICTED

X-18-1

ENCLOSURE (D), continued

B. Change in number of HI (confidential) publications.

<u>Present</u> <u>HI No.</u>	<u>Name</u>	<u>New GUNKI</u> <u>(Top-Secret) No.</u>	<u>Class</u>
302	Tidal currents in TOKYO WAN	615	Unregistered
	Record of Strandings (1897-1931)	621	Unregistered
	Notices to Mariners on Yangtse River No. 1	701	Registered

3. Secret Notices. TAISHO No. 205, paragraph 858 (25 June 1935)

H.D. HI (confidential) charts issued.

<u>HI No.</u>	<u>Title</u>	<u>Survey</u>	<u>Scale</u>	<u>Published</u>
141	Approaches to Avachinskaya	1922	0.8cm	Jan. 1925 (Formerly H.D. chart 208)
142	S. Kamchatka	1921	0.8cm	March 1925 (Formerly H.D. chart 299)

4. Secret Notices. SHOWA No. 1, paragraph 12 (30 January 1937).

Change of numbers of H.D. HI (confidential) charts and publications.

<u>Title</u>	<u>Old No.</u>	<u>New No.</u>
Tidal Currents in Philippine Islands	1	101
Soundings in Waters South of Japan	2	71
Han Shu (river), Han-Kou to Hsiang-Yang	204	51
Ice in Waters Adjacent to Japan	302	131
Hydrographic data on Kwang-Tung, Hong-Kong, Hainan Straits (appended charts in sep. vol)	403	161

5. Secret Notices. SHOWA No. 4, paragraph 25 (1 Sept. 1934).

A. H.D. GUNKI (Top Secret) 614 (registered).

The number "GUNKI 614" on front sheet should read "SUIRO GUNKI 702" according to annexed sheet, "H.D. GUNKI 702".

B. H.D. HI (Confidential) 303 (registered).

The number "HI 303" should read "401" on front sheet, back of front sheet and on front sheet of annexed charts, "H.D. HI 401".

6. Secret Notices. SHOWA No. 4, paragraph 33 (30 April 1935).

<u>Title</u>	<u>Present</u> <u>GUNKI No.</u>	<u>New</u> <u>GUNKI No.</u>
Chart of Statistics on Japan Ocean Traffic		
#1 (Jap waters)	1001	581
#2 (N. Pacific)	1002	582
#3 (S. of Japan)	1003	583

ENCLOSURE (D), continued

7. Secret Notices. SHOWA No. 8, paragraph 69 (28 Sept. 1938).A. Confidential H.D. Charts. Change of class, title and number.

- a. Note: SUIRO GUNGOKUHI 1000 (H.D. Secret 1000) is changed to SUIROBU GUNGOKUHI 404.
- b. Note: SUIROBU GUNGOKUHI 5 to 19 are changed to SUIROBU GUNGOKUHI 405 to 419.
- c. Note: The following changes in GUNKI H.D. charts are to be made:
 - i. SUIRO GUNKI 585 to 589 are to be called SUIROBU GUNGOKUHI 485 to 489.
 - ii. SUIRO GUNKI 591 to 593 are to be called SUIROBU GUNGOKUHI 491 to 493.
- d. Note: The following changes in HI H.D. charts are to be made:
 - i. SUIRO HI 106 to 108 and 109 are to be called respectively SUIROBU HI 406 to 408 and 509
 - ii. SUIRO HI 116 and SUIROBU HI 117 (1 to 5) are to be called SUIROBU HI 516 and SUIROBU HI 517 (1 to 5).

B. Sea Charts. Classification changes without change of numbers:

- a. GUNGOKUHI 4.
- b. GUNGOKUHI 5 to 19.
- c. GUNKI 585 to 589 and GUNKI 591 to 593.
- d. HI 196 to 109 and HI 116 and 117 (1 to 5).

C. H.D. Charts

SUIROBU GUNGOKUHI (H.D. Secret)

New Number	491
	492
	493
	404
	415
	416
	417
	418
	419
	405
	406
	407
	408
	409
	410
	411
	412
	413
	414

SUIRO GUNKI (H.D. Top Secret)

Old Number	591
	592
	593

SUIRO GUNGOKUHI (H.D. Secret)

	4
	15
	16
	17
	18
	19
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14

ENCLOSURE (D), continued

SUIROBU GUNGOKUHI (H.D. Secret)
New Number485
486
487
488
489

SUIROBU HI (H.D. Confidential)

517.1
517.2
517.3
517.4
517.5
406
407
408
509SUIRO GUNKI (H.D. Top Secret)
Old Number585
586
587
588
589

SUIROBU HI

117.1
117.2
117.3
117.4
117.5

SUIRO HI

106
107
108
109

8. On 1 January 1942 the following charts and publications were transferred from the Hydrographic Department to the authority of the Naval Weather Department.

A. Aeronautical charts and publications:

SUIROBU GUNKI (H.D. Top Secret)

1551
901
902
903
904
701
341
342Chart
Chart
Chart
Chart
Chart
Chart
Publication
Publication

SUIROBU HI (H.D. Confidential)

B. Hydrographic charts and publications:SUIROBU HI
SUIROBU GUNKI
SUIROBU HI522
551
525
91
113
112
2763
2767
2771
2772
169
162
137
142
144
170
171
143
145
8514
8525
141
151
152
631Chart
Chart
Chart
Chart
Chart
Chart
Chart
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Chart
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Publication
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SUIROBU GUNKI

ENCLOSURE (E)

LIST OF JAPANESE DOCUMENTS FORWARDED TO THE WASHINGTON DOCUMENT CENTER
AND THE U.S. NAVY HYDROGRAPHIC OFFICE

Forwarded to WDC VIA ATIS	Forwarded to U.S. H.O. VIA ATIS	Item
NavTechJap Document No.	NavTechJap Document No.	
ND50-5000 ATIS No. 3087	ND50-5001 ATIS No. 3088	Catalog of Ordinary (Unclassified) charts and Books - Jap. H.D.
ND50-5002 ATIS No. 3139	ND50-5003 ATIS No. 3101	System of Oceanographic Observations.
ND50-5004 ATIS No. 3089	ND50-5005 ATIS No. 3102	Manual for Marine Meteorological Observation.
ND50-5006 ATIS No. 3090	ND50-5007 ATIS No. 3103	Treatment of Hydrographic Charts and Books.
ND50-5008 ATIS No. 3091	ND50-5009 ATIS No. 3104	Textbook of Oceanography.
ND50-5010 ATIS No. 3092	ND50-5011 ATIS No. 3105	Compilation of Hydro Charts and Books.
ND50-5012 ATIS No. 3093	ND50-5013 ATIS No. 3106	General Theory in Natural Geography.
ND50-5014 ATIS No. 3094	ND50-5015 ATIS No. 3107	Manual of Photography (for Lithography).
ND50-5016 ATIS No. 3095	ND50-5017 ATIS No. 3108	Method of Reporting Notices to Mariners.
ND50-5018 ATIS No. 3096		Hydrographic Surveying Vol. I.
ND50-5020 ATIS No. 3097		Hydrographic Surveying Vol. II.
ND50-5022 ATIS No. 3098		Hydrographic Surveying Vol. III.
ND50-5024 ATIS No. 3099		Method of Cartography for Charts.
ND50-5026 ATIS No. 3100		Method of Spherical Projection.