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NAVY OCEANOGRAPHIC OFFICE

H.O. PUB 1-IR

1 AUGUST 1968

CATALOG OF INFORMAL REPORTS

Washington, D.C. 20390

PREFACE

The Informal Oceanographic Manuscript (IOM) established in 1960, the Informal Manuscript Report (IMR) established in 1962, and the Informal Manuscript (IM) established in 1966, are replaced by the Informal Report (IR).

These reports are used to disseminate information on items which do not have sufficient interest to warrant wide distribution as formal publications, thus, the reports provide the investigators freedom to publish limited copies of their findings.

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Suggestions and recommendations concerning this catalog should be submitted to the U. S. Naval Oceanographic Office, Attn: Code 4300, Washington, D. C. 20390.

Requests for publications shall be submitted to the U. S. Naval Oceanographic Office, Attn: Code 40, Washington, D. C. 20390.

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TITLE/NOMENCLATURE

The following reports show the results of studies in flushing and dye dispersal conducted in various tests throughout the United States, Guantanamo Bay, Cuba and Pearl Harbor. The amount of time and tidal cycles required to flush contaminants from a given area and the methods used are discussed.

IOM 1-60	FIELD REPORT, JAMES RIVER DYE DISPERSAL TESTS, by Clifford H. Cline and William E. Maloney, Feb 1960, 37 pp.
IOM 2-60	FLUSHING STUDY OF SAN DIEGO BAY, by Edward L. Ridley, Oct 1959, 14 pp.
IOM 3-60	FLUSHING STUDY OF CHARLESTON HARBOR, SOUTH CAROLINA, by Edward L. Ridley and Charles Ostericher, Jr. Oct 1959, 12 pp.
IOM 4-60	FLUSHING STUDY OF PEARL HARBOR, by Edward L. Ridley and Charles Ostericher, Jr., Nov 1959, 6 pp.
IOM 5-60 (FOUO)	FLUSHING STUDY OF KEY WEST NAVAL STATION, FLORIDA, by Edward L. Ridley and Charles Ostericher, Jr., Dec 1959, 6 pp.
IOM 6-60	FLUSHING STUDY OF MARE ISLAND STRAIT AND SACRAMENTO SAN JOAQUIN RIVERS, by Edward L. Ridley and Charles Ostericher, Jr., Feb 1960, 18 pp.
IOM 7-60	FLUSHING STUDY OF THE THAMES ESTUARY, CONNECTICUT, by Edward L. Ridley and Charles Ostericher, Jr., Mar 1960, 11 pp.
IOM 8-60 (FOUO)	FLUSHING STUDY OF LONG BEACH HARBOR, CALIFORNIA, by Edward L. Ridley and Charles Ostericher, Jr., Mar 1960, 9 pp.
IOM 9-60 (FOUO)	FLUSHING STUDY OF CANAVERAL HARBOR, FLORIDA, by Edward L. Ridley and Charles Ostericher, Jr., Mar 1960, 6 pp.
IOM 10-60	FLUSHING TIME AND DISPERSION OF CONTAMINANTS IN TIDAL WATERS WITH APPLICATION TO THE JAMES RIVER, by Clifford H. Kline and Leo J. Fisher, Jul 1959, 42 pp.

PUB NO.

TITLE/NOMENCLATURE

IOM 11-60

**SEA CONDITIONS - NORTH ATLANTIC OCEAN, Apr 1960,
47 pp.**

The isolines presented in this publication are based on tabulations by 2-degree quadrangles for the entire north Atlantic Ocean and adjacent seas. The tabulations are based upon the entire volume of punch card observations available at National Weather Records Center, Asheville, North Carolina and the U. S. Naval Oceanographic Office as of 1958.

**IOM 12-60
(FOUO)**

**FLUSHING STUDY OF MAYPORT BASIN, FLORIDA, by Edward L. Ridley and Charles Ostericher, Jr., Apr 1960,
7 pp.**

This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

IMR 13-60

OCEANOGRAPHIC AND METEOROLOGICAL ASPECTS (OF STORM SURGE) OF 18 MARCH 1952 ALONG THE GULF COAST, by Robert E. Burns, Lloyd B. Bartholf and Charles C. Bates, Apr 1960, 26 pp.

This report presents a study to determine the circumstances surrounding the storm surge which occurred on 18 March 1952 at Southwest Pass, Louisiana.

The following reports show the results of studies in flushing and dye dispersal conducted in various tests throughout the United States. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

**IOM 14-60
(FOUO)**

**FIELD REPORT, SAN DIEGO, DYE DISPERSAL TESTS, by Clifford H. Cline and Edward L. Ridley, May 1960,
19 pp.**

**IOM 15-60
(FOUO)**

**FLUSHING STUDY OF DABOB BAY, WASHINGTON, by Edward L. Ridley and Charles Ostericher, Jr., May 1960,
15 pp.**

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ICM 16-60

SURFACE WATER TEMPERATURE DISTRIBUTION OF THE WORLD,
by William H. Littlewood, Apr 1955, 6 pp.

This publication contains a list of water temperatures throughout the world for the months of February and August.

ICM 17-60

A HISTORY OF OCEANOGRAPHY IN THE U. S. NAVY HYDROGRAPHIC
OFFICE, by William H. Myers, Jun 1959, 52 pp.

A synopsis of the history of oceanography from its early days when it started as a chart depot and observatory to the present time of ocean sciences at the U. S. Naval Oceanographic Office.

The following reports show the results of studies in flushing and dye dispersal conducted in various tests throughout the United States, Guantanamo Bay, Cuba. The amount of time and tidal cycles required to flush contaminants from a given area and the methods used are discussed.

ICM 18-60
(FOUO)

A FLUSHING STUDY OF NARRAGANSETT BAY, RHODE ISLAND,
by Edward L. Ridley and Charles Ostericher, Jr., May 1960, 26 pp

ICM 19-60
(FOUO)

FLUSHING STUDY OF PASCAGOULA, MISSISSIPPI, by Edward
L. Ridley and Charles Ostericher, Jr., Jun 1960, 4 pp.

ICM 20-60
(FOUO)

FLUSHING STUDY OF GUANTANAMO BAY, CUBA, by Edward L.
Ridley and Charles Ostericher, Jr., Jun 1960, 7 pp.

ICM 21-60
(FOUO)

FLUSHING STUDY OF SINCLAIR INLET, BREMERTON, WASHINGTON,
by Edward L. Ridley and Charles Ostericher, Jr., Jun 1960, 8 pp.

ICM 22-60
(FOUO)

FLUSHING STUDY OF SOUTH SAN FRANCISCO BAY, CALIFORNIA,
by Edward L. Ridley and Charles Ostericher, Jr., Jun 1960, 10 pp.

ICM 23-60
(FOUO)

FLUSHING STUDY OF PORTSMOUTH HARBOR, NEW HAMPSHIRE,
by Edward L. Ridley and Charles Ostericher, Jr., Jun 1960, 7 pp.

PUB NO.

TITLE/NOMENCLATURE

IOM 24-60

MEASUREMENT AND APPLICATION OF WATER CLARITY PARAMETERS, by Keith V. Slack, Jun 1960, 12 pp.

This publication presents the background development of an instrument acquired for measuring optical properties of ocean water. Since the instrument is newly designed and the parameters measured are unfamiliar to oceanographers, it is desirable to describe the optical measurements obtained and to discuss their operational application.

IOM 25-60

AUTOMATIC PROCESSING OF OCEANOGRAPHIC STATION DATA, Jun 1960, 17 pp.

This report sets forth the automatic data processing methods used for oceanographic station data by the Office.

IOM 26-60

LIGHT IN THE SEA, by Eugene L. Bialek, Sep 1959, 15 pp.

This publication presents a study of the various methods that can be used in measuring the amount of natural light that can penetrate the water surface.

IOM 27-60

WAVE DAMPENING EFFECT OF OIL FILMS, by Bernard K. Swanson, Jun 1953, 7 pp.

This report is an article of the author's resume of available literature on the subject "Wave Dampening Effect of Oil Film".

IOM 28-60

A COMPARATIVE STUDY OF THREE INTERPOLATION TECHNIQUES USED IN PROCESSING OCEANOGRAPHIC STATION DATA, Aug 1960, 15 pp.

This study compares quantitatively the Lagrange (USHO) and Log (POG) methods of machine interpolation and the "hand drawn curve interpolation" as done by an oceanographer and/or oceanographic technician.

IOM 29-60

A DISCUSSION OF METEOROLOGICAL AND OCEANOGRAPHICAL CONDITIONS RESULTING IN THE STORM DISASTER IN THE IRISH AND NORTH SEAS ON 1 FEBRUARY 1953, by Harold W. Dubach and William E. Maloney, Apr 1953, 15 pp.

This report presents a chronological sequence of meteorological and oceanographical conditions culminating the disastrous storm tides of 1 February 1953 in the Irish and North Seas.

PUB NO.

TITLE/NOMENCLATURE

IOM 31-60
(FOUO)

FLUSHING STUDY OF WEYMOUTH FORE RIVER, QUINCY, MASSACHUSETTS, by Edward L. Ridley and Charles Watericher, Jr., Jul 1960, 15 pp.

This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

IOM 32-60

A GRAPHIC TECHNIQUE FOR ANALYSIS OF TERRESTRIAL TIME-LAPSE PHOTOGRAPHS, by Donald J. Gerson, Jul 1961, 13 pp.

A method for analysis of time-lapse photography is presented. The construction of necessary grids and descriptions of procedures are discussed.

IOM 33-60
(FOUO)

RELATIVE FLUSHING CAPABILITY OF EIGHTEEN HARBORS, by Edward L. Ridley, Jul 1960, 10 pp.

This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

IOM 34-60

THE ISLAND ARC SYSTEM, by Paul E. LaViolette, Nov 1959, 49 pp.

This report describes the criteria used for a structural system to be considered as an Island Arc System. It also discusses the system with its peculiarities of structure, its world distribution and the various theories of origin.

IOM 35-60

THE FOREL SCALE AND ITS MODIFICATIONS, by Lawrence A. Sower, Nov 1960, 14 pp.

Forel devised a scale to designate various colors of sea water by numerals in 1895. However, many additions and modifications have been made to his scale by others in subsequent years. This paper attempts to correlate all of the commonly available scales to avoid confusion and misunderstanding in publications of water color observations.

PUB NO.

TITLE/NOMENCLATURE

IIR 1-61

FOXBORO MULTISAMPLER ENVIRONMENTAL TEST, by Albert P. Sysma, Apr 1961, 6 pp.

The principal purpose of this test was to determine the operational and environmental characteristics of a Foxboro Multisampler System which automatically records temperature, depth and electrical conductivity. Test results indicate this system to be functional for a thirty day period without attendance.

ICM 1-61

APPARENT ABSENCE OF THE DEEP SCATTERING LAYER IN PARTS OF THE CENTRAL SOUTH PACIFIC, by Kenneth W. Kaye, Oct 1957, 7 pp.

This publication contains survey reports conducted by the two naval ships concerning the deep scattering layers on two separate dates. The AN/UQN-1 series echo sounders were used and both times no response was acknowledged in the part of the central South Pacific.

IIR 2-61

BOURNS MODEL 734 - SEA WATER DEPTH TRANSDUCER ACCEPTANCE TEST, by James R. Cousins and Frank J. Halligan, Jr., Nov 1961, 10 pp.

This publication presents the test results of the Bourns Model 734, Sea Water Depth Transducer (Potentiometer Type).

IMR 2-61

SEA CONDITIONS - NORTH PACIFIC AND NORTH INDIAN OCEAN, by Marvin D. Burkhardt, John M. Kipper and E. J. Joseph, Nov 1960, 26 pp.

The isolines presented in this report are based on tabulations by 5-degree quadrangles for the entire North Pacific Ocean, North Indian Ocean, and adjacent seas. The tabulations are based upon the entire volume of punch card observations available at National Weather Records Center, Asheville, North Carolina and U. S. Naval Oceanographic Office as of 1957.

ICM 3-61

WAVE SPECTRA STUDY, FIELD REPORT, by Robert L. Pickett and John C. Wilkerson, Jan 1961, 16 pp.

This report presents an experiment to study the effect of fetch in limiting the height of wind generated seas and to determine which of several theories best predicts the relationship between fetch length and sea height.

PUB NO.

TITLE/NOMENCLATURE

ICM 4-61

OBSERVED AND THEORETICAL SIGNIFICANT WAVE HEIGHTS
TONGUE OF THE OCEAN AND EXUMA SOUND, by Pasquale
DeLeonibus, Jan 1961, 16 pp.

This study presents a discussion of the wind
and waves based upon seasonal observation in the
Tongue of the Ocean (TOTO) and Exuma Sound areas.

ICM 5-61
(FOUO)

A PRELIMINARY ESTIMATE OF TIME REQUIRED FOR FLUSHING
A CONTAMINANT FROM ALBEMARLE SOUND, by William E.
Maloney, Jun 1957, 9 pp.

This report shows the results of studies in flushing
and dye dispersal conducted in various tests. The
amount of time and tidal cycles required to flush con-
taminants from a given area the methods used are dis-
cussed.

ICM 6-61

A CHECKLIST OF ICELANDIC VOLCANOES, by William H.
Berninghausen, Mar 1960, 17 pp.

No list of Icelandic Volcanoes has been made
available to the English speaking public for many
years. Those lists which are available seldomly
give location of the centers of activity. This
check list attempts to rectify this deficiency.

ICM 7-61

POWER SPECTRA OF SURFACE WAVE HEIGHTS ESTIMATED FROM
THE RECORDINGS MADE FROM A SUBMERGED HOVERING SUBMARINE,
by Pasquale DeLeonibus, May 1961, 10 pp.

This report discusses the technique of obtaining
surface wave records with an inverted echo sounder
from submerged hovering submarines and some of the
errors associated with such a wave measuring system.

ICM 8-61

DISCUSSION OF SOUND SPEED EQUATIONS, by Warren B.
Randlett, Apr 1961, 3 pp.

This report contains a summary of the errors
involved in Kuwahara's Equation. It also discusses
the extent to which these errors could be eliminated
if a more accurate equation were adopted.

PUB NO.

TITLE/NOMENCLATURE

IOM 9-61

EXPERIMENTS ON DETERMINATION OF SEA-SURFACE WAVE DIRECTION WITH SONIC SCANNER DATA, by Roger Merrifield, May 1961, 9 pp.

This publication presents experiments performed to investigate the possibility of determining the sea-surface wave direction from Redfin Sonic Scanner data. The experiment was run in two parts: The first involved the summation of wave heights over ten transducers; the variance of these sums was compared to the sea direction in hope of finding a relation between the two. A second part of the experiment employed data from one transducer, obtained while the submarine was underway.

IOM 10-61

DESCRIPTION OF OCEANOGRAPHIC DATA SYSTEM FOR SUBMARINES, by Quick Carlson, May 1961, 11 pp.

This publication describes a system which is completely digital and semi-automatic in operation. Its output is punched paper tape or a digital readout with visual displays of all variables. The system utilizes no direct inputs from any system aboard the submarine and, therefore, will require periodic attention for the manual introduction of position data.

IOM 11-61

LABORATORY EXPERIMENTS WITH BUREAU OF STANDARDS SOUND VELOCITY METER, by Roger Merrifield and Charles P. Selkirk, Nov 1961, 20 pp.

This publication presents a study performed to investigate the reliability of tshieg sound velocimeters at temperature common to the oceans.

IOM 12-61

THE FREQUENCY AND DURATION OF GEOMAGNETIC STORMS, by John K. Duncan, May 1961, 183 pp.

The frequency and duration of geomagnetic disturbances (storms) of sunspot origin were tabulated by using the published Geomagnetic Range Index K. Two types of disturbance, severe and moderate, were studied.

**IOM 13-61
(FOUO)**

FIELD REPORT, KEY WEST HARBOR DYE DISPERSAL TEST, by Leo J. Fisher, May 1961, 21 pp.

This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount to time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

PUB NO.

TITLE/NOMENCLATURE

ICM 14-61

CALIBRATION OF THE MODIFIED WENNER-SMITH-SOULE SALINITY BRIDGE, by James P. Sullivan and Louis J. Francavillese, Jun 1961, 22 pp.

This report is presented as an instruction manual for the calibration of the salinity bridge. An electronic device used for the determination of the salinity of sea water.

ICM 15-61

A PRELIMINARY CLIMATOLOGICAL MODEL OF VERTICAL WIND PROFILES WITH APPLICATION TO TURBULENCE, by James D. Bergen, May 1961, 24 pp.

The model of the wind structure briefly described in this manuscript attempts to provide a practical basis for simulations involving wind effects and for estimates of small scale effects on aircraft operation.

IMR 16-61

ICE CONDITIONS IN BAFFIN BAY AND THE LABRADOR SEA RELEVANT TO PROPOSED CABLE TRACK AND CABLE OPERATION, by Walter I. Wittmann, Jun 1961, 19 pp.

This study presents ice conditions over a broad area affecting the proposed Deer Lake, Newfoundland, Dye-I-Itivdaq Fjord, Greenland and Thule, Greenland submarine cable track.

ICM 17-61

INVESTIGATION PROGRESS CONCERNING THE SCATTERING EFFECTS OF THE SEA SURFACE ON AMBIENT LIGHT, by Nickolas Mabry, Jul 1961, 8 pp.

This publication describes the relationship of the sea surface scattering upon the frequency of occurrence of light and dark patches which the photoelectric cell sees while measuring ambient light.

IM 18-61

IMPLEMENTATION OF AN AIRBORNE OCEANOGRAPHIC PLATFORM, by Robert A. Paloquin, Jul 1961, 39 pp.

This report summarizes the ASWEPS Aircraft Modification Program undertaken during 1961. Mechanics and electronics of various instruments are described and portrayed, including temperature probes, pressure transducers, radiometers, airborne radiation thermometer and receiving antennas.

PUB NO.

TITLE/NOMENCLATURE

- IOM 19-61 PROPOSED ARCTIC DRIFT SHIP STATION STUDY, by Walter I. Wittmann, Charles W. Senior, and Frank L. Skiles, Sep 1961, 29 pp.

This study presents the argument that the selection of a locale for initial establishment and the time for attaining this locale is of critical importance.

- IOM 20-61 PROCEDURES FOR AUGMENTING AND USING A SUBSURFACE CURRENT DATA FILE, by Norman Eisenberg and G. Boyd, Sep 1961, 17 pp.

The subsurface current data file provides a quick and facile determination of the quantity, quality and location of subsurface current data for a specified geographic area.

- IOM 21-61 OCEANOGRAPHIC CONDITIONS IN FOUR SELECTED AREAS OFF CAPE HATTERAS DURING THE PERIOD 27-31 JULY 1961, by Irving Perlroth, Oct 1961, 22 pp.

This report presents results of four tests taken in support of U. S. Navy Underwater Sound Laboratory range accuracy test of a sonar system.

- IOM 22-61 SUBMARINE BOTTOM GRADIENTS AND SEDIMENTS OFF IBERIA, by John K. Duncan, Aug 1961, 26 pp.

This report is the first of a series and covers the submarine relief and slope of the area between 03° and 45°N and 08° and 22°W.

- IOM 23-61 SUBMARINE BOTTOM GRADIENTS SOUTHWEST OF THE AZORES, by John H. Dail, Oct 1961, 9 pp.

This report is the second of a series and covers the submarine relief and slope of the area between 25° and 39°N and 23° and 35°W.

- IOM 24-61 SUBMARINE BOTTOM GRADIENTS AND SEDIMENTS BETWEEN 23° and 40°N and 60° and 70°W, by John K. Duncan and Edmund Wilcox, Oct 1961, 20 pp.

This report is the third of a series and covers the submarine relief and slope of the area.

PUB NO.

TITLE/NOMENCLATURE

ICM 25-61

TIDAL HARMONIC CONSTANTS, by Bernard K. Swanson,
Mar 1953, 14 pp.

This publication presents a study of the harmonic analysis of the tides. Harmonic analysis was suggested by Ford Kelvin in 1867. In 1872 he invented a device for predicting resultant tides from a summation of all the component tides.

ICM 27-61

WATER CLARITY MEASUREMENTS, MAYPORT, FLORIDA, by
Eugene L. Bialek, Nov 1961, 7 pp.

A study of Dr. S. Q. Duntley's nomography for calculating visibility by swimmers provides a technique for predicting the character of the underwater visual field.

ICM 28-61

A DETERMINATION OF THE NATURAL PERIOD OF PALK STRAIT,
INDIA, by Bernard K. Swanson, Nov 1961, 7 pp.

The natural period of this basin was determined to check the possibility and the location of a tidal node and to find an explanation for the small tidal ranges. The equations for forced simple harmonic motion and for a standing wave were applied to Palk Strait to determine the lunar nodal point and the natural period.

ICM 29-61

A COMPARISON OF COMPUTED BATHYTHERMOGRAPHY CORRECTIONS
DETERMINED BY READINGS FROM TWO DIFFERENT TYPES OF GRID
HOLDERS, by Benjamin S. Richmond and Cora E. Slade,
Nov 1961, 12 pp.

This report presents a study and conclusion of an inquiry made by the British Air Ministry Meteorological Office as to why their processing system yielded different temperature and depth corrections for their bathythermographs than our processing system.

ICM 30-61

SOUND VELOCITY FORMULAS, by Lawrence A. Sower, Dec 1961,
18 pp.

Since Sir Issac Newton first derived his formula for the velocity of sound in an ideal fluid, many investigators have tried to apply this formula to sea water. With the increased emphasis on acquiring oceanographic information and development of modern instruments, many methods of computing sea water sound velocity have been formulated. This report attempts to summarize these commonly available formulas in one publication.

PUB NO.

TITLE/NOMENCLATURE

IMR G-1-62

GRAVITY METER OPERATIONAL CHECK RANGE, RHODE ISLAND SOUND AREA, Jun 1962, 12 pp.

This report describes the establishment of a gravity meter operational check range in the Rhode Island Sound Area. The range consists of 36 gravity stations which are established with an underwater gravimeter. Results and values obtained are given.

IMR G-2-62

GRAVITY METER EVALUATION AND TRAINING RANGE, CHESAPEAKE BAY, Jun 1962, 9 pp.

This report describes the establishment of a gravity meter evaluation and training range in Chesapeake Bay. The value of gravity was observed at 22 positions located between Cove Point and Point Lookout. Results and values obtained are given.

The following reports describe a series of investigations of the problems associated with wave hindcasting by the spectrum method.

ICM 2-62

REPORT NO. 7 - COMPARISONS OF WIND GENERATED WAVE SPECTRA AND THEIR PARAMETERS, by Donald C. Bunting, Sep 1961, 50 pp.

ICM 3-62

REPORT NO. 6 - A DISCUSSION OF THE SUBJECTIVITY REQUIRED IN MANUAL WAVE SPECTRAL HINDCASTING, by Donald C. Bunting, Sep 1961, 4 pp.

ICM 4-62

REPORT NO. 5 - AN ANALYSIS OF ERRORS POSSIBLE IN USING CLIMATOLOGICAL INSTEAD OF EXISTING SEA SURFACE TEMPERATURES, by Donald C. Bunting, Sep 1961, 18 pp.

ICM 5-62

REPORT NO. 4 - AN ANALYSIS OF THE RANGE OF ERRORS POSSIBLE IN COMPUTING SURFACE WINDS USING CLIMATOLOGICAL RATHER THAN EXISTING AIR-SEA TEMPERATURE DIFFERENCES, by Donald C. Bunting, Sep 1961, 17 pp.

ICM 6-62

REPORT NO. 3 - A COMPARISON OF COMPUTED SURFACE WINDS WITH OBSERVED SHIP WEATHER STATION WINDS, by Donald C. Bunting, Sep 1961, 8 pp.

ICM 7-62

REPORT NO. 2 - A COMPARISON OF 3, 6 and 12 HOURLY WIND OBSERVATIONS FOR CALCULATING SIGNIFICANT HEIGHTS OF WAVES FROM WAVE SPECTRA, by Donald C. Bunting, Sep 1961, 39 pp.

ICM 8-62

REPORT NO. 1 - A COMPARISON OF THREE METHODS FOR DETERMINING THE SURFACE WINDS OVER THE SEA, by Donald C. Bunting, Sep 1961, 7 pp.

PUB NO.	TITLE/NOMENCLATURE
IOM 9-62	THE DETERMINATION OF SEA-SURFACE WAVE DIRECTION FROM SUBMARINES, by Roger Merrifield, Feb 1962, 35 pp. The submarine, USS REDFIN (SS-272), was utilized as a working platform to obtain analog recording of surface wave motion. This report is concerned with the analysis of these recording to determine sea directions.
IOM 10-62	DIGITAL VIBROTRON TECHNIQUES, by Quick Carlson, Feb 1962, 6 pp. This publication presents a study of the vibrotron, a frequency modulated pressure sensor, with an output that can be counted accurately by electronic technique.
IM 11-62	A NOTE ON THE RELIABILITY OF TRANSMITTED SEA SURFACE TEMPERATURES, by Blair W. Gibson, Jan 1960, 9 pp. Commercial ships plying the world's oceans are the greatest potential source of sea surface temperature data. When surface heating is present, injection temperatures from levels of 20 to 35 feet are more representative of horizontal temperature variations than bucket or other near surface measurements.
IOM 12-62	ROTARY TIDAL CURRENTS, by Bernard K. Swanson, Feb 1962, 8 pp. This publication presents a study of the various types of rotary tidal currents and characteristics of each.
IOM 13-62	RESULTS OF A DEEP-SEA MARINE FOULING AND CORROSION PRETEST IN THE TONGUE OF THE OCEAN, by John R. DePalma, Mar 1962, 15 pp. This report describes marine fouling and corrosion test panel array moored in the Tongue of the Ocean (TOTO) for a pretest exposure. The mooring and rigging survived the pretest satisfactorily and are recommended for future exposure.
IOM 14-62	THE RELATIONSHIP OF MEAN PERIODS AND AMPLITUDES OF BOTTOM PRESSURE RECORDS AS ANALYZED BY TWO DIFFERENT METHODS, by Clifford H. Cline, Sep 1960, 4 pp. This study shows the period and amplitude ratios existing between two methods of analysis.

PUB NO.

TITLE/NOMENCLATURE

IMR 15-62

INTRODUCTION TO UNDERWATER SOUND, by Robert S. Winokur, Mar 1962, 37 pp.

Underwater sounds for navigational use are produced in one of three basic ways: (1) by percussion, as the striking of a bell, gong or bottom of vessel; (2) by an oscillator, as the vibration of a diaphragm by means of electronics; and (3) by an explosion, as by a small bomb or depth charge.

ION 16-62

COMPARISON OF SEA SURFACE SPECTRAL ESTIMATES EDO 255B VERSUS ULCER I SONIC SCANNER, by Pasquale S. DeLeonibus, Mar 1962, 14 pp.

This report is a comparison of wave height data taken by two inverted echo sounders and some preliminary speculations on why the data differ, particularly at spectral densities of higher frequency wave components.

ION 17-62

TSUNAMIS REPORTED FROM THE WEST COAST OF SOUTH AMERICA (1562-1960), by William H. Berninghausen, Mar 1962, 19 pp.

Forty-nine tsunamis reported from the West Coast of South America between 1562 and 1960 are listed and described. This list gives the date of occurrence, location of the epicenter of the causal earthquake, area affected by the wave and general remarks about the height of the wave and the amount of damage done.

ION 18-62

THE DISTRIBUTION OF CALCIUM CARBONATE IN DEEP SEA SEDIMENTS OF THE NORTH ATLANTIC, by Richard Nekritz, Mar 1962, 9 pp.

This report compiles all existing calcium carbonate analyses of bottom samples taken in the North Atlantic into a contoured calcium carbonate distribution chart.

IM 19-62

COMPARISON OF WAVE TELEMETERING BUOY AND ELECTRONIC WAVE STAFF DATA, by Robert L. Pickett, Mar 1962, 10 pp. (Reprinted Dec 1966)

This publication compares seven wave telemetering buoy records to electronic wave staff data. Comparison of wave power spectra calculated from the two instruments show wave telemetering buoys introduce low-frequency energy in their records by transmitter drift; the buoys tend to record the waves too low in high sea states; the buoys lack fidelity on shorter wave periods.

PUB NO.

TITLE/NOMENCLATURE

IOM 20-62

PERSISTENCE OF COMPOSITE SEA SURFACE TEMPERATURE PATTERNS FOR FEBRUARY 1958-1961 OFF CAPE HATTERAS, by Irving Perlroth and Lloyd Simpson, Mar 1962, 9 pp.

The purpose of this study is to ascertain the possibility of constructing an empirical sea surface temperature (SST) chart for a period of a month in a specific area, and to determine whether the temperature pattern of this chart will repeat itself during the same month over a period of several years.

IOM 21-62

BIOLUMINESCENCE AND FLUORESCENCE, by Bernard K. Swanson, Apr 1962, 11 pp.

This publication contains material compiled from various textbooks on physics, bioluminescence and fluorescence, and from notes collected by the author over a period of years.

IMR 0-22-62

OCEANOGRAPHIC STATION DATA - USS PREVAIL CRUISE NO. 00544 OF JUNE AND JULY 1961, Apr 1962, 21 pp.

This report presents results of oceanographic conducted aboard the USS PREVAIL CRUISE.

IMR 0-23-62

OCEANOGRAPHIC STATION DATA - USS SAN PABLO CRUISE NO. 00883 of AUGUST - OCTOBER 1961, Apr 1962, 120 pp.

During this period the USS SAN PABLO (AGS-30) collected oceanographic observations in the Tongue of the Ocean (TOTO) and Exuma Sound. This report contains data obtained on this trip.

IMR 0-24-62

OCEANOGRAPHIC STATION DATA - USS SAN PABLO CRUISE NO. 00528 of NOVEMBER - DECEMBER 1961, Apr 1962, 57 pp.

This report presents results of oceanographic operations conducted aboard the USS SAN PABLO CRUISE during the period November - December 1961 in the Bahama Islands.

IMR 0-25-62

DESCRIPTION OF A SHALLOW WATER OCEANOGRAPHIC MULTI-SAMPLER, by Robert L. Cory, Jun 1962, 7 pp.

This report describes a shallow water oceanographic data collection system which yields continuous measurement of temperature, conductivity and depth from the surface to about 200 feet.

PUB NO.

TITLE/NOMENCLATURE

ICM 0-26-62
(FOUO)

FIELD REPORT, MARE ISLAND STRAIT DYE DISPERSAL TESTS,
by Leo J. Fisher, Apr 1962, 34 pp.

This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

IM 0-27-62

IMPROVING WAVE TELEMETERING BUOY OBSERVATIONS, by
Robert E. Lee Pickett and Josue Diaz, Apr 1962, 9 pp.
(Reprinted Nov 1966)

The Wave Telemetering Buoy (SPLASHNIK), designed by David Taylor Model Basin, measures and transmits wave periods and heights. The buoy consists of a floating antenna and a container which houses an accelerometer, a transmitter and battery pack.

IMR 0-28-62

COMPARISON OF SEA SURFACE SPECTRAL ESTIMATES EDO 2558 VERSUS ARGUS ISLAND RESISTANCE WIRE WAVE STAFF,
by Roger Merrifield, May 1962, 20 pp.

This publication presents a study of the collection and analysis of sea surface wave data recorded through the use of inverted echo sounders.

IMR 0-29-62

ANTARCTIC AERIAL ICE OBSERVATION - OCTOBER-DECEMBER 1961, by L. A. Dotson and R. B. McBeth, May 1962, 20 pp.

Aerial observation of sea ice was conducted in the Ross Sea and McMurdo Sound, Antarctica. This report contains information concerning the deployment of ice observers and includes reproduction of ice charts obtained in aerial reconnaissance of antarctic sea ice by this office.

IMR 0-30-62

OCEANOGRAPHIC STATION DATA - USS SAN PABLO CRUISE NO. 31933, FEBRUARY - APRIL 1962, May 1962, 111 pp.

The oceanographic station data contained in this report have been assigned identifying NODC Reference No. 31933. These data have not yet been reviewed by the National Oceanographic Data Center. It is possible that modifications will be made to these data following a quality analysis by NODC.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-31-62

PRELIMINARY DATA REPORT OF BOTTOM SEDIMENTS FROM THE TONGUE OF THE OCEAN, BAHAMAS, by Roswell F. Busby, May 1962, 21 pp.

This report presents findings of eighty-one bottom sediments. Samples were collected in the Tongue of the Ocean (TOTO), Bahamas.

IMR 0-33-62

FIELD RESULTS - PANAMA CANAL ZONE FOULING - PROJECT 0-11, 1957-1959, by John R. DePalma, Jun 1962, 30 pp.

This report describes the Marine Biological Fouling Program conducted at three test sites in the approaches to Panama Canal Zone. It includes all of the oceanographic data collected at these sites between April 1957 and April 1959.

IMR 0-34-62

FIELD REPORT OF THE FIRST YEAR OF A BOTTOM FOULING STUDY IN PENOBSCOT BAY, MAINE, by John R. DePalma, Jun 1962, 16 pp.

This report describes data collected during the first year of a biological fouling study in Penobscot Bay, Maine.

IMR 0-35-62

COMPARISON OF HINDCAST TO OBSERVED SIGNIFICANT WAVE HEIGHTS AT ARGUS ISLAND, NOVEMBER 20-30, 1961, by Pasquale S. DeLeonibus, Jun 1962, 30 pp.

A brief description is given of six wave generating (fetch) areas from which wave propagated towards the Argus Island Tower.

IMR 0-36-62

RELATIONSHIP OF CENTRAL PRESSURE OF HURRICANE ESTHER (1961) AND THE SEA SURFACE TEMPERATURE FIELD, by Irving Perlroth, Jun 1962, 27 pp.

This report is an attempt to approach the problem in a manner similar to that used by Fisher, utilizes much more detail in the Sea Surface Temperature Field, and reveals that variations of hurricane intensity are apparently directly related to the Sea Surface Temperature Field.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-37-62

OCEANOGRAPHIC STUDY - UNITAS II, 22 SEPTEMBER - 20 OCTOBER 1961, by Rudolph J. Perchal, Jun 1962, 9 pp.

The Naval Oceanographic Office developed an Antisubmarine Warfare Environmental Prediction System (ASWEPS). Since 1959 successive antisubmarine exercises have shown the value of ASWEPS to the Navy, especially in utilizing oceanographic charts to locate areas of optimum sonar conditions.

IMR 0-38-62

OCEANOGRAPHIC DATA REPORT - PROJECT CHIPER, MARCH - APRIL 1960, by A. W. Andersen, Sep 1962, 81 pp.

Project CHIPER, a Joint U. S. - Chile - Peru Survey collected oceanographic data along the west coast of South America from Talcahuano Naval Base, Chile to Talara, Peru.

IMR 0-39-62

A PRELIMINARY STUDY OF THE OCEANOGRAPHY OF THE TONGUE OF THE OCEAN, BAHAMAS, by Edward L. Ridley, Jun 1962, 40 pp.

This report outlines briefly some aspects of the oceanography of the Tongue of the Ocean. Variations in physical properties occurred within two or three hours which significantly affect sound propagation.

IM 0-40-62
(FORMERLY
IMR 0-40-62)

A CRITICAL SUMMARY OF SEA SURFACE HEAT EXCHANGE EQUATIONS, by Roy D. Gaul and Robert B. Elder, Aug 1959, 30 pp.

This manuscript presents an evaluation of relationships that have been advanced for computation of total heat flux at the sea surface -- the so called heat budget equation.

IM 0-41-62

OCEANOGRAPHIC CONDITIONS DURING THE TESTING AND EVALUATION OF THE AN/SQS-26 (XN-1 EDO) SONAR, by James R. D. Tapager, Jul 1962, 25 pp.

Oceanographic observations were obtained aboard the USS SAN PABLO (AGS-30) in supports of the testing and evaluation of the AN/SQS-26 (XN-1 EDO) Sonar. Observations were analyzed and all of the data obtained have been tabulated and are listed in the appendix to this report.

PUB NO.

TITLE/NOMENCLATURE

IM 0-42-62

ACOUSTIC AND PHYSICAL PROPERTIES OF BOTTOM SEDIMENTS,
by Robert S. Winokur, May 1962, 20 pp.

This paper summarizes the existing studies of the acoustic and physical properties of bottom sediments. The computation of the impedance, reflection coefficient, and the reflection loss for each of the sediments, as well as the graphic presentation, represents the original material.

IMR 0-43-62

BOTTOM ACOUSTICAL REFLECTIVITY AND PENETRATION STUDIES,
by Jacob Hoffman and Gordon E. Wilkes, Jun 1962, 5 pp.

This report presents a close examination of the PDR (Precision Depth Recorder) echograms from the Holiday II Bathymetric survey.

IMR 0-44-62

PRELIMINARY STUDY ON THE USE OF LIGHT TO LOCATE
UNSTABLE WATER MASSES IN THE TONGUE OF THE OCEAN, by
Anthony J. Kral (Lt. USN), Jun 1962, 16 pp.

This paper attempts to correlate readily available photometer data in the Tongue of the Ocean with unstable water lenses observed in this area.

IMR 0-45-62

LITERATURE SURVEY - BIOLOGY IN THE TONGUE OF THE
OCEAN AND EKUMA SOUND, by Anthony J. Kral (Lt. USN),
Jun 1962, 46 pp.

This paper attempts to digest all the available information on marine biology of the Tongue of the Ocean and Ekuma Sound and to summarize present knowledge of the oceanography and hydrography of these areas.

IMR 0-47-62

REPORT NO. 9 - FURTHER STUDIES OF FULLY DEVELOPED
SEAS AT SHIP METRO 1958, by Donald C. Bunting,
Aug 1962, 12 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-48-62

SUBAERIAL FEATURES ON THE FLOOR OF THE TONGUE OF THE OCEAN, BAHAMAS, by Roswell F. Busby, Jul 1962, 13 pp.

Photographs taken 1000 fathoms display features associated with erosion of limestone in the littoral zone on reefs in warm or temperate parts of the world.

IMR 0-49-62

A REINTERPRETATION OF SURFACE SHIP DRIFT OBSERVATIONS, by William E. Boisvert, Aug 1962, 13 pp.

This report describes, by comparison with past requirements, the present method of analyzing surface drift observation utilized by the U. S. Naval Oceanographic Office.

IMR 0-50-62

KEY TO PRINCIPAL PTEROPOD SPECIES, by James B. Rucker, Aug 1962, 17 pp.

This manuscript provides an illustrated key to 35 principal pteropod species. Along with pelagic foraminifera the pteropod shells frequently form a large portion of some deep sea sediments. The latitudinal distribution of pteropod species is limited by surface water temperature. Thus their presence and distribution in deep sea cores may prove useful in determining hydrographic regimes of oceanic waters.

IMR 0-51-62

REPORT NO. 11 - OCEAN WAVE PROPAGATION IN GREAT CIRCLES ON POLAR-STEREOGRAPHIC PROJECTION MAPS, by A. F. Gustafson and F. Lewis, Sep 1962, 7 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

IMR 0-52-62
(FOUO)

FIELD REPORT, PISCATAQUA AND PORTSMOUTH HARBOR, NEW HAMPSHIRE DYE DISPERSAL TESTS, by Leo J. Fisher, Sep 1962, 28 pp.

This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-53-62

OCEANOGRAPHIC STATION DATA - USS SHELDRAKE CRUISE NO. 31934 of MARCH 1962, Sep 1962, 93 pp.

This report presents oceanographic data collected on the USS SHELDRAKE CRUISE NO 31934 on 10 March and 22 March 1962 in the northern part of the Tongue of the Ocean.

**IMR 0-53-62
(SUPPLEMENT)**

OCEANOGRAPHIC STATION DATA - USS SHELDRAKE CRUISE NO. 31934 of MARCH 1962, Sep 1962, 22 pp.

Oceanographic Station Data from the Tongue of the Ocean (TOTO) obtained by the USS Sheldrake during 10 thru 22 March 1962, have been previously published. The data contained herein for Exuma Sound are issued as a supplement to TOTO Data.

IMR 0-54-62

REPORT NO. 10 - ERRORS IN SIGNIFICANT HEIGHTS AND E-VALUES OF OCEAN WAVES FROM INCORRECT WIND SPEEDS, by Donald C. Bunting, Sep 1962, 8 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

IMR 0-55-62

OCEANOGRAPHIC SURVEY IN CENTRAL AND SOUTH AMERICAN WATERS, by Alfred W. Anderson, May 1963, 83 pp.

This report contains the data resulting from oceanographic observations taken by USS REHOBOTH (AGS-50) in Central and South American waters in 1960.

IMR 0-56-62

OCEANOGRAPHIC STATION DATA - USS SAN PABLO CRUISE NO. 31947, MAY - JUNE 1962, Sep 1962, 71 pp.

This publication presents oceanographic data collected in the Tongue of the Ocean, Exuma Sound and east of the Bahamas by the USS SAN PABLO (AGS-30) in 1962.

IMR 0-57-62

REPORT NO. 12 - THE VARIABILITY OF SURFACE WIND SPEEDS OBSERVED BY FIXED WEATHER SHIP STATIONS, by Donald C. Bunting, Sep 1962, 21 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

PUB NO.

TITLE/NOMENCLATURE

IR 0-58-62

AN UNDERWATER ACOUSTIC MEASURING SYSTEM FOR THE ASWEPS AIRCRAFT, by John C. Wilkerson, Sep 1962, 13 pp.

Four AN/SSQ-23 Sonobuoys with related receiving and recording equipment were calibrated for use in an airborne system for measuring bottom-reflected underwater acoustic signals.

IMR 0-59-62

REPORT NO. 8 - A COMPARISON OF THE STAGE OF DEVELOPMENT OF SEA SPECTRA AT VARIOUS WIND SPEEDS, SHIP METRO 1958, by Marvin Burkhardt, Sep 1962, 13 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

IMR 0-60-62

LAYER DEPTHS OF THE KAUAI CHANNEL, by Joseph E. O'Hare, Oct 1962, 8 pp.

This study attempts to determine whether the Division of Oceanographic Prediction has come upon a technique sufficiently useful and accurate to warrant adoption for routine use in standard publication.

IMR 0-61-62

A COMMENT ON THE FLOW PATTERN OF THE YELLOW SEA, by Joseph E. O'Hare, Oct 1962, 13 pp.

This report presents a study of the currents within the Yellow Sea. This analysis derived from a study of one-degree square current drift vectors collected by U. S. Merchant Vessels over a period of years, shows the area invaded by a number of branching tongues of warm water.

IMR 0-62-62

BIRDS EYE 4-62, 19 JULY - 2 AUGUST 1962, Oct 1962, 49 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

PUB NO.

TITLE/NOMENCLATURE

IOM 0-63-62

FIELD REPORT, GALVESTON CHANNEL, DYE DISPERSAL TESTS, by Leo J. Fisher and James J. Gallagher, Sep 1962, 67 pp.

This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

IMR 0-64-62

MARINE FOULING AND BORING ORGANISM IN THE TONGUE OF THE OCEAN, BAHAMAS - EXPOSURE II, by John R. DePalma, Oct 1962, 14 pp.

A 111-day marine fouling and corrosion experiment was performed in the Tongue of the Ocean during the period 5 April to 25 July 1962. This report attempts to determine the effects of the deep sea environment on various materials.

IMR 0-65-62

A SERIES OF WAVE POWER SPECTRA, by Robert L. Pickett, Nov 1962, 111 pp.

This report presents wind and wave data taken during the last two weeks of November 1961 at Argus Island Tower. The wave data are presented as power spectra and no attempt has been made to relate the spectra to conditions in the generating area or to predict wave heights.

IMR 0-66-62

RADIO OCEANOGRAPHY - A BIBLIOGRAPHY, by Norman A. Eisenberg, Sep 1960, 72 pp.

This bibliography is a preliminary survey of the subject because lack of time limited the references consulted to those that were readily accessible and expeditiously processed.

IMR 0-67-62

IMPORTANCE OF DIURNAL TEMPERATURE CHANGES IN THE OCEAN TO ASW AND ENVIRONMENTAL PREDICTION, by Edward L. Corton, Dec 1962, 8 pp.

Much study has been delved into the problem of measuring sea surface temperatures. This report describes certain integral parts of the problem; namely, presence, magnitude and significance of diurnal temperature changes in the ocean.

PUB NO.

TITLE/NOMENCLATURE

IR 0-68-62

ARGUS ISLAND TIDES, by Robert B. Elder, Dec 1962, 9 pp.

Tidal data collected with a bubbler tide gage in 1962 at Argus Island, 22 miles southwest of Bermuda, are compared to predicted times and heights at Ireland Island and Hampton Roads.

IMR 0-69-62

AUTOMATION OF OCEANOGRAPHIC ANALYSIS AND PREDICTION, by John J. Russell, Nov 1962, 6 pp.

This report outlines and describes developmental stages of a completely automatic system of data processing and dissemination. This system furnishes the Fleet with analyzed Antisubmarine Warfare Environmental Prediction System (ASWEPS) contour charts.

IMR 0-70-62

MARINE FOULING AND BORING ORGANISMS OFF FORT LAUDERDALE, FLORIDA, by John R. DiPalma, Apr 1963, 28 pp.

This report presents a biological fouling study conducted off Fort Lauderdale, Florida during the period September 1961 to September 1962. The exposure site was representative of the general coastal environment rather than local harbor conditions.

IMR 0-71-62

FIELD REPORT, WEYMOUTH FORE RIVER DYE DISPERSAL TESTS, QUINCY, MASSACHUSETTS, by Leo J. Fisher, Dec 1962, 33 pp.

This report shows the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used are discussed.

PUB NO.

TITLE/NOMENCLATURE

IMR G-1-63

RIGOROUS SOLUTION FOR THE DETERMINATION OF THE DEFLECTION OF THE VERTICAL FOR THE CENTER AREA, by Andrew C. Campbell, 1963, 16 pp.

This report presents a mathematical solution for the evaluation of the deflection of the vertical. The solution is for both square and circular approach to the problem. The solution pertains to that area about the computation point which has previously been the subject for empirical type solutions.

IMR H-1-63

AN ANALYTIC ADJUSTMENT OF A SOUNDING LINE, by Andrew C. Campbell and Roger T. Osborn, 1963, 10 pp.

Horizontal data consisting of positional fixes, ships heading and an average constant speed of advance may be utilized in the adjustment of a sounding line. Proof for the quality of the adjustment is established by the comparison of depth differences (residuals) at line crossings.

IMR I-1-63

TEXT AND EVALUATION OF THE MECHANICAL BATHYTHERMOGRAPH, by Robert J. Farland and Richard A. Stewart, Jun 1963,

This report presents a series of controlled laboratory tests conducted on a newly acquired calibrated mechanical bathythermograph.

IMR M-1-63

PRELIMINARY REPORT ON SPECIAL AEROMAGNETIC SURVEY PUERTO RICO TRENCH - 1962, by Wilburt H. Geddes and Leonard S. Dennis, May 1963, 6 pp.

At the request of the National Academy of Sciences in connection with Project MOHOLE, a special aeromagnetic survey in the vicinity of Puerto Rico was conducted by the U. S. Naval Oceanographic Office. This report describes the findings of the survey.

IMR N-1-63

A STUDY OF DECCA/LAMBDA CALIBRATION, by H. Schlen and Henry W. Bigelow, 1963, 13 pp.

This report discusses the method of calibrating two-range Decca and Decca/Lambda electronic positioning system. The nature and variation of the fixed errors determined by these calibrations are considered.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-1-63

RELATIONSHIP BETWEEN WATER TEMPERATURE AND SURVIVAL,
by R. Eichberg, 1952, 10 pp.

This study is intended primarily to enlighten the individual of his chances of survival after immersion in the ocean.

IMR G-2-63

COASTAL GRAVITY SURVEY EASTERN PUERTO RICO, Apr 1963,
10 pp.

A free air anomaly chart of the eastern tip of Puerto Rico and Vieques Sound is presented along with a tabulated list of land gravity observations in eastern Puerto Rico and adjacent islands.

IMR I-2-63

SEA SURFACE TEMPERATURE MEASUREMENTS SYSTEM (SURTEMS),
by J. Kuhn and Robert J. Farland, May 1963, 79 pp.

A Sea Surface Temperature Measurement System (SURTEMS) was evaluated to establish the most desirable method for obtaining sea surface temperature measurements.

IMR M-2-63

PROJECT MAGNET AN ADDRESS DELIVERED TO THE AMERICAN
ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, by
Wilburt H. Gaddes, Dec 1962, 7 pp.

This address covers the survey equipment in use on Project Magnet aircraft and reviews briefly our world-wide survey operations.

IMR N-2-63

MEASUREMENTS OF DISTANCES OVER WATER, by Henry W.
Bigelow, Mar 1963, 8 pp.

This report discusses in detail the results of several tests conducted to obtain the correct procedures in the measurement of distances over water.

IMR O-2-63

OCEANOGRAPHIC STATION DATA - USS SAN PABLO CRUISE NO.
31972 OF AUGUST - SEPTEMBER 1962, 1963, 43 pp.

This report presents oceanographic data collected by the USS San Pabo (AGS-30) west of Bermuda in 1962.

PUB NO.

TITLE/NOMENCLATURE

IMR I-3-63

TEST AND EVALUATION OF THE PRECISION DEPTH RECORDER AND PRECISION GRAPHIC RECORDER, by James R. Cousins, 31 pp.

A series of controlled laboratory tests were conducted on five Precision Depth Recorders Mark XI and five Precision Graphic Recorders No. 411 to evaluate their capabilities for use as underwater sound ranging recorders.

IR M-3-63

ANALYSIS OF APPROXIMATING RESIDUAL TOTAL MAGNETIC INTENSITY BY THE PROJECTION OF THE ANOMALOUS FORCE ON THE EARTH'S NORMAL FIELD, by Angelo L. Kontis and George A. Young, Sep 1963, 11 pp.

Utilizing magnitude and directions observations of the magnetic field, the anomalous total intensity, the residual total intensity and the projection of the anomalous force in the direction of the earth's normal field, are computed for two profiles over Plantagenet Bank.

IMR O-3-63

AN ANALYSIS OF CURRENT OBSERVATIONS MADE IN THE TONGUE OF THE OCEAN IN JANUARY AND FEBRUARY 1962, by Charles Ostericher, Jr., Feb 1963, 16 pp.

Current observation for a two week period in the Tongue of the Ocean are reported and portions analyzed to determine their period and nature. The analysis, although inconclusive, indicates the presence of at least three different sets of periodic currents.

IMR M-4-63

MARINE MAGNETIC PROFILES IN THE PACIFIC OCEAN, 1961-1962, by Dewey R. Bracey, Sep 1963, 10 pp.

Marine magnetic data were collected along 23,824 nautical miles of survey track in the Pacific Ocean. These data, presented in profile form, reveal distinct zones of differing magnetic characters defined by changes in frequency and amplitude of magnetic anomalies.

IMR O-4-63

COMPUTER PROGRAMS FOR USE IN THE ANALYSIS OF DATA OBTAINED BY SUBMARINES, by F. J. Scott, Jan 1963, 14 pp.

This report describes the various processing steps taken to process raw data (oceanographic) being furnished by the submarines into final form.

PUB NO.

TITLE/NOMENCLATURE

IMR M-5-63

SPECIAL AEROMAGNETIC SURVEY - MAYAQUEZ AREA, PUERTO RICO, by Leonard S. Dennis and Charles L. Gunn, Jr., Jun 1963, 9 pp.

At the request of the National Academy of Sciences in connection with Project MOHOLE, a special aeromagnetic survey in the vicinity of Mayaguez, Puerto Rico was conducted by the U. S. Naval Oceanographic Office. This report presents six magnetic profiles constructed from data acquired over the serpentinite ridges and compared with a geological map.

IMR O-5-63

AN ANALYSIS OF AMBIENT LIGHT RECORDINGS IN THE OCEAN FROM ARGUS ISLAND TOWER, by Roger Merrifield, Apr 1964, 29 pp.

Ambient light data were recorded at Argus Island Tower in an attempt to determine the effect of surface waves and sky conditions on light variations beneath the sea surface.

IMR M-6-63

ANALYSIS OF PUERTO RICO TRENCH MARINE MAGNETIC SURVEY DATA, by Gerald D. VanVoorhis and Jerry C. Carroll, Sep 1963, 11 pp.

A detailed geomagnetic survey of the Puerto Rico Trench has revealed that two major structural trends intersect in this area. One trend is related to the structure of the Bahama Islands and the second is related to the Puerto Rico Trench.

IMR O-6-63

PERIODIC VARIATIONS WITHIN THE WATER COLUMN IN THE TONGUE OF THE OCEAN, BAHAMAS, by Gilbert S. Ruggles, Jan 1963, 38 pp.

This report presents a discussion of temperature and salinity anomalies and examines the various phenomena which are believed to produce the periodic and aperiodic variations in the physical properties at various levels within the water column.

IMR M-7-63

GEOLOGIC INTERPRETATION OF MARINE MAGNETIC DATA IN AN AREA OFF THE SOUTHERN BAHAMA ISLANDS, by Dewey R. Bracey, Nov 1963, 8 pp.

A seventh degree Chebyshev polynomial residual contour chart has been used to interpret the geologic features in an area off the Southern Bahamas. This interpretation suggests the presence of three major and several subordinate faults dividing the area into five crustal blocks.

PUB NO.

TITLE/NOMENCLATURE

IM 0-7-63

BATHYMETRIC SURVEY RESULTS OFF BIG WOOD CAY AND SALVADOR POINT, BAHAMAS, by Roswell F. Busby, Jan 1963, 10 pp.

This report presents the results of a bathymetric survey conducted off the East Coast of Andros Island, Bahamas in 1962.

IMR M-8-63

SUMMARY OF MAGNETIZATION COMPUTATIONS FOR KELVIN SEAMOUNT, PRELIMINARY REPORT, by Gerald VanVoorhis and James Walczak, Jan 1963, 19 pp.

Data from surveys of the New England Seamount Chain were used to compute the magnetic polarization constants for Kelvin Seamount. Five runs were made on an IBM 7070 computer using different densities of data from a marine survey of the area and two runs were made on the computer using data from an aeromagnetic survey of the area. The results show that Kelvin Seamount is highly magnetized and has a large component of remanent magnetization.

IMR 0-8-63

SALINITY BRIDGE COMPARISON BY CONTROLLED EQUIPMENT, by Lloyd B. Bertholf, Mar 1963, 18 pp.

Analysis of sea water salinity often is performed by means of a salinity bridge. Although there are several types of salinity bridges in existence, no study has been published recently to make comparisons of their results. This report presents results and preliminary conclusions of experiments conducted on fourteen separate bridges by ten oceanographic institutions.

IMR M-9-63

A MARINE MAGNETIC SURVEY OF AN AREA IN THE CENTRAL INDIAN OCEAN, by Gordon P. Burton, Jan 1964, 5 pp.

A marine magnetic was conducted over a 10,000 square mile area on the slopes of a submarine rise in the Central Indian Ocean. This report discusses the data recorded during the survey.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-9-63

A FORTRAN PROGRAM TO COMPUTE THERMOMETER CORRECTION AND THERMOMETRIC DEPTHS, by Stanley C. Porter, Mar 1963, 25 pp.

This report presents a basic fortran program for computing thermometer corrections and thermometric depths from the U. S. Naval Oceanographic Log Sheet "A" and printing this data in the general format of the "A" Sheet. A proposed Log Sheet "A" modified for automatic data processing is included.

IMR M-10-63

AN INTERPRETATION OF AN AEROMAGNETIC AND GRAVITY SURVEY OF EASTERN VIRGINIA, by Nicholas J. DiPiazza, Dec 1963, 36 pp.

This report presents the results, analysis, and a geological interpretation of the survey data taken on 19 October, 1961.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR 0-10-63

BIRDSEYE 2-62, 27 APRIL - 8 MAY 1962, Feb 1963, 57 pp.

IMR 0-12-63

BIRDSEYE 5-62, 19-23 AUGUST 1962, Mar 1963, 35 pp.

IMR 0-13-63

BIRDSEYE 6-62, 22-30 SEPTEMBER 1962, Mar 1963, 64 pp.

IMR 0-14-63

BIRDSEYE 7-62, 18-29 OCTOBER 1962, Mar 1963, 50 pp.

IMR 0-15-63

OCEANOGRAPHIC STATION DATA - USS REHOBOTH CRUISE NO. 319091 of NOVEMBER - DECEMBER 1962, Mar 1963, 59 pp.

During the period 16 November - 13 December 1962 the REHOBOTH (AGS-50) collected oceanographic data in the eastern Pacific Ocean. This report presents oceanographic station data collected during that trip.

PUB NO.

TITLE/NOMENCLATURE

IM 0-16-63

AIRBORNE RADIATION AND INFRARED THERMOMETERS (TWO PARTS), by Morris Weiss and Robert A. Peloquin, Feb 1963, 30 pp.

This report is presented in two parts. The first part is a technical consideration of the equipment. The second part describes performance of the instrument in the field with a discussion of the importance of sea surface temperature measurement in oceanography.

IMR 0-17-63

DETERMINATION OF DISSOLVED OXYGEN AND NITROGEN IN SEA WATER BY GAS CHROMATOGRAPHY, by James P. Sullivan, Apr 1963, 30 pp.

This report discusses the method used by this Office to determine dissolved oxygen and nitrogen in sea water by means of gas chromatography. Steps required to modify equipment for the analysis, operating procedures and data computations are presented in detail.

IMR 0-19-63

DEVELOPMENT OF ENVIRONMENTAL SENSING BUOYS, by Robert E. Lee Pickett, Mar 1963, 16 pp.

Environmental sensing buoys are to be used to collect data for the ASWEPs. As a first step in developing a buoy program a survey was made of the various agencies involved in buoy work. This report describes a number of buoy programs and contains a consensus on the future of buoys.

IMR 0-20-63

AIRBOURNE RADIATION THERMOMETER SURVEY - TONGUE OF THE OCEAN, 5-9 FEBRUARY 1963, by John C. Wilkerson, Robert A. Peloquin and Irving Periroth, Feb 1963, 12 pp.

This report presents sea surface temperature measurements obtained by the Barnes Model 14-320 Airborne Radiation Thermometer (ART) conducted by ASWEPs aircraft over the Tongue of the Ocean and Exuma Sound.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-21-63

OCEANOGRAPHIC STATION DATA - USS SAN PABLO CRUISE
NO. 31034 OF OCTOBER - NOVEMBER 1962, Mar 1963,
138 pp.

During the period 25 October - November 1962, the
USS SAN PABLO (AGS-30) collected oceanographic
information off the west coast of St. Croix. This
report presents oceanographic data collected in 1962
by the USS SAN PABLO (AGS-30) off the west coast of
St. Croix.

These reports show the results of studies in flushing
and dye dispersal conducted in various tests. The
amount of time and tidal cycles required to flush
contaminants from a given area the methods used.

IMR 0-22-63

FIELD REPORT, SAN DIEGO BAY, DYE DISPERSAL TESTS,
by Leo J. Fisher, Apr 1963, 23 pp.

IMR 0-23-63

FIELD REPORT, COOPER RIVER, CHARLESTON, SOUTH CAROLINA
DYE DISPERSAL TESTS, by James J. Gallagher, Apr 1963,
52 pp.

IMR 0-24-63

WATERSPOUTS IN NORTH AMERICAN WATERS, by Joseph E.
O'Hara, Feb 1963, 11 pp.

Along the course of the Gulf Stream System there
are several areas in which waterspouts are reported
frequently. This report studies the courses, locations
and the frequencies of such waterspouts.

IMR 0-25-63

U. S. NAVAL OCEANOGRAPHIC OFFICE SUBJECTIVE LAYER DEPTH
ANALYSIS MODEL, by Bertrand Thompson and R. Anderson,
Oct 1963, 19 pp.

The distribution of sea surface temperature (SST)
is controlled by three major factors: currents,
seasonal effects and latitude. This report describes
the subjective layer depth (LD) analysis techniques
utilized by this Office.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-26-63

OCEANOGRAPHIC DATA REPORT, ARCTIC - 1958, Jun 1963, 200 pp.

This report presents the results of an oceanographic operation conducted in the western and eastern Arctic during the Autumn of 1958. It includes 95 oceanographic stations, 70 bottom samples and 18 current stations and 32 bathythermograph log sheets.

IMR 0-27-63

OCEANOGRAPHIC SURVEY OPERATIONS IN WEST INDIES WATERS, SPRING 1962, Aug 1963, 99 pp.

Oceanographic survey operations in West Indies waters during the Spring of 1962 were conducted from aboard the USS REQUISITE (AGS-18). Observations made included 59 oceanographic stations, 275 bathythermographs and 13 phleger cores. Ship's track, station location, survey methods, data analysis techniques, oceanographic station data listing and core analysis summary sheets are presented.

IMR 0-29-63

OCEANOGRAPHIC STATION DATA, USS PREVAIL CRUISE NO. 31037 OF OCTOBER - NOVEMBER 1962, Jun 1963, 33 pp.

This report presents oceanographic data collected in the Atlantic Ocean east of the Bahamas.

IMR 0-30-63

PROJECT FLOOD, DATA REPORT OF MEDITERRANEAN SEA, MAY 1961 - JULY 1962, by James W. Underwood, Aug 1963, 146 pp.

This report is one of a continuing series which contains oceanographic data collected by several mine divisions.

IMR 0-31-63

A SERC BT ANALYSIS PROGRAM IN AUTOCODER, by Mary E. Myers, Dec 1963, 54 pp.

This report describes the procedures and computer equipments needed for a complete BT SERC data analysis.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-32-63

OCEANOGRAPHIC RESULTS OF DATA RECORDED BY SODDS IN THE NORWEGIAN SEA ABOARD THE USS REDFIN (SS-272) by Roger Merrifield and Charles G. Kammer, Feb 1963, 87 pp.

During the summer of 1960, U. S. Naval Oceanographic Office personnel aboard the USS REDFIN (SS-272) conducted a submarine oceanographic survey in the Norwegian Sea. The Submarine Oceanographic Digital Data System (SODDS) was given its first extensive sea trial on this cruise. Discussions of temperature and sound velocity data collected and general oceanography of the area are presented in this report.

IMR 0-33-63

TEMPORAL AND SPATIAL VARIATIONS OF THE TEMPERATURE AND SOUND SPEED IN THE TONGUE OF THE OCEAN, BAHAMAS, by Gilbert S. Ruggles, Sep 1963, 80 pp.

This report presents an examination of serial oceanographic data in the Tongue of the Ocean which revealed that the annual cycle of variation in temperature and sound speed is well defined in the upper 100 meters of water column.

IMR 0-34-63

OCEANOGRAPHY WEST COAST OF ST. CROIX, VIRGIN ISLANDS, Jul 1963, 8" pp.

This report presents oceanographic surveys conducted to define gross spatial changes in physical properties as well as time variations at a point within the water column.

IMR 0-35-63

BIRDSEYE 8-62, 6-18 DECEMBER 1962, May 1963, 66 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

The following reports show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used.

IMR 0-36-63

FIELD REPORT, PASCAGOULA, MISSISSIPPI, DYE DISPERSAL TESTS, by James J. Gallagher, Aug 1963, 27 pp.

IMR 0-37-63

FIELD REPORT, LONG BEACH HARBOR, CALIFORNIA, by Leo J. Fisher, Jun 1963, 24 pp.

PUB NO.	TITLE/NOMENCLATURE
IMR 0-38-63	FIELD REPORT, MAYPORT BASIN, FLORIDA DYE DISPERSAL TESTS, by Leo J. Fisher, Aug 1963, 14 pp. This report show the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants from a given area the methods used.
IMR 0-39-63	OCEANOGRAPHIC DATA REPORT, PROJECT LOLA, JUNE 1963, USS COUGAL (ASR-8), by Sidney W. Oliver and William A. Babis, Aug 1963, 67 pp. This publication presents sound velocity and bathythermograph measurements made from USS COUGAL (ASR-8) in the western Pacific in connection with Project LOLA.
IMR 0-40-63	PART I - EVALUATION OF U. S. NAVAL OCEANOGRAPHIC OFFICE LAYER DEPTH CHARTS PART II - COMPARISONS OF U. S. NAVAL OCEANOGRAPHIC SEA SURFACE TEMPERATURE CHARTS AND WOODS HOLE OCEANOGRAPHIC INSTITUTE ATLANTIC DATA, by John Tuttle, Aug 1963, 15 pp. Part I - Layer depth data from two antisubmarine warfare exercises (CONVEX 1-61 and CONVEX 2-61) and two oceanographic cruises were studied and compared. Part II - This paper compares the positions and temperature values of water masses shown on a NAVOCEANO Composite Chart with data observed on an independent oceanographic survey.
IMR 0-41-63	THE SONAR ENVIRONMENTAL RESEARCH CARD (SERC) DECK - A TOOL FOR THERMAL STRUCTURE RESEARCH, by John J. Russell, May 1963, 19 pp. This report attempts to describe the data and to indicate their availability to investigators interested in thermal structure research.
IMR 0-42-63	BOTTOM LOSS IN THE TONGUE OF THE OCEAN - SPRING 1962 PART I: WEAPONS RANGE, Dec 1963, 17 pp. This report presents the bottom loss data, at near-normal incidence, by discharging rifle shots into the water along two tracks within the weapons range. The direct and bottom reflected arrivals were detected by an acceleration canceling hydrophone towed several hundred yards aft of the receiving ship.

PUB NO.**TITLE/NOMENCLATURE****IMR 0-43-63****OCEANOGRAPHIC DATA REPORT, ARCTIC - 1959, Oct 1963, 245 pp.**

This report presents the results of oceanographic operations conducted in the eastern and western Arctic during Summer and Fall 1959. Data for 136 oceanographic stations, 74 bottom samples, 3 current stations and 35 bathythermograph log sheets are included.

IMR 0-44-63**POST OPERATIONAL REPORT - RED WHEEL - 63, by Bertrand Thompson, Jul 1963, 8 pp.**

This report describes the predication services during exercise RED WHEEL - 63 as a continuation of ASWEP8 established in the Western Pacific in 1962. This program attempts to acquaint the fleet with oceanographic thermal structure charts and their tactical applications to ASW operations; train shipboard meteorological applications to ASW operations; train shipboard meteorological personnel in environmental analysis and forecasting techniques; study the thermal structure of the Pacific Ocean.

IMR 0-45-63**BI-LEVEL OCEAN CURRENT MEASUREMENTS AT ARGUS ISLAND, by Alton B. Crumpler, Feb 1962, 35 pp.**

As a continuation of the study of the circulation pattern over Plantagenet Bank, bi-level (15 and 105 feet) current measurements were taken at Argus Island during the latter part of February 1962. Analysis of the data shows that neither winds nor tidal influence were primary factors in determining direction of current flow during the observational period.

IMR 0-46-63**PREDICTION OF SEA SURFACE CONDITION FROM AMBIENT LIGHT MEASUREMENTS AT DEPTH IN THE ARCTIC OCEAN, by Roger Merrifield, Feb 1964, 14 pp.**

Operation SUBICEX II involving the rendezvous of submarines at the North Pole, enabled the Naval Oceanographic Office to simultaneously measure the ice cover and ambient light level while submerged. The preliminary analysis of these data indicates the possibility of predicting the surface conditions above a submarine.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-47-63

A SUMMARY OF OBSERVATION OF UNDERWATER VISIBILITY AVAILABLE AT THE OCEANOGRAPHIC OFFICE, by Mary Anne Opalski, Sep 1963, 8 pp.

This report summarizes information available at the U. S. Naval Oceanographic Office concerning underwater visibility. Observations were limited to two sources, namely, visibility by divers and by personnel aboard deepwater vessels such as the Bathscaph TRIESTE.

IMR 0-48-63

PHYSICAL DIMENSION OF CONTINENTAL SHELVES AND CONTINENTAL SLOPES, Sep 1963, 10 pp.

This report presents the physical dimensions of continental shelves and slopes computed from data collected from bathymetric charts. Areas and depths of the oceans and seas were obtained from previously compiled lists. International Hydrographic Bureau Ocean Boundaries were used to delineate the oceans.

IMR 0-49-63

ANALYSIS OF ENVIRONMENTAL CONDITIONS AFFECTING ACCIDENTS AT SEA, by Joseph E. O'Hara, Quick H. Carson and W. E. Tamblin, Oct 1963, 27 pp.

This report attempts to establish a relationship between the frequency of accidents at sea and meteorological and associated oceanographic factors based on accident data for U. S. vessels during the years 1947 - 1951. These accidents are primarily in the North Atlantic and North Pacific areas.

IMR 0-50-63

SUBMARINE CANYONS OF MOZAMBIQUE, by John K. Duncan, Oct 1963, 44 pp.

This report presents a study of twenty-five submarine canyons which are incised into the Mozambique continental shelf and continental slope between 10° and 17°S.

IMR 0-51-63

PROTOTYPE FAIRED HOUSING CONSTRUCTED FOR SHIPBOARD CABLE-TOWED OCEANOGRAPHIC INSTRUMENTATION, by Charles G. Kammer, May 1963, 10 pp.

This report describes the concepts, design, construction and experiments with the new instrument.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-52-63

REPORT NO. 13 - STUDIES ON THE VARIABILITY OF SURFACE WINDS, by Donald C. Bunting, Oct 1963, 33 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

IMR 0-54-63

COMPARISON OF U. S. NAVAL OCEANOGRAPHIC OFFICE TEMPERATURE AND LAYER DEPTH CHARTS WITH USNS DAVIS SURVEY DATA, by John J. Tuttle, Jun 1963, 16 pp.

This report evaluates U. S. Naval Oceanographic Office (NAVOCEANO) sea surface temperature and layer depth values interpolated from synoptic facsimile charts by comparison with USNS DAVIS survey data collected during the shakedown cruise of the vessel.

IMR 0-55-63

BOTTOM SEDIMENT DISTRIBUTION IN THE MEDITERRANEAN SEA, by Richard Nekritz, Nov 1963, 10 pp.

This report presents a bottom sediment distribution chart prepared for the Mediterranean Sea. Most of the data were derived from nautical charts and supplemented by sample analyses.

IMR 0-56-63

OCEANOGRAPHIC DATA REPORT, USS ARCHERFISH (AGSS-311) JANUARY 1961 TO MARCH 1962, by Frank X. MacDougal and Dale E. Tidrick, Mar 1964, 174 pp.

This report contains meteorological data, wave observations, water temperature and sound velocity for 157 stations taken during the world cruise of the USS ARCHERFISH (AGSS-311) from January 1961 to March 1962.

IMR 0-57-63

MARINE FOULING AND BERING ORGANISMS OFF SOUTHERN SARDINIA, by John R. DePalma, Dec 1963, 14 pp.

This report presents findings of an experimental marine fouling study conducted off southern Sardinia in connection with Project Flood.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-58-63

VERTICAL COMPONENTS OF TIDAL CURRENTS ON CONTINENTAL SLOPES, by Donald A. Burns, Nov 1963, 7 pp.

The theoretical strength of the vertical component of the tidal current near the bottom is determined for two regions off the coast of the United States having different continental slope characteristics. Results indicate that the strength of the vertical components is probably insignificant.

IMR 0-59-63

BOTTOM LOSS IN THE TONGUE OF THE OCEAN-SPRING 1962 PART II: ACOUSTICS RANGE, Jan 1964, 10 pp.

This report presents bottom loss data, at near normal incidence, as ascertained by firing rifle shots into the water along six tracks traversed within the acoustic range.

IMR 0-60-63

A FURTHER EVALUATION AND COMPARISON OF ERRORS IN SIGNIFICANT WAVE HEIGHTS AND E-VALUES FOR FULLY DEVELOPED SEAS BASED ON ERRORS IN WIND SPEED, by Lionel I. Meskowitz, Oct 1963, 11 pp.

This publication evaluates a report presented by Donald C. Bunting of this Office in 1962. This evaluation discusses Bunting's findings and the required modifications in order for it to be valid.

IMR 0-61-63

CHRISTMAS ISLAND CURRENT DROGUE MEASUREMENTS, MARCH 1962, by Alfred W. Anderson, Dec 1963, 7 pp.

This report describes the parachute drogue current measurements in the Christmas Island area (March 1962) disclosed an apparent westerly surface current of about 0.50 knot. An easterly flowing counter current of about 1.0 knot was located about 500 feet below the surface.

IMR 0-62-63

OCEANOGRAPHIC DATA REPORT, ARCTIC -1960, Feb 1964, 154 pp.

This report presents results of oceanographic operations conducted in the eastern and western Arctic during the winter, summer and fall of 1960.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-63-63

DATA SOURCES FOR SURFACE CURRENT OBSERVATIONS, by Robert G. Engler, Dec 1963, 16 pp.

The sources of data are many and varied, covering the entire spectrum of reliability. The types of current observations may be divided into three categories: Ship drift observations, current measuring device information and theoretical dynamic calculations. This report attempts to summarize the major sources of the first two types of current information.

IMR 0-64-63

OCEANOGRAPHY OF THE GREENLAND SEA, USS ATKA (AGB-3) SURVEY, SUMMER 1962, by William A. Gladfelter, Feb 1964, 154 pp.

Greenland Sea currents and water formations are discussed and numerous temperature salinity and dynamic topography charts are presented.

PUB NO.	TITLE/NOMENCLATURE
IMR MISC-1-64	OPEN SHOP DATA PROCESSING MANUAL, by W. McDaniel and L. Wolcott, Apr 1964, 19 pp. This manual presents information for the proper utilization of the computer operating system by those participating in open shop projects.
IMR N-1-64	LORAN COORDINATE COMPUTATION, by Charles Kirkland, Apr 1964, 47 pp. The program is designed to compute charting coordinates along lines of latitude or longitude for loran curves at specified intervals. The output is suitable for use in drafting loran charts or after editing, serves as copy for loran navigational tables.
IMR O-1-64	MARINE FOULING, A STATE-OF-THE-ART REPORT, by John R. DePalma, James H. Rucker and James A. Bruce, Feb 1964, 33 pp. This report describes the present state of research on the ecology of marine fouling communities and the effect of fouling attachment on the performance of underwater equipment.
IMR MISC-2-64	TAPE INPUT AND OUTPUT SUBROUTINE, by Phillip J. Launtenschlager, Jan 1965, 24 pp. This report outlines the use of TAPIO (Tape Input and Output). This program is pre-compiled and copies of object program deck and compile listings will be reproduced on request.
IMR N-2-64	A DRIP-TOWED MAGNETOMETER SYSTEM, by Jerry G. Carroll and James E. Walczak, May 1964, 23 pp. This report describes the resulting modified magnetometer and its subsequent use in search operations.
IMR N-2-64	NAVIGATION BY VISUAL OBSERVATION OF SATELLITES (NAVOSAT), by William E. Hart, William A. Allen and Leslie L. Cunningham, Apr 1964, 42 pp. This report describes this new system NAVOSAT which is a conceptually simple, relatively inexpensive system for navigation by visual observation of satellites.

PUB NO.

TITLE/NOMENCLATURE

IMR O-2-64

INTERTIDAL FOULING COMMUNITY AT PENOBSCOT BAY, MAINE, by James B. Rucker, Apr 1964, 20 pp.

This report presents a shoreline census conducted in Penobscot Bay, Maine to supplement the existing offshore fouling program. Relative occurrence and distribution of dominant and subdominant fouling organisms, their substrate preferences and temperature and salinity measurements were noted at 16 representative sites during low tide.

IMR MISC-3-64

AUTOMATED DISPLAY OF TIME SERIES DATA, by James S. Warden, Dec 1964, 13 pp.

This paper provides a general description and illustrates uses of this program.

IMR M-3-64

PRELIMINARY REPORT - SPECIAL AEROMAGNETIC SURVEY GUARDIAN HANK, by Leonard S. Dennis and E. Cramer, Jul 1964, 4 pp.

This report discusses a special aeromagnetic survey conducted to provide magnetic data and visually inspect the area for shoals.

IMR N-3-64

LORAN TO GEOGRAPHIC CONVERSION AND GEOGRAPHIC TO LORAN CONVERSION, by Andrew Campbell, Jun 1964, 23 pp.

Up until this time the conversion of Loran coordinates to geographic has always been an iterative computation procedure. The iterative technique had many shortcomings which have been overcome. This report describes the new non-iterative procedure which is more accurate and requires less computer time for the conversion.

IMR O-3-64

ABWEPN - A NEW TYPE OF OCEANOGRAPHY, by George L. Hansen, Dec 1963, 10 pp.

Oceanographic studies oriented directly to anti-submarine warfare were generally terminated after World War II, and reverted to classical approaches of seasonal surveys and basic research. In 1957, the Naval Oceanographic Office commenced investigations into some of the apparent anomalies affecting anti-submarine warfare (ASW) equipment, with an objective to determine if they could be explained physically or if they could be predicted.

PUB NO.

TITLE/NOMENCLATURE

IMR N-4-64

SATELLITE PASS EVALUATOR AND PATH PLOTTER (SPEAPP),
by William A. Allen, William E. Hart and Leslie L.
Cunningham, Sep 1964, 30 pp.

The Satellite Pass Evaluator and Path Plotter (SPEAPP) is designed to solve two major satellite prediction problems: one is determining predicted satellite position or path data; and the second is determining whether a pass will be suitable for observation.

IMR O-4-64

INVESTIGATION OF THE APPLICATION OF STANDARD SOIL MECHANICS TECHNIQUES AND PRINCIPLES TO MAY SEDIMENTS, by George H. Keller, Apr 1964, 57 pp.

This study investigates the feasibility of using the standard soil mechanics procedures in conjunction with submarine sediments. Bottom samples were collected from St. Andrew Bay, Florida and analyzed for their mass physical properties.

IMR N-5-64

LORAN TABLE EDITING PROCESS, by Lucretia A. Walker, Jan 1965, 48 pp.

This manuscript represents a compatible system of integrated KDP and EAN processes fitted into an organized method of producing loran tables.

IMR O-5-64

EFFECT OF VARIATION OF INTAKE DEPTHS ON WATER INJECTION TEMPERATURES, by Richard W. James and Mitchell K. Shank, Feb 1964, 26 pp.

This report presents an investigation of the error in water temperature introduced through the use of the injection system. The study concludes that the use of a thermisto probe in the intake system will yield sufficiently accurate measurements for the synoptic oceanographic net.

IMR N-6-64

THE PREPARATION OF SECONDARY PHASE CORRECTION CHARTS FOR LORAN-C, by David G. Scull and Willard M. Swartwood, Oct 1964, 26 pp.

This report describes the process of computing the secondary phase correction and the methods of constructing charts that are necessary for portraying the correction.

PUB NO.

TITLE/NOMENCLATURE

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR 0-6-64

BIRDSEYE 1-62, 23 MARCH - 3 APRIL 1962, Mar 1964, 62 pp.

IMR 0-8-64

BIRDSEYE 3-62, 19-28 JUNE 1962, Mar 1964, 56 pp.

IMR 0-9-64

A REVIEW OF THE DETERMINATION OF DEPTH OF SERIAL SAMPLING, by Louis O. Adamo, Apr 1964, 19 pp.

This publication presents a discussion of the techniques used by NAVOCEANO Oceanographers to determine the "accepted depth" of serial oceanographic samples.

IMR 0-14-64

BIRDSEYE 2-64, 20 FEBRUARY - 3 MARCH 1964, Jun 1964, 91 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR 0-15-64

TABLE OF PROPOSED OCEANOGRAPHIC MEASUREMENT REQUIREMENTS, May 1964, 16 pp.

This Table of Proposed Oceanographic Measurement Requirements has been compiled from statements prepared and reviewed by several individuals within the Marine Sciences Department of the Office.

IMR 0-16-64

OCEANOGRAPHIC STATION DATA, USS SAN PABLO CRUISER NO. 31057 OF JUNE 1963, Oct 1964, 23 pp.

This report presents oceanographic data collected by the USS SAN PABLO in the Atlantic Ocean in an area slightly larger than a one-degree square. The data were collected as part of a program to depict the magnitude of variations in the water column within a small areal extent of the ocean.

IMR 0-17-64

A DESCRIPTIVE REPORT ON THE PHYSICAL AND CHEMICAL PROPERTIES OF THE NORTHWEST PACIFIC OCEAN OFF KAMCHATKA DURING SUMMER 1963, by John Allen, Oct 1964, 72 pp.

This publication presents oceanographic data collected aboard the USS RENOBOTH (AGS-50) in the northwest Pacific Ocean near Kamchatka during August and September 1963.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-18-64

OCEANOGRAPHIC STUDY, CANUS-SLAMEX, 15-25 MAY 1963, by Bertrand Thompson, May 1964, 14 pp.

This report presents results of a study of the Environment Prediction Program in support of Operation CANUS-SLAMEX.

IM 0-19-64
(FORMERLY
IMR 0-19-64)

ARGUS ISLAND TIDES-II, by Robert B. Elder and Clinton F. Beckner, May 1964, 16 pp.

This publication discusses the survey conducted aboard the Argus Island Tower in order to obtain knowledge of the tidal range.

IMR 0-20-64

ARGUS ISLAND WAVE RECORDER, by Robert K. Lee Pickett, May 1964, 11 pp.

This report describes the wave recorder installed on the Argus Island Research Tower. A basic description of the electronic and mechanical aspect of the unit and results of accuracy tests performed on the instrument are included.

IMR 0-22-64

OCEANOGRAPHIC DATA REPORT, VENEZUELA - BRITISH GUIANA COAST, SEPTEMBER 1963 (USS PREVAIL AGS -20), by James B. Rucker and Robert L. Magan, Oct 1964, 55 pp.

This report presents data collected from the USS PREVAIL (AGS-20) in September 1963 along the Venezuela - British Guiana Coast.

IMR 0-23-64

AN ANALYSIS OF THE VARIATION OF SOUND VELOCITY IN A 10° QUADRANGLE NEAR BERMUDA, by Fred N. Jackson, May 1964, 55 pp.

Geographically sorted data consisting of 368 sound velocity profiles were analyzed to determine the mean sound velocity structure and its variation with depth and latitude by month and season. Major variations in acoustic structure caused mainly by changes in temperature result from variations in insolation and vertical or horizontal water motions (i.e., wind induced mixing, internal waves and currents) in the upper 150 meters of the ocean.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-24-64

SUBMARINE BOTTOM GRADIENTS AND SEDIMENTS OF THE PANAMA BASIN AND ADJACENT AREAS, by John K. Duncan, Jun 1964, 14 pp.

This report classifies gradients of submarine relief features in the Pacific Ocean west of Panama to 90°W between 04°S and 14°N in six categories ranging from flat to very steep.

IMR 0-27-64

MARK III AIRBORNE RADIATION THERMOMETER, Jul 1964, 12 pp.

This report contains historical sea surface temperature data collected with the MARK III Airborne Radiation Thermometer -- the prototype of the Barnes Model 14-320-ART. These data are compared with data simultaneously obtained at the surface with a towed resistance-wire thermometer.

IMR 0-28-64

REPORT OF SECOND SALINITY BRIDGE COMPARISON BY CONTROLLED EQUIPMENT, by Lloyd B. Bertholf and James W. Bellar, Sep 1964, 16 pp.

This report describes the procedures and presents the results of the second controlled salinity bridge experiment conducted by this Office. The experiment was participated by 13 organizations and 816 replica sea water samples were analyzed on 30 separate salinity bridges.

IMR 0-29-64

VERTICAL SECTIONS OF SOUND VELOCITY IN THE NORTH ATLANTIC OCEAN, by David N. Dillon, Jul 1964, 34 pp.

Fourteen south-to-north representative vertical sections of sound velocity from the equator to 70°N have been prepared from data located in 5-degree zones of longitude from 10°W through 80°W in the North Atlantic Ocean. The major acoustic features of the North Atlantic are interpreted briefly in terms of the water masses involved in the thermohaline circulation.

PUB NO.

TITLE/NOMENCLATURE

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

- IMR 0-30-64 BIRDSYE 1-63, 22 FEBRUARY - 9 MARCH 1963, Dec 1964, 93 pp.
- IMR 0-31-64 BIRDSYE 2-63, 22 MARCH - 5 APRIL 1963, Jul 1964, 95 pp.
- IMR 0-32-64 BIRDSYE 3-63, 19 APRIL - 5 MAY 1963, Aug 1964, 109 pp.
- IMR 0-33-64 BIRDSYE 4-63, 24 MAY - 5 JUNE 1963, Sep 1964, 97 pp.
- IMR 0-34-64 BIRDSYE 5-63, 12-26 JULY 1963, Sep 1964, 73 pp.
- IMR 0-35-64 BIRDSYE 6-63, 16-28 AUGUST 1963, Oct 1964, 91 pp.
- IMR 0-36-64 BIRDSYE 7-63, 27 SEPTEMBER - 9 OCTOBER 1963, Oct 1964, 70 pp.
- IMR 0-37-64 BIRDSYE 8-63, 29 NOVEMBER - 11 DECEMBER 1963, Dec 1964, 75 pp.
- IMR 0-38-64 BIRDSYE 1-64, 25 JANUARY - 5 FEBRUARY 1964, Dec 1964, 91 pp.
- IMR 0-39-64 BIRDSYE 3-64, 2-16 APRIL 1964, Oct 1964, 81 pp.
- IMR 0-41-64 FIELD TEST AND EVALUATION OF THE LANE-WELLS NUCLEAR SEDIMENT DENSITY METER, by George H. Keller, Newell T. Stiles and Richard G. Evans, Aug 1964, 14 pp.

This paper presents the operating principles, field test and discussion of derived data of an in situ sediment density meter. The meter, which penetrates ocean bottom sediments following free fall from a ship, determines sediment density by measuring the back scatter of gamma-rays from a contained radioactive source.

- IMR 0-42-64 AN ANNOTATED BIBLIOGRAPHY OF BIOLOGICAL EFFECTS ON SOUND SCATTERING IN THE WESTERN NORTH ATLANTIC, Nov 1964, 74 pp.

This bibliography was prepared as a planning document to assist researchers in making a more systematic approach in directing work on biological effects upon long range sonar systems.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-43-64

SUBMARINE SEDIMENT DATA HOLDINGS AT THE U. S. NAVAL OCEANOGRAPHIC OFFICE ON 1 JANUARY 1964, by John K. Duncan, Sep 1964, 3 pp.

This report describes the collection, handling and geographic distribution of submarine sediment data held by the Oceanographic Office.

IMR 0-44-64
(REPLACES
IMR 0-11-63)

COMPUTER PROGRAMMING CONCEPTS EMPLOYED AT THE U. S. NAVAL OCEANOGRAPHIC OFFICE, by Walter E. Yergler, 1964, 28 pp.

This report describes the various computer capabilities, limitations, mechanisms, number coding system, program language and equipments used by the Office.

IM 0-45-64
(FORMERLY
IMR 0-45-64)

THE NON-GAUSSIAN CHARACTER OF GRAVITY WAVE DISPLACEMENTS, by Robert E. Lee Pickett, May 1965, 37 pp.

This paper deals with the distribution of gravity wave displacement above and below mean sea level. Fifty wave records taken from an ocean research tower near Bermuda were analyzed.

IMR 0-46-64

WAVE POWER SPECTRA FROM ARGUS ISLAND - SEPTEMBER 1962, by Sheldon M. Lazanoff, Dec 1964, 48 pp.

This report presents wind and wave data obtained during the period 16-22 September 1962 at Argus Island Tower, located at 31°56'55"N - 65°10'45"W in 192 feet of water. The series of power spectra presented represents data from relatively low sea states.

IMR 0-47-64

A PROGRAM FOR COMPUTING SOUND VELOCITY WITH WILSON'S EQUATIONS, by Walter E. Yergen, Oct 1964, 21 pp.

This report describes an IBM 7074 computer program employed by the Naval Oceanographic Office for computing in situ sound velocity values with Wilson's Equations.

IMR 0-48-64

BOTTOM SEDIMENTS OFF THE COAST OF ARGENTINA, by Dixie J. Lembach, Oct 1964, 9 pp.

This report presents a generalized bottom sediment pattern off the Argentina Shelf derived from several thousands sediment notations on nautical charts published by the hydrographic agencies of Argentina, Great Britain and the United States.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-49-64

BIRDSEYE 4-64, 23 APRIL - 4 MAY 1964, Jan 1965, 73 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR 0-50-64

A DESCRIPTIVE REPORT OF THE OCEANOGRAPHY OF THE OKHOTSK SEA - OCTOBER 1963, by Don Fenner, Mar 1965, 62 pp.

This report presents results of an oceanographic survey in the Okhotsk Sea conducted in October 1963.

IMR 0-51-64

SOUND VELOCITY VARIATION IN MEDITERRANEAN DEEP AND BOTTOM WATER, by Carl T. Moore, Oct 1964, 7 pp.

This study of variation in sound velocity in four major deep water basin in the Mediterranean Sea is based upon 565 paired temperature and salinity values distributed at standard oceanographic depths from 1500 to 4000 meters.

IMR 0-53-64

OCEANOGRAPHIC AND ACOUSTICAL PROPERTIES OF ATLANTIC AREA C1, DURING JUNE 1963, by Robert R. Gleason, Dec 1965, 47 pp.

Sixteen oceanographic stations, obtained during a one week period from 23 - 30 June 1963 in a one-degree square by the USS SAN PABLO, were analyzed for spatial and temporal variations. The analysis of this deep water Atlantic area revealed variations of an unsuspected magnitude.

IMR 0-54-64

OCEANOGRAPHIC STATION DATA, USS REHOOTH CRUISE NO. 31052 of MAY AND JUNE 1963, Feb 1965, 102 pp.

During the period 9 May - 12 June 1963, the USS REHOOTH (AGS-50) collected oceanographic data in the Pacific Ocean in two one-degree squares. The data were collected as part of a program to depict the magnitude of variations in the water column within small areal extents of the ocean.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-55-64

OCEANOGRAPHIC STATION DATA, USS SAN PABLO CRUISE
NO. 31056 OF JULY 1963, Dec 1964, 66 pp.

This report presents oceanographic data collected by the USS SAN PABLO (AGS-30) in the Atlantic Ocean in an area slightly larger than a one-degree square. The data were collected as part of a program to depict the magnitude of variations in the water column within small areal extents of the ocean.

IMR 0-56-64

OCEANOGRAPHIC STATION DATA, USS PREVAIL CRUISE 31053
OF MARCH AND APRIL 1963, Nov 1964, 37 pp.

During the period 14 March through 13 April 1963, the USS PREVAIL (AGS-20) collected oceanographic data in the Atlantic Ocean in two one-degree squares. The data were collected as part of a program to depict the magnitude of variations in the water column within small areal extents of the ocean.

IMR 0-57-64

A DISCUSSION OF NANSEN CAST TEMPERATURE DEPTH
DETERMINATIONS AND DATA PROCESSING TECHNIQUES, by
Kenneth B. Peery, Oct 1964, 30 pp.

This report discusses oceanographic Nansen Cast Survey and data processing techniques. Several new methods of recording and processing data were tested during portions of the February 1964 oceanographic survey aboard the USNS James M. Gilliss (AGOR-4).

IMR 0-58-64

SYNOPTIC ANALYSIS OF A PORTION OF THE NORTH ATLANTIC
OCEAN IN JULY 1963, by Edward L. Corton, Jan 1965,
23 pp.

This report presents data obtained from an area of 100 miles square surveyed twice in July 1963 with a ten day interval to verify a three-dimensional thermal structure prediction model.

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IMR 0-59-64

BIRDSEYE 5-64, 24 JULY - 1 AUGUST 1964, Jan 1965, 55 pp.

IMR 0-60-64

BIRDSEYE 6-64, 9-23 AUGUST 1964, Jan 1965, 75 pp.

IMR 0-61-64

BIRDSEYE 7-64, 4-19 SEPTEMBER 1964, Jan 1965, 76 pp.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-63-64

DEPTH CORRECTION OF NOMAD THERMISTORS, by Carroll G. Thompson, Jan 1965, 7 pp.

This report describes a procedure for determining the true depth of the thermistors.

IM 0-64-64
(FORMERLY
IMR 0-64-64)

COMPARISON OF DEEP WATER ISOTOPIC CURRENT ANALYZER WITH THE SAVONIUS ROTOR CURRENT METER, by Clinton F. Beckner, Feb 1965, 16 pp.

This report describes a Deep Water Isotopic Current Analyzer (DWICA) designed to measure current speeds between .002 and 10 knots at the ocean bottom to depths of 6,000 feet. Data obtained simultaneously with this instrument and a Savonius Rotor Current Meter were compared.

IMR 0-65-64

COMPARISON OF U. S. NAVAL OCEANOGRAPHIC OFFICE SEA SURFACE TEMPERATURE CHARTS WITH USNS GILLISS SURVEY DATA, 2-5 MARCH 1964, by David Carman, Jan 1965, 6 pp.

This report continues a series of synoptic oceanographic evaluation studies being conducted by the U. S. Naval Oceanographic Office in conjunction with the Antisubmarine Warfare Environmental Prediction System.

IMR 0-66-64

REDUCTION OF OCEAN WIND DATA BY USE OF DRAG COEFFICIENTS WITH APPLICATION TO VARIOUS WAVE FORECASTING TECHNIQUES, by Lionel I. Moskowitz, Jan 1965, 12 pp.

Variation of windspeed with height has been shown to be of extreme importance to ocean wave forecasting. Windspeeds observed at any level may be reduced to levels where various wave forecasting techniques and spectral forms apply.

IMR 0-67-64

AN OCEANOGRAPHIC AND ACOUSTIC STUDY OF A ONE-DEGREE SQUARE OFF POINT CONCEPTION, CALIFORNIA - JUNE 1963, by Don F. Fenner, Aug 1965, 50 pp.

This report presents the results of an oceanographic and acoustic study off Point Conception, California. Results indicated that large sound speed variations were found at the sound channel axis. Temperature and salinity cross sections delineated upwelling in the eastern half of the area and dynamic height contours indicated a possible meandering loop of the California current in the western half.

PUB NO.

TITLE/NOMENCLATURE

IMR MISC-1-65

CALCOMP PLOTTER MANUAL, by James S. Warden, May 1965, 45 pp.

This report provides a reference manual for the Calcomp Plotter users. The present system employs FORTRAN subroutine and the IBM 7074 computer to produce magnetic tapes which are used to control the plotter.

IR H-1-65

GEOMAGNETIC SURVEY OF AN AREA NORTHEAST OF HISPANIOLA, by Gordon D. Burton, 1965, 18 pp.

A detail geomagnetic survey of an 11,000 square mile area northeast of Hispaniola has revealed a linear magnetic anomaly which strikes N55°W and extends for 120 miles across the area. Depth estimates and 2-dimensional model studies indicate relief along the top of the mantle is the source of this anomaly.

IR N-1-65

STELLAR REDUCTIONS OF APPARENT PLACES, by William E. Hart and William A. Allen, Dec 1965, 28 pp.

The formulas necessary to reduce mean places of stars to apparent places are collected from scattered sources and organized in sequence of use. The terms for coordinates, motions, perturbations, corrections and the significance of their interrelation are defined. Numerical examples, which no longer appear in current ephemerides, are also given.

IMR MISC-2-65

GLOBAL MARINE GEOPHYSICAL SURVEYS OR IS OCEANOGRAPHY GROWING UP? by Charles C. Bates, Sep 1965, 19 pp.

The texts of a speech given to the Geophysical Societies of Dallas and Houston, Texas.

IR H-2-65

ADJUSTMENT TECHNIQUES ADAPTABLE TO HYDROGRAPHIC SURVEYING, by Roger T. Osborn, 1965, 83 pp.

This report describes a technique which provides the necessary link between initial input and finished product in an automated system for processing hydrographic survey data.

PUB NO.

TITLE/NOMENCLATURE

IR H-3-65

AN AIRBORNE GEOMAGNETIC SURVEY OF THE REYKJANES RIDGE - 1963, by George R. Lorentzen, James R. Heirtzler and J. Gregory Baron, 1965, 23 pp.

This report gives full coverage of processing procedures along with a brief discussion of the computer generated charts. A partial bathymetric chart is included for correlation.

IMR I-03-65

EVALUATION OF THE BISSETT-BERMAN (HYTECH) MODEL 480-1 ELECTRONIC BATHYTHERMOGRAPH, by Richard L. Ribe, Apr 1965, 79 pp.

This report presents a study of tests conducted by the Oceanographic Office Instrumentation Laboratory during December 1964-February 1965 to determine the accuracy of the Bissett-Berman, Model 480-1, electronic bathythermograph.

IR H-4-65

PROTON MAGNETOMETER TEST ON BOARD A SURVEY AIRCRAFT, by Otis E. Avery and F. N. Watts, 1965, 14 pp.

This report describes the procedures used for testing and compensating the proton instrument. Conclusions show that it is definitely feasible to obtain accurate total magnetic intensity values by operating a compensated proton magnetometer inside the aircraft.

IMR O-4-65

PERFORMANCE OF A SHIPBOARD WAVE HEIGHT SENSOR, by A. Moskios and Pasquale S. Deleonibus, Mar 1965, 50 pp.

This report presents the results of four tests conducted with a sonic wave height sensing and recording instrument at Argus Island near Bermuda during 1963 and 1964.

IR H-5-65

AN AIRBORNE GEOMAGNETIC INVESTIGATION OF A REPORTED DECLINATION ANOMALY IN EASTERN PANAMA, by J. Gregory Baron and George R. Lorentzen, 1965, 18 pp.

This report describes that a small declination anomaly at flight altitude was detected. Results from total intensity and inclination measurements indicate the presence of exposed igneous rocks of tertiary period that make up the Darien Mountains.

PUB NO.

TITLE/NOMENCLATURE

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR 0-5-65 BIRDSEYE 8-64, 18 OCTOBER - 6 NOVEMBER 1964, Mar 1965
53 pp.

IMR 0-6-65 BIRDSEYE 9-64, 9-19 DECEMBER 1964, Mar 1965, 44 pp.

IMR 0-7-65 BIRDSEYE 1-65, 12-25 JANUARY 1965, March 1965, 42 pp.

IMR 0-8-65 ASWEPS DATA SUMMARY - NORTH ATLANTIC WEATHER STATIONS
1958 - 1963, by J. Hazelworth and Edward Khedouri,
Mar 1965, 70 pp.

This report contains quantitative listing and discussion of oceanographic data collected between 1958-1963 at Ocean Weather Stations CHARLIE, DELTA and ECHO.

IMR 0-9-65 AN OCEANOGRAPHIC AND ACOUSTIC STUDY OF A ONE-DEGREE
SQUARE IN THE WESTERN NORTH ATLANTIC, by Roland E.
Johnson, Sep 1965, 45 pp.

An intensive Nansen Cast Survey of a one-degree square in the western North Atlantic revealed significant variations in the distribution of properties. This report presents an analysis of the serial stations and BT's with the emphasis placed upon the actual measured quantities (i.e. temperature and salinity) rather than computed properties (i.e. dynamic topography).

IMR 0-10-65 PH OF THE PRINCIPAL WATER MASSES OF THE WORLD, by
Eugene L. Bialek, Apr 1965, 25 pp.

This publication gives an estimate of the PH conditions existing in the major water masses of the ocean.

IMR 0-11-65 HARBOR ANALOG SYSTEM - PART III: SALINITY, DENSITY
AND CONDUCTIVITY, by Ancil L. Grabham, May 1965, 70 pp.

This manuscript presents a classification system for nearshore areas of the world to predict salinity values and gradients.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-12-65

BIRDSEYE 2-65, 10-23 FEBRUARY 1965, May 1965, 53 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IM 0-13-65

SUMMARY FIELD REPORT OF OCEANOGRAPHIC AND BATHYMETRIC OPERATIONS IN THE STRAIT OF GIBRALTAR, MAY - JUNE AND OCTOBER - NOVEMBER 1964, by Louis A. Banchemo and Donald A. Burns, Oct 1965, 61 pp.

This report summarizes an oceanographic-bathymetric operation completed during May-June and October-November 1964 in the Strait of Gibraltar. Approximately 60 square miles of bathymetry was developed and 500 hours of useful current data were obtained.

IMR 0-14-65

A REVIEW OF THE DEVELOPMENT OF COTIDAL AND CORANGE CHARTS, by John J. Audet, Jr., May 1965, 22 pp.

This is a short summary of the development of cotidal line charts and tide range charts to the present time. The accuracy of the charts in use today is still dependent solely on coastal data.

IMR 0-15-65

NEARSHORE ENVIRONMENTAL ANALOG PREDICTION SYSTEM STATUS AS OF 31 DECEMBER 1964, Apr 1965, 73 pp.

This report is one of a series of studies of the nearshore environmental, a subject which is the least understood marine environment.

IMR 0-16-65

BIRDSEYE 3-65, 11-26 MARCH 1965, May 1965, 113 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR 0-18-65

CURRENT OBSERVATIONS AND LEAD LINE SOUNDINGS, MCMURDO SOUND, ANTARCTICA, 1961, by Richard H. Evans, May 1965, 10 pp.

This publication presents current observations and lead line soundings made in the near-shore water of McMurdo Sound, Antarctica by this Office and Task Force 43 personnel. Stability of the current directions observed was related to distance from shoreline and current speed.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-19-65

PRELIMINARY INVESTIGATION INTO FEASIBILITY OF ANTARCTIC ICE FORECASTING, by J. Johnson and Franklin E. Kniskern, Jul 1965, 15 pp.

The purpose of this preliminary study is to determine the extent of variability in meteorological and oceanographic parameters at McMurdo Sound in order to partially assess the degree of the forecasting problem in Antarctica.

IMR 0-20-65

BIRDSEYE 4-65, 9-24 APRIL 1965, Aug 1965, 85 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IR 21-65

A SUMMARY OF TIDES AND CURRENTS, by Matilene S. Berryman, Jul 1965, 193 pp.

This report attempts to summarize the existing information on tides and currents in a manner suitable for instruction in the subjects.

IMR 0-22-65

A STANDARD-VECTOR DEVIATION ROSE PROGRAM FOR CURRENT DATA, by Donald A. Burns, Aug 1965, 19 pp.

This report presents Standard-Vector Deviation program using methods developed by Yergen. By graphically portraying the output of this program, it is possible to indicate statistically the variation of the mean resultant current.

IMR 0-23-65

THE DISTRIBUTION AND VARIATION OF TEMPERATURE, SALINITY AND DENSITY IN THE STRAIT OF GIBRALTAR, by Paul LaViolette, Jul 1965, 15 pp.

This report presents a study of the water structure in and around the Strait of Gibraltar.

IMR 0-24-65

OCEANOGRAPHIC STUDY-CONVEX 3-64, 10-14 AUGUST 1964, by David R. Carman, Nov 1965, 9 pp.

Oceanographic condition in the operating area of CONVEX 3-64 (western north Atlantic - August 1964) were not conducive to good sonar ranges. However, fair relationship were established between historical and actual layer depth patterns by supplementing historical sea surface temperature and layer depth charts with daily synoptic bathythermograph and injection temperatures.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-25-65

U. S. NAVAL OCEANOGRAPHIC OFFICE SUBJECTIVE LAYER DEPTH ANALYSIS MODEL, by Bertrand Thompson and Robert Anderson, Oct 1965, 19 pp.

This report describes the subjective layer depth (LD) analysis techniques utilized by the U. S. Naval Oceanographic Office.

IMR 0-26-65

FORTTRAN PROGRAMS FOR PROCESSING BATHYMETRIC DATA, by Jacob Hoffman, Aug 1965, 18 pp.

The primary reason for processing bathymetric data is to automate the plotting and compilation of sounding information. This report describes the purposes, inputs and outputs of each FORTRAN program utilized in the various methods of processing bathymetric data.

IMR 0-28-65

SOUND CHANNEL PARAMETERS IN THE NORTH ATLANTIC OCEAN, by Oscar Kaufman, Jul 1965, 43 pp.

This report presents the variability of sound channel axis velocities and depth. Velocity gradients beneath the axis and effects produced on these channel parameters by water masses, bathymetry and climate.

IMR 0-29-65

A POLYNOMIAL CURVE FITTING SCHEME, by Walter E. Yergen, Dec 1965, 24 pp.

The polynomial curve fitting scheme must be used with caution. It provides a curve which matches constituent data points mathematically. If the data points do not naturally align in a smooth distribution, the polynomial curve will meander between data points.

IMR 0-31-65

CANUS SLAMEX 2-64 (13-25 SEPTEMBER 1964), by Rudolph J. Perchal, Sep 1965, 13 pp.

This report presents the results of a survey conducted in support of CANUS SLAMEX 2-64.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-32-65

BJRDSEYE 5-65, 27 MAY - 10 JUNE 1965, Sep 1965, 50 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR 0-33-65

THEORETICAL COMPUTATIONS OF SOUND REFLECTIONS FROM 4 LAYERED OCEAN BOTTOM, by Robert S. Winokur, Oct 1965, 21 pp.

This report illustrates how a layered ocean bottom model can be used to develop an understanding of ocean bottom reflectivity.

IMR 0-34-65

SUBMARINE SEDIMENT DATA HOLDINGS AT THE U. S. NAVAL OCEANOGRAPHIC OFFICE ON 1 JANUARY 1965, by John K. Duncan, Aug 1965, 39 pp.

This report supplements Technical Report 150 and Informal Manuscript Report 0-43-64. It also describes the source, types and uses of bottom sediment information, and the variety of forms in which it is reported.

IMR 0-35-65

METHOD FOR AVERAGING SOLAR RADIATION DATA WITH A POLAR PLANIMETER, by Richard M. Heavers, Aug 1965, 5 pp.

Solar radiation data are usually collected at sea by means of pyrheliometer and recorded on a strip chart which gives very closely spaced values of solar radiation intensity. This publication describes a method of averaging with a polar planimeter used to reduce the time and labor involved in this process with no significant loss of accuracy.

IMR 0-38-65

BIRDSEYE 6-65, 8-22 JULY 1965, Sep 1965, 50 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IMR T-38-65

SECOND INTERIM REPORT ON INVESTIGATION OF NAVOCEANO REQUIREMENT IN CONNECTION WITH HYDROFOILS AND GROUND EFFECT MACHINES, by Robert L. Wheatley and Francis W. Howlett, Jun 1965, 16 pp.

This report describe charting requirements with hydrofoils and ground effect machines.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-39-65

A QUANTITATIVE EVALUATION OF ASWEPS SEA SURFACE TEMPERATURE AND LAYER DEPTH CHARTS, by Richard W. James, Jun 1965, 37 pp.

This report presents a composite picture of these evaluations and apply a new evaluation criteria which places a numerical value on the accuracy of these analyses.

IMR T-39-65

EVALUATION OF COLOR PHOTOS EXPOSED FROM THE GEMINI (GT-4) FLIGHT OVER THE GULF OF CALIFORNIA - JUNE 1965, by Richard F. Gettys, Sep 1965, 12 pp.

Two photographs in color exposed in a 70mm format camera during the GEMINI flight were evaluated to ascertain what information could be derived from extremely high altitude photography for utilization by the U. S. Naval Oceanographic Office. The photos were mosaicked and an experimental chartlet printed in continuous tone with overprinted chart detail on the mosaic. It is concluded that photography exposed from satellites with appropriate cameras can provide much useful information for oceanography and cartography.

IMR 0-40-65

REPORT NO. 14 - A COMPARISON OF WIND SPEEDS AND WAVE HEIGHTS OVER THE NORTH ATLANTIC OCEAN DURING THE YEARS 1957-1964, by Donald C. Bunting, Oct 1965, 40 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

IMR T-40-65

BIBLIOGRAPHY ON HYDROFOILS AND GROUND EFFECT MACHINE, by Francis W. Howlett, Oct 1965, 10 pp.

This bibliography is primarily a consolidation and expansion of bibliographies included in the Naval Oceanographic Office.

IMR 0-41-65

REPORT NO. 15 - PROPOSAL-A WAVE SPECTRA CLIMATOLOGY ATLAS FOR THE NORTH ATLANTIC OCEAN, by Donald C. Bunting, Sep 1965, 11 pp.

This report describes a series of investigations of the problems associated with wave hindcasting by the spectrum method.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-42-65

A HEAT BUDGET MODEL PREDICTION OF VERTICAL TEMPERATURE CHANGE IN THE OCEAN, by William H. Gemmill and D. Nix, Oct 1965, 22 pp.

This report presents a technique based primarily on heat budget and wind mixing calculations for predicting the vertical thermal structure of the ocean.

IMR 0-43-65

DEVELOPMENT OF AN IN-SITU DISSOLVED OXYGEN SENSOR, by Robert F. Sproull, Aug 1965, 14 pp.

This report presents a study of the methods and problems involved in order to fabricate an in-situ dissolved oxygen sensor.

IMR 0-45-65

AUTOMATED THERMAL STRUCTURE FORECASTING TECHNIQUES, by Bertrand Thompson, Oct 1965, 25 pp.

In its program of ocean thermal structure forecasting, the Antisubmarine Warfare Environmental Prediction System of the Naval Oceanographic Office has been experimenting with various automated methods. The present numerical analysis technique, as applied under conditions of insufficient data, is investigated by the author.

IMR 0-46-65

ASWEPS MEDITERRANEAN EXERCISE, 11-21 JULY 1964, by Gordon P. MacDowell, Dec 1965, 44 pp.

This report presents results of continued experimental applications of Anti-Submarine Warfare Environmental Prediction System.

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IMR 0-47-65

BIRDSEYE 7-65, 9-26 AUGUST 1965, Nov 1965, 55 pp.

IMR 0-48-65

BIRDSEYE 8-65, 14-25 SEPTEMBER 1965, Nov 1965, 82 pp.

IMR 0-49-65

NATURAL RADIOACTIVITY IN MARINE SEDIMENTS, by John R. Carpenter, Nov 1965, 31 pp.

This report describes sediment samples collected from several sedimentary environments analyzed for potassium, uranium and thorium by gamma-ray scintillation spectrometry.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-50-65

SPATIAL CHANGES IN THERMAL STRUCTURE NEAR ARGUS TOWER,
by Robert L. Pickett and Clinton F. Beckner, Jr.,
Dec 1965, 16 pp.

This report contains the results of a thermal structure study made at Plantagenet Bank, Bermuda.

IMR 0-51-65

TEMPERATURE AND SALINITY VALUES BELOW 2000 METERS IN THE NORTH ATLANTIC OCEAN, by Carl T. Moore, Dec 1965, 12 pp.

A study of the relationship between temperature and salinity in four major water masses is presented for eleven deepwater basins in the north Atlantic Ocean. The data used constitute 7030 paired temperature and salinity observations distributed from 2000 meters to the bottom at 500 meter intervals.

IMR 0-52-65

TABLES ON SOUND SPEED AT THE BOTTOM BELOW 1,000 FATHOMS IN THE NORTH ATLANTIC, by Carl T. Moore, Nov 1965, 12 pp.

This report presents, in tabular form, the variation in sound speed at the bottom of the North Atlantic Ocean in the major deepwater physiographic basins. Sound speed data, based on more than 7,000 paired temperature and salinity observations, are presented at 50-fathom intervals below 1,000 fathoms.

IMR 0-53-65

REPORT OF SEVERE ICE CONDITIONS IN MELVILLE BUGT, SUMMER 1964, by Gabriel Potocsky and Franklin E. Kniskern, Mar 1966, 45 pp.

Anomalous (severe) ice conditions occurred during Summer 1964 in Melville Bugt. Factors producing the variation are analyzed in order to determine whether the anomaly should have been predicted.

IMR 0-54-65

COMCARDIV 17 EXERCISE AND IPOSS EVALUATION 29 NOVEMBER - 9 DECEMBER 1963, by Rudolph J. Perchal, Feb 1966, 18 pp.

In support of the Interim Pacific Oceanographic Support System (IPOSS) and COMCARDIV 17, the Naval Oceanographic Office assigned an oceanographer to the USS HORNET to prepare environmental analyses and forecasts of the thermal conditions during a fleet exercise from Yokosuka to Iwakuni, Japan, from 29 November to 9 December 1963. This publication presents an evaluation of the above exercise.

PUB NO.

TITLE/NOMENCLATURE

IM 0-55-65

MARINE FOULING AND CORROSION OF INSTRUMENTATION AT ARGUS ISLAND, by Clinton F. Beckner, Jr. Jan 1966, 7 pp.

This report describes the marine fouling and corrosion of instrumentation at Argus Island. Goose Barnacles, and green and brown algae were the predominant fouling organisms which generally attached to sensors in areas where anti-fouling coatings had become shipped or scratched.

IMR 0-56-65

NEARSHORE ENVIRONMENTAL ANALOG PREDICTION SYSTEM PART IV - TIDAL CURRENTS, by Harold C. Felts, Dec 1965, 42 pp.

This report summarizes the results of the work accomplished on currents for the Nearshore Analog Prediction Program up to the beginning of Fiscal Year 1966. Its purpose is to document the more significant results of the investigations.

PUB NO.

TITLE/NOMENCLATURE

IR H-1-66

MAGNETIC ANOMALIES NORTH OF PUERTO RICO: TREND
REMOVAL WITH ORTHOGONAL POLYNOMIALS, by Gerald D.
VanVoorhis and Thomas M. Davis, 1966, 17 pp.

Magnetic total intensity data in the vicinity of
the Puerto Rico Trench and the outer ridge are pre-
sented. The magnetic field over the trench is
unusually smooth and does not show the effect of local
sources. A seventh degree orthogonal polynomial was
removed from along the survey lines to reduce the
effect of both low-frequency magnetic time variation
and the regional gradients of the main field of the
earth.

IR N-1-66

EXPERIMENTAL VERY LOW FREQUENCY NAVIGATION SYSTEM
EVALUATION, by William L. Lear and Willard M. Swartwood,
Jun 1966, 42 pp.

This report summarizes results of the Fiscal Year 1965
operational analysis of the Tracor Experimental Very Low
Frequency (VLF) Navigation System. This low-cost
relative-ranging system utilizes existing VLF transmitters,
provides worldwide navigational coverage and is available
now for operational use.

IMR O-1-66

ACCURACY OF AN AIRBORNE INFRARED RADIATION THERMOMETER,
by Robert L. Pickett, Apr 1966, 10 pp.

This report describes experiments to evaluate and
improve the accuracy and precision of the Barnes Model
14-320 Airborne Radiation Thermometer (ART).

IR H-2-66

GEOPHYSICAL PROFILES IN THE NORTHEASTERN ATLANTIC
OCEAN AND THE MEDITERRANEAN SEA, 1962 - 1963, by
D. E. Frankowski, 1966, 47 pp.

Magnetic, gravity and bathymetric data collected
aboard three ships along a total of 4450 miles of
track in the northeastern Atlantic Ocean and the
Mediterranean Sea are presented in profile form.

Project Birds Eye aims to improve ice observing
techniques for continuing acquisitions of statistical
and historical data for present and future application
of military arctic operations.

IMR O-2-66

BIRDSEYE 9-65, 12-18 OCTOBER 1965, Apr 1966, 42 pp.

IMR O-3-66

BIRDSEYE 10-65, 6-22 NOVEMBER 1965, Apr 1966, 80 pp.

PUB NO.

TITLE/NOMENCLATURE

IR H-3-66

GEOMAGNETIC MEASUREMENTS IN THE NORTH PACIFIC OCEAN ABOARD USS REHOBOTH (AGS-50) 1961, by Robert F. Obrochta, 1966, 31 pp.

This report presents geomagnetic and bathymetric data collected on a single track in the North Pacific Ocean between San Francisco, Adak and Pearl Harbor aboard USS REHOBOTH (AGS-50) in 1961 in profile form.

IMR 0-4-66

BIRDSEYE 11-65, 4-18 DECEMBER 1965, Apr 1966, 60 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IR H-4-66

GEOMAGNETIC MEASUREMENTS IN THE PACIFIC OCEAN ABOARD USNS CHARLES H. DAVIS (AGOR-5) 1964, by Dewey R. Bracey, 1966, 143 pp.

Magnetic and bathymetric data were collected aboard USNS CHARLES H. DAVIS in the Pacific Ocean. Contour charts for five detailed survey areas and profile charts for 13,500 miles of magnetic and bathymetric survey track are presented.

IMR 0-5-66

BIRDSEYE 1-66, 28 JANUARY - 3 FEBRUARY 1966, Apr 1966, 59 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IR H-5-66

SHIPBOARD MAGNETIC SURVEY OF AN AREA NORTH OF THE LESSER ANTILLES, by Otis E. Avery, Jerry C. Carroll and Dewey R. Bracey, 1966, 20 pp.

The earth's magnetic intensity over a 41,000 square mile area north of the Lesser Antilles has been charted in detail by a shipboard survey. The contoured data show a major magnetic anomaly trending N20°E through the center of the survey area.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-6-66

A STUDY OF THE MARINE FOULING AND BORING ORGANISMS AT ADMIRALTY INLET, WASHINGTON, by John R. DePalma, May 1966, 23 pp.

This report describes the test site, outlines the technique of data collection and analysis and discusses the results of the first two years of this program.

IR H-6-66

SHIPBOARD MAGNETIC SURVEY OF AN AREA NORTHWEST OF BERMUDA, by Herbert K. Schneider, 1966, 4 pp.

This report presents the resulting contour data which can only be considered a general representation of the magnetic field because of the wide survey track spacing. It also shows a series of elongate magnetic anomalies with a general northeast - southwest trend.

IR 0-7-66

DETERMINATION OF SOUND SPEED FROM TEMPERATURE MEASUREMENTS IN THE TONGUE OF THE OCEAN, BAHAMAS, by Gilbert S. Ruggles and Leland W. Cisney, Apr 1966, 12 pp.

Repeated oceanographic stations in the Tongue of the Ocean have revealed a very stable temperature salinity (T-S) relationship at depths greater than 200 meters. Three empirical equations, tests and verified with recent T-S data, fitted to historical T-S data indicate that temperature observations can be used to compute the associated salinity to within 0.05% at the 95% confidence level.

IMR 0-8-66

SOUND VELOCIMETER PROFILES FROM THE TONGUE OF THE OCEAN AND EXUMA SOUND, BAHAMA - FEBRUARY - MARCH 1962, by Gilbert S. Ruggles, Feb 1966, 32 pp.

Sound speed profiles are presented for more than fifty sound velocimeter lowerings made in the Tongue of the Ocean (TOTO) and Exuma Sound, Bahamas in February and March 1962. A comparison of the velocimeter data sound speeds derived from non-synoptic oceanographic station data for the same observation period indicates good agreement between the two methods.

IMR 0-9-66

THE AUTOMATED WAVE PREDICTION PROGRAM OF THE U. S. NAVAL OCEANOGRAPHIC OFFICE, by Lionel I. Moskowitz, Jun 1966, 9 pp.

This publication is a review of the various methods used in the past by individuals to obtain accurate information as to how to predict wave development.

PUB NO.

TITLE/NOMENCLATURE

IMR 0-10-66

BOTTOM SEDIMENT DATA PROGRAM MANUAL, by Roger J. Van Wyckhouse, May 1966, 13 pp.

This manual provides a reference for the users of the bottom sediment data program now available in the Geology Section of this Office.

IM 0-11-66

PRESENT VIEWS OF THE GULF STREAM FLOW, by William E. Boisvert, May 1966, 12 pp.

The description of the Gulf Stream in this report is based on data obtained by direct methods utilizing buoys, drogues, meters, ship-drift and drift bottles that obtain the two main measures of any current, namely, direction.

IMR 0-13-66

ON THE NUMERICAL PREDICTION OF OCEANIC THERMAL STRUCTURE, by Tim P. Barnett and David E. Amstutz, Jun 1966, 10 pp.

This paper reviews difficulties encountered in this program and suggests an approach for obtaining a logical and unique prediction method.

IMR 0-15-66

ENVIRONMENTAL STUDIES IN SUPPORT OF ATLANTIC UNDERWATER TACTICAL RANGES, by Charles Ostericher, Jr. May 1966, 50 pp.

Results of oceanographic surveys off the west coast of St. Croix, Virgin Islands and the south coast of Puerto Rico are discussed. Above 100 meters temperature and salinity are lower than those found in historical data while below 100 meters higher temperatures were measured.

IMR 0-18-66

COMPUTATION OF SEASONAL CUMULATIVE FREQUENCY DISTRIBUTIONS OF BOTTOM PRESSURE FLUCTUATIONS, by Richard B. Blumenthal, Jun 1966, 35 pp.

This report describes the procedures used in determining the seasonal cumulative frequency distributions of bottom pressure fluctuations for specific ocean areas.

PUB NO.

TITLE/NOMENCLATURE

IM 66-1

PROJECT FLOOD DATA REPORT OF MINE DIVISION FORTY-THREE
IN THE MEDITERRANEAN SEA, by James W. Underwood,
Aug 1966, 104 pp.

This report is one of a continuing series which
contains oceanographic data collected by several
mine divisions.

IM 66-2

OCEANOGRAPHIC STATION DATA, AGOR CRUISE NO 056510,
USNS CHARLES H. DAVIS (T-AGOR-5), by Robert W. Thomas
and David E. Amstutz, Aug 1965, 47 pp.

This report contains oceanographic station data
collected during August 1965. This survey was con-
ducted to provide data for the formulation and de-
velopment of oceanographic environment prediction
techniques for ASWEPS.

IM 66-3

PRELIMINARY REPORT ON SCATTERING LAYER MEASUREMENTS IN
THE WESTERN NORTH ATLANTIC, by George B. Farquhar,
Aug 1966, 16 pp.

This preliminary report presents results of bio-
acoustic investigation of sound scattering layers in
the subtropical western North Atlantic.

IM 66-4

AN OCEANOGRAPHIC STUDY OF A ONE-DEGREE SQUARE WEST OF
SAN FRANCISCO, CALIFORNIA, by Robert R. Gleason, Aug 1966,
39 pp.

This publication presents findings of an oceanographic
study in a one-degree square located in the California
current for both time and spatial changes. From the
time record, the variations in the sound speed profiles
were determined and from these profiles the variations
in the convergence zone were computed.

IM 66-5

A PULSE METHOD FOR SOUND SPEED MEASUREMENT IN CORED
OCEAN BOTTOM SEDIMENTS, by Robert S. Winokur and Stanley
Chanesman, Aug 1966, 10 pp.

This report presents general information on a pulse
system developed for measurement of sediment sound speed
in cored ocean bottom sediments.

PUB NO.

TITLE/NOMENCLATURE

IM 66-6

ACCURATE DEPTH RECORDING OF LARGE-VOLUME SAMPLING OF SEA WATER, by Neil R. Andersen and Robert L. Morris, Aug 1966, 11 pp.

This publication describes an extensive evaluation of the application of a pressure sensing device used to indicate apparatus closing on large volume sea water sampling.

**IR 66-7
(FORMERLY
IM 66-7)**

EVALUATION OF SELF-RECORDING CURRENT METER ARRAYS, OCTOBER 1962 - MARCH 1965, by Frank M. Daugherty, Jr. Aug 1966, 51 pp.

The Naval Oceanographic Office entered the field of current measurement in October 1962 using self-recording moored arrays. By February 1965 a total of 65 arrays had been planted with 71 percent recovery. Out of a total of possible 26,774 hours of data only 37 percent were satisfactory. Two-thirds of the data loss was due to array loss and one-third was due to current meter failure. The evaluation of current meter arrays produced 5-basic array families which are varied to suit environment and operation situations.

IM 66-8

ENVIRONMENTAL CONDITIONS DURING AIRCRAFT SALVOPS MED (APPENDIX 7), Oct 1966, 59 pp.

This report tendered as Appendix 7 to the major documentation of Aircraft Salvops Med present NAVOCEANO participation and reporting relative to bathymetry and environmental information.

IM 66-9

PROPOSED METHOD FOR THE EVALUATION OF THE HEAT BUDGET IN THE SURFACE LAYER OF THE SEA, by Alvan Fisher, Jr. Aug 1966, 9 pp.

Exclusion of terms in the heat budget equation limits successful prediction of oceanic thermal structure. This publication proposes a method to include the net radiant heat flux, advective and eddy conductivity terms so that thermal structure can be accurately predicted.

PUB NO.

TITLE/NOMENCLATURE

IM 66-10

TEST AND EVALUATION OF THE NEAR SURFACE REFERENCE TEMPERATURE SYSTEM, by Carl V. Beetham, Aug 1966, 14 pp.

The study concludes that an intake thermistor probe and meter readout system should be adopted as a standard instrument for measuring sea surface temperature.

IM 66-11

SEDIMENT SIZE COMPUTER PROGRAM, by James B. Rucker and Richard A. Stewart, Aug 1966, 20 pp.

A sediment size computer program has been developed to reduce the time involved in the manual calculations of statistical parameters. The program computes these parameters utilizing raw weights derived from analysis.

IM 66-12

A MODEL CLIMATOLOGY OF THE OCEANIC THERMAL STRUCTURE AS APPLIED TO SINGLE STATION ANALYSIS, by Edward L. Corton, Aug 1966, 8 pp.

A model of the seasonal thermocline is presented. The model, based on parameters deduced from climatic data from ocean station located in the Sub Arctic.

IM 66-13

A FIELD-ASSEMBLED WATER-PROOF CONNECTOR FOR IN-SITU OCEANOGRAPHIC INSTRUMENTATION, by William T. Martin and John J. Audet, Jr., Aug 1966, 13 pp.

In-situ measurements of certain radioisotopes present in the marine environment have been conducted using gamma spectrometry techniques with a submersible probe. Leakage into the probe has often occurred when the probe was lowered to depth of 1000 feet or more. A connector which prevents this leakage has been tested successfully and is described in this report.

IM 66-14

OCEANOGRAPHIC INTERPRETATION OF TWO GEMINI 5 PHOTOGRAPHS, by Tim P. Barnett, Aug 1966, 11 pp.

This report examines the use of photography from orbital altitudes to observe surface phenomena and conditions applicable to the earth sciences.

IM 66-15

ACCURACY OF SEA SURFACE TEMPERATURE ANALYSES - PART I, by Richard W. James, Aug 1966, 17 pp.

This report attempts to determine how well each of the various forms of SST information describe the actual water temperatures.

PUB NO.

TITLE/NOMENCLATURE

IM 66-16

NAVY ACRE UNDERWAY, by Frank M. Daughtery, Jr., Aug 1966, 7 pp.

U. S. Naval Oceanographic Office personnel planted 5 current temperature and pressure sensing arrays in 2860 to 2950 fathoms of water. The objective of this operation was to conduct the first phase of a concentrated effort to measure and interpret the dynamic characteristics of the ocean in a small area.

IM 66-17

DEEP MOORED CURRENT MEASUREMENT IN THE WESTERN NORTH ATLANTIC (OPEVAL AREA B) JUNE - JULY 1965 - A PRELIMINARY REPORT, by Donald A. Burns and Louis A. Banchemo, Aug 1966, 19 pp.

Approximately 5500 hours of current data were collected during June - July 1965 in the western North Atlantic in depth ranging from 50 to 3000 meters. This publication presents a summary of field work and initial analysis of current field.

IM 66-18

ACCURACY OF SEA SURFACE TEMPERATURE ANALYSES - PART II, by Richard W. James, Aug 1966, 12 pp.

This report presents five sea surface temperature analyses compared with sea surface temperatures obtained by use of the airborne radiation thermometer on a detailed survey in April 1966 of the waters from Norfolk to 200 miles seaward.

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IM 66-19

BIRDSEYE 2-66, 6-14 MARCH 1966, Aug 1966, 81 pp.

IM 66-20

BIRDSEYE 3-66, 11-27 APRIL 1966, Aug 1966, 133 pp.

IM 66-21

BIRDSEYE 4-66, 16-29 JUNE 1966, Aug 1966, 98 pp.

PUB NO.

TITLE/NOMENCLATURE

IM 66-22

COMPARISON OF ANALYZED SEA SURFACE TEMPERATURES WITH OBSERVED DATA, JANUARY - FEBRUARY 1966, by Mitchell K. Shank, Jr., Oct 1966, 13 pp.

This report evaluates sea surface temperature (SST) analyses issued by the U. S. Naval Oceanographic Office and the Fleet Numerical Weather Facility. In addition, SST values recorded by various sensing devices are compared and a brief discussion of the subsurface thermal structure is included.

IM 66-23

ACCURACY OF SEA SURFACE TEMPERATURE ANALYSES - PART III, by Richard W. James, Sep 1966, 14 pp.

This report presents sea surface temperature obtained from an airborne radiation thermometer survey on 21 June 1961 as compared with five other sea surface temperature analyses.

IM 66-24

AN OBSERVATION OF SUBTIDAL INTERNAL WAVE VELOCITIES NEAR BERMUDA, by Robert L. Pickett and Clinton F. Beckner, Jr., Dec 1966, 9 pp.

This report describes an experiment conducted to measure the speed and direction of subtidal (1 to 5 hour periods) internal waves at Argus Tower, an observation platform on Plantagenet Bank, Bermuda.

IM 66-25

BIRDSEYE 5-66, 12-22 JULY 1966, Oct 1966, 98 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IR 66-26

AN OCEANOGRAPHIC AIRCRAFT, by John J. Schule, Jr. and John C. Wilkerson, Jan 1967, 11 pp.

This publication describes the airborne oceanographic sensors needed to fit a Lockheed Super Constellation to measure sea surface temperature, temperature at depth and gravity waves.

IM 66-27

OCEANOGRAPHIC CRUISE SUMMARY - AEGEAN SEA, by Richard M. Wargelin, Oct 1966, 18 pp.

This report describes the oceanographic portion of a survey conducted in the Aegean Sea during December 1965 and early January 1966.

PUB NO.

TITLE/NOMENCLATURE

IM 66-28

NON-EXISTENT SEAMOUNTS - A CASE STUDY, by Joseph G. Gilg and James J. McConnell, Jr., Sep 1966, 16 pp.

This report attempts to explain why some of the reported shallow underwater features shown on nautical charts failed to be detected by oceanographic ships. Data collected to evaluate this feature points up the need of an investigating technique to eliminate such errors.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IR 66-29

BIRDSEYE 6-66, 6-28 AUGUST 1966, Oct 1966, 74 pp.

IM 66-30

BIRDSEYE 7-66, 28 SEPTEMBER - 8 OCTOBER 1966, Dec 1966, 65 pp.

IR 66-31
(FOUO)

NAVOCEANO'S RESEARCH DEVELOPMENT, TESTING AND EVALUATION PROGRAM, Nov 1966, 51 pp.

This summary report is a review at task and work unit levels of the RDT & E Programs in existence at the U. S. Naval Oceanographic Office for the fiscal year 1967. Contents include level of effort by funds and man years; objective, approach and progress of research project; biographies of the principal investigators.

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IM 66-32

BIRDSEYE 8-66, 25 OCTOBER - 7 NOVEMBER 1966, Dec 1966, 116 pp.

IM 66-33

BIRDSEYE 9-66, 21 NOVEMBER - 11 DECEMBER 1966, Mar 1967, 103 pp.

PUB NO.

TITLE/NOMENCLATURE

IM 66-34

WIND, SEA AND SWELL DATA FOR AIRCRAFT SALVOPS MED,
by Donald A. Burns, Oct 1966, 74 pp.

Wind, sea and swell data are presented for Winter
and Spring 1966 for an area southwest of Cartagena,
Spain.

IM 66-36

INTEGRATION OF A TIME SERIES REPRESENTATION OF HEAVING
MOTIONS OF A SHIP IN A RANDOM SEAWAY, by Duncan B. Ross,
Jr., Oct 1966, 10 pp.

A method of numerically intergrating a random heave
velocity signal measured at the bow of a ship underway
is presented.

IM 66-37

OBSERVATIONS OF SYNOPTIC MESOSCALE SYNAMIC PROCESSES,
by Edward L. Corton and Charles C. Bates, Jan 1967,
15 pp.

Mathematical models of the oceanic circulation
are being increasingly used to describe and predict
changes in ocean structure. The U. S. Naval Oceanographic
Office in 1960 sponsored research by New York University
which resulted in a physically simple but computationally
complex model adapted to making ten-day predictions. This
report concentrates on the results of the tests and their
implications for further development of computer models.

IM 66-39

CURRENT NAVAL ACTIVITIES OF INTEREST TO THE EXPLORATION
GEOPHYSICIST, by Charles C. Bates, Jan 1967, 23 pp.

This paper overviews a number of on-going activities
of the U. S. Navy of interest to the seagoing geophysicist.

PUB NO.

TITLE/NOMENCLATURE

IM 67-1

PRELIMINARY INVESTIGATIONS OF THE DIRECTIONAL SPECTRUM OF OCEAN WAVE HEIGHT AS OBTAINED FROM STEREO WAVE PHOTOGRAPHS, by Lloyd S. Simpson, Jan 1967, 8 pp.

Stereophotographs of the sea surface were obtained by the Navy Photo Reconnaissance Squadron (VAP-62) stationed at Jacksonville, Florida. These photographs were taken on 2 January 1964 about sixty miles northeast of Bermuda. They were analyzed to obtain wave heights from which the two dimensional energy spectrums of the sea surface was obtained.

IM 67-2

CO-CUMULATIVE SPECTRUM CURVES FOR THE PIERSON-MOSKOWITZ (PM) SPECTRUM, by Richard Blumenthal, Raymond Beauchesne and Julius Marcus, Jan 1967, 9 pp.

This publication presents a comparison between the durations required for 95 percent maximum height wave development for the co-cumulative curves in H. O. Pub 603 and in the PM spectrum. A table showing durations required for fully developed seas for use in connection with the PM Spectrum is included.

IM 67-3

COMMENTS ON THE "LIVE ATLAS", by Walter E. Yergens, Jan 1967, 9 pp.

This report gives a provisional definition of an oceanographic "Live Atlas" as an automated archival-retrieval-display system conceived to serve the needs of the oceanographic community. The system is likened to a library and a few of the problems involved in organizing such a "library" are discussed.

IM 67-4

AN AUTOMATED PROCEDURE FOR PRODUCING CONTOUR CHARTS, by Roger T. Osborn, Feb 1967, 48 pp.

This report consists of a description of three FORTRAN computer programs which will enable the user to produce a contour chart.

IM 67-5

TEMPERATURE, SALINITY AND DENSITY OF THE WORLD'S SEAS: SOUTH CHINA SEA AND ADJACENT GULFS, by Paul E. LaViolette and Theodore R. Frontenac, Feb 1967, 134 pp.

This is a part of a series of studies describing the temperature, salinity and density of various seas of the world. This part covers South China Sea and its adjacent gulfs.

PUB NO.

TITLE/NOMENCLATURE

IM 67-6

BOTTOM SEDIMENT DATA CODING MANUAL, by Roger J. Van Wyckhouse, Feb 1967, 22 pp.

This manual provides the instructions, codes and conversion tables for filling in the Bottom Sediment Data Coding Sheet No. 1 used by this Office.

IM 67-7

GEODETTIC METHODS APPLIED TO ACOUSTIC POSITIONING, by Andrew C. Campbell, Mar 1967, 14 pp.

This report presents a method for calibrating an acoustic network array and an example where this method was used with real data.

IR 67-8

MASS PROPERTY RELATIONSHIP OF SEDIMENTS FROM THE HATTERAS ABYSSAL PLAIN, by Newell T. Stiles, Feb 1967, 110 pp.

This study determines the interrelationships between strength characteristics and related mass properties, primarily moisture content, unit weight, and specific gravity of submarine sediments, and to determine their areal and vertical variations.

IR 67-9

A PREVIEW OF NEWLY CONSTRUCTED SEA SURFACE TEMPERATURE CHARTS OF THE PACIFIC, ATLANTIC AND INDIAN OCEANS, by Paul E. LaViolette, Mar 1967, 13 pp.

The U. S. Naval Oceanographic Office is currently engaged in preparing oceanographic atlases of the various oceans. For inclusion in these atlases monthly maximum, minimum and mean sea surface temperature charts of the Pacific (south to 20°south), the Atlantic (south to 10°south) and the Indian (south to 55°south) Oceans have been analyzed on a 1°quadrangle grid.

IM 67-10

OCEANOGRAPHIC CRUISE SUMMARY, SOUTH CHINA SEA, by Samuel G. Tooma, Jr. and Harry Iredale, III, Feb 1967, 20 pp.

This report describes the oceanographic survey conducted in the South China Sea. The survey was performed to update existing nautical charts and to expand the limited knowledge of the oceanographic environment in that area.

PUB NO.

TITLE/NOMENCLATURE

IM 67-11

GRAVIMETRIC COMPUTATIONS, by Andrew C. Campbell, Apr 1967, 10 pp.

This report describes a mathematical solution developed for the complete evaluation of both the geoid undulation and the deflection of the vertical components for the center area.

IM 67-12

DEEP-TOWED BATHYMETRIC SYSTEM, by Martin Fagot and Robert Oser, Feb 1967, 14 pp.

This report describes a low cost deep-towed bathymetric system that gives micro-bathymetry and subbottom profiling. The results appear to be better than those obtained with conventional shipboard bathymetric systems.

IR 67-13

AUTOMATION OF UNDERSEA FEATURE NAMES, by M. Karl Jugel, Jun 1967, 19 pp.

This report describes a comprehensive automated system using modifications of three Hollerith files, to facilitate the preparation of bottom contour and other charts and studies.

IR 67-14

A RAPID ACCESS TAPE FORMAT FOR OCEANOGRAPHIC STATION DATA, by Walter E. Yergen, Mar 1967, 12 pp.

This report proposes a new tape format which will facilitate reduction of tape storage to one twentieth that of the image format now in use.

IR 67-16

OCEANOGRAPHIC CRUISE SUMMARY SALVOPS VIEQUES, USS HOIST (ARS-40), by James W. Underwood, Apr 1967, 6 pp.

This report describes an oceanographic survey conducted off the eastern tip of Vieques Island during August 1966 to obtain current, bottom sediment, and underwater photographic data for immediate use by Navy divers working in the area.

IR 67-17

COMMENTS ON THE MASS BUDGET OF ARCTIC PACK ICE, by Walter I. Wittmann and John J. Schule, Jr., Mar 1967, 30 pp.

In this study evidence is presented to indicate that in the Canadian Basin along, 13 to 18 percent of the ice area is covered by pressure ice considerably thicker than the 6 to 14 feet usually considered average thickness of polar ice.

PUB NO.

TITLE/NOMENCLATURE

IR 67-18

MODELS FOR ESTIMATING WAVE REFRACTION, by Richard M. Holcombe, Apr 1967, 24 pp.

One of the problems associated with wave refraction in estimating breaker heights is the time-consuming, costly and laborious task of constructing wave refraction diagrams. Through the use of three simplified wave refraction models, along with historical offshore wave data preliminary estimates of breaker height conditions may be derived for remote coastlines where visual observations are sparse. The method is adaptable for computer use.

IR 67-20

TEMPERATURE, SALINITY AND DENSITY OF THE WORLD'S SEAS: INDONESIA SEAS, by Paul E. LaViolette and Theodore R. Frontenac, Apr 1967, 138 pp.

This is a part of a series of studies describing the temperature, salinity and density of various seas of the world. This part covers the Indonesian Sea.

IR 67-21

GULF COAST VISIT TO THE MISSISSIPPI BASIN FOR RIVERINE APPLICATIONS TO SOUTHEAST ASIA, by George Tselepis, Apr 1967, 16 pp.

During the period 9-16 November 1966, arrangements were made to observe a high speed test of a recording fathometer at Florida State University and to confer with officials on riverine applications to the southeast Asia area.

IR 67-22

HARBOR SURVEY ASSISTANCE PROGRAM CONDUCTED BY NAVOCEANO IN THE VICINITY OF PUERTO BARIOS, GUATEMALA, by George Tselepis and Dorica J. Ouellette, Apr 1967, 25 pp.

The Harbor Survey Assistance Program (HARSAP) is intended to provide a hydrographic mission to train personnel, advise and assist other governments in conducting hydrographic surveys of harbors and their approaches.

IR 67-23

BIRDSEYE 1-67, 15-28 JANUARY 1967, Apr 1967, 136 pp.

Project Birds Eye aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

PUB NO.

TITLE/NOMENCLATURE

IR 67-24

CALIBRATION OF AN OCEAN BOTTOM ACOUSTIC TRANSPONDER NET, by William E. Hart, Apr 1967, 68 pp.

This paper illustrates a most accurate method for determining baseline lengths and calibrating an ocean bottom acoustic transponder triad. Also illustrated and discussed is the effect of transponder depth and sound velocity errors on horizontal accuracy.

IR 67-25

SYNOPTIC ANALYSIS OF A PORTION OF THE NORTHWESTERN SARGASSO SEA, JUNE 1965, by Alvan Fisher, Jr., Jul 1967, 20 pp.

This report presents a study of the spatial distributions of temperature and salinity within the area of the Sargasso Sea during June 1965.

IR 67-26

PART I - PROGRAM PROPOSAL FOR AN AUTOMATIC SYNOPTIC OCEANOGRAPHIC DATA ASSIMILATION SYSTEM (SODAS)
PART II - SYNOPTIC OCEANOGRAPHIC DATA ASSIMILATION SYSTEM (SODAS) PROGRESS REPORT NUMBER 1, by John J. Russell, May 1967, 47 pp.

This report contains two parts describing a joint U. S. Naval Oceanographic Office - Fleet Numerical Weather Facility effort initiated in June 1966. This effort attempts to develop an automated synoptic oceanographic data assimilation system (SODAS). PART II is a progress report to 1 September 1966 describing operationally available ADP and verification product resulting from (SODAS). A typical format for periodic quality-quantity reports is also included in PART II.

IR 67-27

CORRECTION FOR PORTABLE INDUCTION SALINOMETERS, MODEL RS-7A AND RS-7B, by Alvan Fisher, Jr., May 1967, 38 pp.

Salinity values determined by induction salinometers require correction for instrument drift and water sample temperature. These corrections formerly required considerable interpolation which is time consuming and subject to error. This paper gives correction for the Beckman Salinometer, Models RS-7A and RS-7B, in tubular form.

IR 67-28

VARIATIONS IN THE VERTICAL WATER STRUCTURE AT OWS DELTA (44°N 41°W), by Edward L. Corton, Jun 1967, 24 pp.

This report presents findings of variations in the vertical water structure made at Ocean Station Vessel Delta (44°N 41°W) during five 3-week cruises between 1962 and 1963.

PUB NO.

TITLE/NOMENCLATURE

IR 67-29

AN APPLICATION OF NAVAL OCEANOGRAPHIC DEVELOPMENT TO INLAND WATERS, by John C. Wilkerson and J. F. Ropek, Dec 1967, 11 pp.

This report presents the aerial oceanographic capability applied in the public interest to a survey of Lake Michigan.

IR 67-30

SOME TECHNICAL CONSIDERATIONS IN PRODUCING SPECIAL CHARTS FOR RIVERS AND OTHER SHALLOW WATER AREAS, by Charles C. Bates, George Tselepis and Daniel Von Nieda May 1967, 28 pp.

This report presented by Charles C. Bates, George Tselepis and Daniel Von Nieda at the ASP/ACSM Convention in Washington, D. C. on 10 March 1967. This paper addresses itself to current day technical problems that must be solved in order to provide up-to-date, comprehensive information to navigators of river craft.

IR 67-31

A MULTIFREQUENCY ACOUSTIC TRANSMITTING SYSTEM, by Laurence C. Breaker, May 1967, 11 p.

An acoustic transmitting system incorporating a towable projector that operates in the 1 to 10 kHz frequency range has been developed with the assistance of the Underwater Sound Reference Division of the Naval Research Laboratory. This report describes that the transmitting system has been successfully used in the measurement of one-way horizontal propagation characteristics to ranges of about 10,000 yards. The flexibility of this acoustic transmitting system should permit it to be used for a variety of acoustic measurements.

IR 67-32

EXTENSION OF ATLAS TECHNIQUES BY ADP, by Richard M. Holcombe, Gordon H. McDougall, Eugene L. Bialek, Jun 1967, 13 pp.

This publication serves as an introduction to a series of IRM on each of the primary oceanographic disciplines defining problems and recommendations for adapting to automatic data processing methods at NAVOCEANO.

PUB NO.

TITLE/NOMENCLATURE

IR 67-33

ALUMINAUT MAGNETOMETER OPERATIONS - ST. CROIX, VIRGIN ISLANDS - 1966, by Robert H. Higgs and Jerry C. Carroll, Mar 1967, 28 pp.

The Naval Oceanographic Office demonstrated the practicality of conducting geomagnetic surveys from deep diving submarines during operations aboard Reynolds Aluminum Company's ALUMINAUT near St. Croix, Virgin Islands.

IR 67-34

A VOLUME SCATTERING AND OCEANOGRAPHIC STUDY OF AN AREA IN THE EASTERN GULF OF MEXICO, by Peter Van Schuyler and Arthur A. Hunger, May 1967, 47 pp.

This report presents data from the deep scattering layer and oceanographic data collected during June 1966 from the Gulf of Mexico area.

IR 67-35

A GEOMETRIC CONFIGURATION ASSOCIATED WITH THE OSCULATING QUADRICS AT A POINT OF ANALYTIC SURFACE, by Paul D. Thomas, May 1967, 27 pp.

This report presents a mathematical study of geometric configuration at a point of an analytic surface. Detailed results are described in this report.

IR 67-36

THE USE OF THE KOLMOGOROV-SMIRNOV TEST TO DETERMINE THE EXISTENCE OF A FULLY DEVELOPED SEA - PART I
THE MEAN SPECTRUM FOR A FULLY DEVELOPED SEA RECORDED AT ARGUS ISLAND - PART II, by Richard J. Manasseri, May 1967, 27 pp.

It is shown that a fully developed sea considered as a stationary Gaussian process produces spectral values which exhibit a χ^2 distribution for each frequency band. The Kolmogorov-Smirnov goodness-of-fit test is explained and applied to Argus Island ocean wave data at each frequency band.

IR 67-37

THE MERCATOR PROJECTION AND ITS VARIATIONS, by Michael G. Paradis, May 1967, 18 pp.

This report presents basic information on the Mercator Projection, including its variations and a selected glossary. The report is aimed at the apprentice cartographer as well as non-professional personnel whose duties require a familiarity with projections in general. The method of presentation, supported with illustrations, is intended to depict the intrinsic properties of each projection covered.

PUB NO.

TITLE/NOMENCLATURE

IR 67-38

PROJECT MAGNET AND COSMIC RAYS, by Leonard S. Dennis, May 1967, 22 pp.

Project Magnet began to observe cosmic rays in 1958 with a neutron monitor. Expanded later to include a meson telescope. An aircraft has proven to be an excellent platform to measure cosmic radiation simultaneously with the magnetic field.

IR 67-39

BATHYMETRIC-MAGNETIC FIELD INVESTIGATION: SOUTHERN PORTION, SAN JUAN SEAMONT, by Robert W. Thomas, Jun 1967, 11 pp.

This report presents the bathymetric and magnetic field results of AGOR Cruise No 056704 to the scientific community. The primary concern is to provide a detailed bathymetric chart of the Southern Portion of San Juan Seamount for anticipated operations requiring placement of bottom-mounted instruments.

IR 67-40

PORTABLE DEPTH ECHO SOUNDING TEST-MODIFIED RAYTHEON DE-723B FATHOMETER WITH A NARROW BEAM TRANSDUCER, by George Tselepis, May 1967, 27 pp.

This report presents tests of a portable Ratheon DE 723B Fathometer made in the Anacostia and Potomac Rivers to evaluate over the side and through-the-hull transmission at various speeds.

IR 67-41

OCEANOGRAPHIC CRUISE SUMMARY - EAST SIBERIAN SEA, by Richard M. Wargelin, Jul 1967, 15 pp.

Data collected on this survey indicate three possible major sources of water moving into the East Siberian Sea.

IR 67-42

A STUDY OF THE CHART CORRECTION PROGRESS AT THE NAVAL OCEANOGRAPHIC OFFICE, by John C. Grove and Earl M. Waters, May 1967, 11 pp.

This report describes problems encountered to keep the nautical charts updated by hand corrections and how this problem is solved by the silk screen process which saves times, money and manpower.

PUB NO.

TITLE/NOMENCLATURE

IR 67-43

OCEANOGRAPHIC CRUISE SUMMARY - DE LONG STRAIT, by
Martial Car and William L. Gsell, Jul 1967, 16 pp.

Historical data and data collected on this survey
show De Long Strait contain two diverse water masses.

IR 67-44

OCEANOGRAPHIC CRUISE SUMMARY - RECONNAISSANCE SURVEY OF
NORTHERN MID-OCEANIC RIDGE, by G. Leonard Johnson,
Jul 1967, 7 pp.

A Joint U. S. Naval Oceanographic Office and U. S.
Coast Guard Geological-Geophysical Survey was conducted
during the Summer of 1966 in that portion of the mid-
oceanic ridge that lies north of Iceland.

IR 67-45

COLLECTED REPORTS OF THE 1966 STUDENT TRAINEES OF THE
RESEARCH AND DEVELOPMENT DEPARTMENT, Jun 1967, 217 pp.

The research undertaken by the student trainees
during Summer 1966 is presented in a collection of
reports authored by the respective students. An
alphabetical listing of the students and a Program
of the Student Seminar held on 6 September 1966 also
included.

IR 67-46

SUMMARY OF THE GENERAL HYDROLOGY OF THE MEKONG DELTA,
by Donald A. Burns, Jun 1967, 36 pp.

The Mekong Delta is composed of major streams,
their distributaries and numerous short tidal streams.
This report briefly summarizes the climate, tides,
currents and vertical control of the Mekong Delta.

IR 67-47

OCEANOGRAPHIC CRUISE SUMMARY - BARENTS SEA, by Keith R.
Newsom, Jul 1967, 19 pp.

ATKA conducted an oceanographic survey to examine
the flow of Arctic and Atlantic waters into the Barents
Sea and to determine their effects on the physical
structure of the area.

IR 67-48

BLAKE RIDGE AEROMAGNETIC SURVEY, by Dewey R. Bracey,
Jun 1967, 13 pp.

This report describes two positive magnetic lineations
revealed in an aeromagnetic survey of a 20,000 square
mile area over the Blake Ridge.

PUB NO.

TITLE/NOMENCLATURE

IR 67-49

TEMPERATURE, SALINITY AND DENSITY OF THE WORLD'S SEAS: ARABIAN SEA, PERSIAN GULF AND RED SEA, by Paul E. LaViolette and Theodore R. Frontenac, Aug 1967, 105 pp.

This is a part of a series of studies describing the temperature, salinity and density of various seas of the world. This part covers the Arabian Sea, Persian Gulf and Red Sea.

IR 67-50

MANUAL OF SIMPLE FIELD TECHNIQUES FOR MEASURING WATER LEVEL FLUCTUATIONS AND SURFACE CURRENT PATTERNS, by Willis S. Glidden and Donald A. Burns, Jun 1967, 26 pp.

This manual provides the non-professional hydrographer with the necessary techniques for taking water level and current measurements in rivers and canals.

IR 67-51

UNDERSEA STUDIES WITH THE DSRV ALVIN - TONGUE OF THE OCEAN, BAHAMAS, by Roswell F. Busby and Roger Merrifield, Sep 1966, 54 pp.

This report presents a study of the results obtained by the deep submergence research vehicle ALVIN which is sponsored by the office of Naval Research and operated by the Woods Hole Oceanographic Institution.

IR 67-52

U. S. NAVAL OCEANOGRAPHIC OFFICE GEOMAGNETIC SURVEYS, Jul 1967, 44 pp.

Since 1953, the U. S. Naval Oceanographic Office has conducted geomagnetic surveys over various ocean areas of the world. Information on survey locations, dates, navigational control, track patterns, data format and availability of geomagnetic technical reports, charts and other publications are presented.

IR 67-54

LECTURE NOTES ON BASIC UNDERWATER SOUND, by Matilene S. Berryman, Aug 1967, 60 pp.

This is a first attempt to set forth information of a basic nature on underwater sound suitable for training purposes. This material was compiled from lecture notes, and contains only a portion of the wealth of unclassified data available on Underwater Sound.

PUB NO.

TITLE/NOMENCLATURE

IR 67-55

RADIOLOGICAL SAFETY INSTRUCTIONS FOR THE LANE-WELLS NUCLEAR SEDIMENT DENSITY METER, by Newell T. Stiles, John R. Carpenter and Robert A. Pedrick, Jul 1967, 33 pp.

This report contains radiological safety instructions for the use of a 100 millicurie Cesium 137 source in the Lane-Wells Nuclear Sediment Density Meter. Procedures are provided for handling and storage of the source under shipboard operating conditions.

IR 67-56

CHRONOLOGY OF SEA WATER, by Boyd E. Olson, Jul 1967, 44 pp.

This report is a summary of isotopic dating techniques applied to sea water. Several of the naturally occurring isotopes have been investigated for use in determining the chronology of sea water.

IR 67-57

TEMPERATURE, SALINITY AND DENSITY OF THE WORLD'S SEAS: BAY OF BENGAL AND ANDAMAN SEA, by Paul E. LaViolette, Aug 1967, 81 pp.

This is a part of a series of studies describing the temperature, salinity and density of various seas of the world. This part covers the Bay of Bengal and the Andaman Sea.

IR 67-59

PROPERTIES OF THE NORTHERN EDGE OF THE GULF STREAM INFERRED FROM AIRCRAFT OBSERVATIONS, by Robert Lee Pickett, Sep 1967, 13 pp.

This report presents data obtained through the use of an airborne infrared radiation thermometer on the northern edge of the Gulf Stream between 65° and 75°W.

IR 67-60

WIND MIXING AT ARGUS ISLAND, by Edward L. Corton, Sep 1967, 8 pp.

This report presents a new wind mixing formula that was derived for Argus Island, located in 192 feet of water on Plantagenet Bank. The formula indicates that the summer layer depth is deeper over the bank than in nearby deep water, when wind speed is less than about 15 to 18 knots, and shallower at higher wind speeds.

PUB NO.

TITLE/NOMENCLATURE

IR 67-61

EVALUATION OF THE NAVY NAVIGATION SATELLITE SYSTEM AND THE OMEGA NAVIGATION SYSTEM, by Willard M. Swartwood and Leslie L. Cunningham, Aug 1967, 14 pp.

This paper summarizes the results of tests conducted aboard the USS GYATT (DD-712) in 1966. The Navy Navigation Satellite System (NAVSAT) and the OMEGA Navigation system were evaluated using precise radar fixes from the Wallops Island Radar Tracking Station as a yardstick. NAVSAT and OMEGA fixes gave position differences less than 0.5 nautical miles and 2 nautical miles respectively.

IR 67-62

PRELIMINARY DISCUSSION OF CURRENT DATA COLLECTION SYSTEMS FOR USE IN MEKONG DELTA, by Dennis K. Clark, Aug 1967, 16 pp.

The collection of current data in the Mekong Delta poses many difficult problems, primarily due to war conditions and large water level fluctuations. This report briefly discusses initial concepts concerning an underway system for measuring current magnitudes that utilizes a ducted current meter and various positioning devices.

IR 67-63

SOME MATHEMATICAL ASPECTS OF UNDERWATER EXPLOSIONS CAUSED BY EXPLODING WIRES, by James R. McGrath, Aug 1967, 14 pp.

This report treats the following topics: The calculation of a correction factor for peak pressure measurements of very fast, small amplitude explosions, the formal basis for defining the explosion time constant for EWP events underwater, and the equivalent weight of TNT for stored electrical energy.

IR 67-65

MEASUREMENTS OF UNDERWATER REFLECTANCE AND ATTENUATION OF DIFFUSE LIGHT NEAR KAMCHATKA, U.S.S.R., DURING AUGUST - SEPTEMBER 1966, by Richard M. Heavers, Nov 1967, 17 pp.

This report presents a study of measurements of underwater reflectance and of the attenuation coefficient for diffuse light made as part of an oceanographic survey aboard USS FLORIKAN (ASR 9) off the coast of Kamchatka, U.S.S.R. during August - September 1966.

PUB NO.

TITLE/NOMENCLATURE

IR 67-66

A PARTIAL BIBLIOGRAPHY INSHORE SURVEY PROGRAM ALONG ATLANTIC AND GULF COASTS, by William R. Heiner, Sept 1967, 14 pp.

This report presents the survey program which began in the early 1950's. Oceanographic surveys were conducted in the approaches to many U. S. harbors by various universities, oceanographic institutions and government agencies and by the Naval Oceanographic Office.

IR 67-67

OCEANOGRAPHIC CRUISE SUMMARY - BAFFIN BAY - DAVIS STRAIT - LABRADOR SEA, by Kenneth B. Peery, Sep 1967, 12 pp.

This report describes the oceanographic survey conducted in the Autumn of 1966 in the Baffin Bay - Labrador Sea area. The survey was performed to obtain knowledge of the ocean environment for use in the annual East Arctic Ice Forecast Program.

IR 67-68

OPTIMUM SPACING OF TRANSPONDERS, by Robert J. Haehnle Sep 1967, 6 pp.

This paper documents some original research on optimizing spacing to achieve the largest area of accurate navigation with an ocean acoustic transponder triad. It was further prepared to serve as an input to the Ocean Survey Program of the Naval Oceanographic Office, and applied theoretical formulae to data collected by the Acoustic Ship Positioning System, MARK III.

PUB NO.	TITLE/NOMENCLATURE
IR 67-71	A COMPARATIVE STUDY NIMBUS II SATELLITE SEA SURFACE TEMPERATURES VERSUS HISTORICAL DATA IN A SELECTED REGION, by Paul E. LaViolette and Paul L. Chabot, Dec 1967, 19 pp. This report presents data received from the Meteorological Satellite, NIMBUS II, from the time of its launching on May 15 until November 15, 1966.
IR 67-72	SEASONAL ECHO SOUNDER CORRECTION FOR MARSDEN SQUARE 130, by Eugene L. Bialek, Nov 1967, 16 pp. The purpose of this study is to examine the calculated seasonal echo sounder corrections within Marsden Square 130.
IR 67-73	LIVE ATLAS ACCESSING OF OCEANOGRAPHIC FILES, by Walter E. Yergen, Sep 1967, 20 pp. The concept of the live atlas is defined, and discussed in terms of hardware and software needs. Discussed also are the disciplines imposed by the live atlas concept on data formatting techniques.
IR 67-74	DESIGN AND USE OF A BOTTOM ENVIRONMENTAL SENSING SYSTEM, by Robert K. Oser and Martin G. Fagot, Oct 1967, 14 pp. This report presents the design of a bottom environmental sensing system (BESS). The BESS has been designed to measure the current speed and direction, water temperature, in-situ sediment strength and minimum/maximum visibility periods of the near bottom oceanic environment.
IR 67-76	OCEANOGRAPHIC CRUISE SUMMARY - ATLANTIC FLEET TACTICAL UNDERWATER RANGE - SOUTHEAST PUERTO RICO, 1967, by Charles Ostericher, Jr., Dec 1967, 44 pp. This report presents an oceanographic survey of a proposed Fleet Tactical Underwater Range off the southeast coast of Puerto Rico conducted during March - April 1967. Data collected included: temperature and salinity, surface currents, moored current meter measurements, bottom sediments, bottom stereo photographs, and ambient noise.

PUB NO.

TITLE/NOMENCLATURE

IR 67-77

OCEANOGRAPHIC DATA REPORT - SAN CLEMENTE ISLAND AREA, OCTOBER - DECEMBER 1966, by Robert K. Oser, James L. Berger and Louis J. Franc, Sep 1967, 152 pp.

The Bottom Environmental Survey Project (BESP) of the Naval Oceanographic Office conducted an oceanographic environmental survey from October to December 1966 in the vicinity of San Clemente Island to obtain oceanographic information for the support of the Deep Submergence Systems Program (DSSP). This report presents sediment, deep towed profiler, physical oceanography, visibility and current data collected during the survey.

IR 67-78

EVALUATION OF SPECTRAL WAVE HINDCASTS USING THE AUTOMATED WAVE PREDICTION PROGRAM OF THE NAVAL OCEANOGRAPHIC OFFICE, by Lionel I. Moskowitz, Oct 1967, 32 pp.

The first section of this paper presents a brief historical summary and description of the wave forecasting model. The second section attempts to evaluate spectral hindcasts made in the vicinity of Bermuda, B.W.I. during the latter part of November 1961.

IR 67-79

OCEANOGRAPHIC CRUISE SUMMARY - ROSS SEA, ANARCTICA, by Martial Car, Dec 1967, 14 pp.

This report presents an oceanographic survey performed in the Ross Sea, Antarctica from 25 January to 8 March 1967 aboard GLACIER and STATEN ISLAND. Oceanographic stations were occupied in the central part of the sea to complement previous work done by NAVOCEANO in the investigation of circumpolar water intrusion into the Ross Sea and the annual ice forecasting station locations.

IR 67-80

SURVEYING WITH BRN-3 SATELLITE NAVIGATION AND BOTTOM TRANSPONDERS, by William E. Hart, Nov 1967, 37 pp.

This report presents a semi-technical outline of BRN-3/Transponder surveys. It covers equipment, transponder triad spacing, calibration by a baseline crossing method, sound velocity and depth error sources, and other topics.

PUB NO.

TITLE/NOMENCLATURE

Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

IR 67-81

BIRDSEYE 2-67, 15 MARCH - 19 APRIL 1967, Nov 1967, 171 pp.

IR 67-82

BIRDSEYE 3-67, 30 JUNE - 10 JULY 1967, Nov 1967, 46 pp.

IR 67-83

BIRDSEYE 4-67, 10-22 AUGUST 1967, Nov 1967, 122 pp.

IR 67-84

NAVOCEANO'S RESEARCH, DEVELOPMENT, TESTING, AND EVALUATION PROGRAM, by John K. Duncan, Oct 1967, 87 pp.

This summary report is a review at task and work unit levels of the RDT & E Programs in existence at the U. S. Naval Oceanographic Office for fiscal year 1968.

IR 67-85

PROJECT FLOOD - REPORT ON DATA COLLECTED BY MINE DIVISION 84 EASTERN LIGURIAN SEA, DECEMBER 1965, by Atwood S. Barwick, Dec 1967, 81 pp.

This report is one of a continuing series which contains oceanographic data collected by several mine divisions.

IR 67-87

UNDERWATER EXPLODING WIRES, by James R. McGrath, Nov 1967, 7 pp.

This report treats (1) the shock wave parameters associated with exploding wire phenomena (EWP) underwater and (2) their comparison to TNT data. The assumption correction factors, and justifications central to the data reduction and analysis are outlined.

IR 67-88

TEMPERATURE, SALINITY, AND DENSITY OF THE WORLD'S SEA: SEA OF OKHOTSK, by Paul E. LaViolette, Dec 1967, 134 pp.

This is a part of a series of studies describing the temperature, salinity, and density of various seas of the world. This part covers the Sea of Okhotsk.

IR 67-89

AEROMAGNETIC SURVEY OF TAMPICO BANK, by Leonard S. Dennis and Patrick T. Taylor, Dec 1967, 5 pp.

This report presents the results of a special aeromagnetic survey of the Tampico Bank in the Gulf of Mexico conducted by the U. S. Naval Oceanographic Office.

PUB NO.

TITLE/NOMENCLATURE

IR 67-90

CONVERGENCE ZONE WIDTH ANOMALY IN THE NORTH PACIFIC,
by Henry Leopold, Dec 1967, 35 pp.

This report presents the results of a study to determine the factors contributing to the existence of an anomaly in convergence zone widths in the North Pacific Ocean. Instead of the normal convergence zone widths of 3 to 5 miles, it was found that the convergence zone widths in some regions approached zero. It was determined that the ratio of sound velocity gradients above or below the limiting depth is the factor controlling the width of the zone.

IR 67-91

THE MAGNITUDE OF TEMPERATURE VARIABILITY AT ONE LOCATION
IN THE TONGUE OF THE OCEAN, by Laurence C. Breaker and
Robert R. Gleason, Dec 1967, 15 pp.

This report presents the results of a study determining to what extent theory and experiment agree in relation to ocean turbulence.

IR 67-92

THE VARIABILITY OF BOTTOM REFLECTED SIGNALS USING THE
DEEP RESEARCH VEHICLE ALVIN, by Laurence C. Breaker and
Robert S. Winokur, Dec 1967, 19 pp.

This paper presents the results of a preliminary study using a deep research vehicle to investigate the cause of acoustic fluctuations observed in normal incidence bottom reflection signal.

IR 67-93

CURRENTS ALONG THE EAST COAST OF AFRICA, by William E.
Boisvert, Dec 1967, 10 pp.

The descriptions of the coastal currents in this report are based on data obtained by direct methods. The two principal currents are the East Africa Coastal Current, also known as the Somali Current, and the Agulhas Current.

IR 67-95

EXTRACTING INFORMATION FROM THE GEO-SORT FILE BY COMPUTER
PROGRAMMING, by J. C. Franco, Dec 1967, 33 pp.

This report describes the magnetic tapes of historical oceanographic data known as the Geo-Sort File, and the library copies of these tapes called the NIS north Pacific data tapes.

PUB NO.

TITLE/NOMENCLATURE

IR 67-96

HYDROGRAPHIC SURVEY DATA REDUCED BY AUTOMATIC PLOTTER, by Anthony A. Brown, Oct 1967, 22 pp.

This report shows how the calcomp plotter processed in a period of six months to a two year backlog of hydrographic data obtained by survey ships. Due to its invaluable time and cost reduction features, programs are now developed for use in constructing position and plotting sheets, grids and projection layouts and many other time consuming tasks formerly done manually.

IR 67-97

RECRUITING OCEANOGRAPHERS, by Charles C. Bates, Dec 1967, 15 pp.

This report presents the method practiced at the Naval Oceanographic Office in the recruiting of oceanographers, marine geologist and geophysicists, engineers and technicians.

IR 67-98

AN ANALYSIS OF SELECTED SIGMA-T SURFACES IN THE INDIAN OCEAN, by Douglas R. Hamilton and Paul E. LaViolette, Nov 1967, 36 pp.

This report presents an analysis based on interpolated values of six Sigma-T surfaces beginning with 26.6 and ending with 27.6. The levels are spaced at increments of 0.2 units of Sigma-T. For each Sigma-T surface three charts are drawn showing the mean depth, mean temperature, and mean salinity of the surface.

IR 67-99

TEMPERATURE, SALINITY, AND DENSITY OF THE WORLD'S SEAS: YELLOW SEA, by Paul E. LaViolette and Sandra E. Seim, Dec 1967, 67 pp.

This is a part of a series of studies describing the temperature, salinity, and density of various seas of the world. This part covers the Yellow Sea.

IR 67-100

AUTEC SEDIMENT DEPOSITION/EROSION STUDY INTERIM REPORT, by Howard D. Muddell, Sep 1967, 40 pp.

This report presents the results of the first three surveys in a planned series of seven replicate surveys. The objective of this study is to monitor sediments accretion and/or erosion on the beaches and in the channel due to the construction of the autec main base and down range sites. Data collection methods, channel data and beach profiles are presented in this report.

PUB NO.

TITLE/NOMENCLATURE

IR 68-1

TEMPERATURE, SALINITY, AND DENSITY OF THE WORLD'S SEAS: SEA OF JAPAN, by Paul E. LaViolette and Douglas R. Hamilton, Dec 1967, 110 pp.

This report is a part of a series of studies describing the temperature, salinity, and density of various seas of the world. This part covers the Sea of Japan.

IR 68-2

MONTHLY CHARTS OF MEAN, MINIMUM, AND MAXIMUM SEA SURFACE TEMPERATURE IN THE PACIFIC OCEAN, by Paul E. LaViolette, Walter Howard and Curtis Mason, Jan 1968, 59 pp.

This report presents charts, based on ships injection temperature data, to show the monthly mean, minimum and maximum sea surface temperatures for the Pacific Ocean.

IR 68-4

A COMPARISON BETWEEN PREDICTED AND OBSERVED TIMES OF HIGH AND LOW WATERS FOR MY THO, REPUBLIC OF SOUTH VIETNAM, JANUARY THROUGH MARCH, 1967, by Sheldon M. Lazanoff, Jan 1968, 5 pp.

A comparison between observed and predicted times of high and low water times for My Tho, South Vietnam, during January through March 1967 indicates that time of high water should be corrected by +75 minutes, and low water by +29 minutes. These values should be added to the time corrections for My Tho as published in the 1967 COMNAVFORV Tide Table.

IR 68-7

OCEANOGRAPHIC CRUISE SUMMARY - MARINE BIOFOULING STUDIES OF MAIZURU, YOKOSUKA, AND SASEBO, JAPAN, by John R. DePalma, Feb 1968, 15 pp.

This report presents a study of cooperative biofouling studies conducted off Maizuru, Yokosuka, and Sasebo, Japan, by the Japanese Maritime Self Defense Forces and the U. S. Naval Oceanographic Office.

IR 68-8

SUMMARY OF SUSPENDED SEDIMENT DATA IN THE MEKONG DATA PRELIMINARY INVESTIGATION, by Roger J. Van Wyckhouse, Feb 1968, 21 pp.

This report summarizes and graphically displays tabular listings of suspended sediment data published by the Harza Engineering Company of Chicago. These data are used by Navy Personnel involved in operational mine hunting operations and sonar instrumentation design.

PUB NO.

TITLE/NOMENCLATURE

IR 68-10

OCEANOGRAPHIC CRUISE SUMMARY - WESTERN GREENLAND SEA, AUGUST - SEPTEMBER 1965, by Martin T. Bourkland, Mar 1968, 12 pp.

This informal report is a summary of an oceanographic survey in the western Greenland Sea during August and September 1965. Scientists from NAVOCEANO, University of Washington, and University of Massachusetts collected physical, chemical, geological, and biological data from aboard USS EDISTO (AGB 2).

IR 68-11

TIDAL DEPTH SOUNDING CORRECTIONS FOR THE MEKONG DELTA, by Julian Josephson and Donald A. Burns, Apr 1968, 21 pp.

This paper offers a method of obtaining tidal corrections (or "reducers") for depth soundings in a reach of river canal or stream even though a tide gauging station does not exist in the immediate area of a given survey.

IR 68-12

AN ANALYSIS OF JAPANESE CURRENT METER ARRAYS, by John D. Hawes, Apr 1968, 7 pp.

This report discusses the Japanese techniques and compares them with present NAVOCEANO practices. Advantages and disadvantages of both techniques for launching, recovery, and rigging procedures are presented.

IR 68-13
(FOUO)

TEST AND EVALUATION OF FIVE PORTABLE RECORDING ECHO-SOUNDERS FOR RIVERINE APPLICATIONS, by John J. Spinning, James P. Fletcher, and Charles B. Sproull, II, Mar 1968, 57 pp.

This report presents the results of tests obtained from five (5) portable recording echo-sounders. The tests were made to determine their operational characteristics, accuracy, minimum depth resolution, and general suitability as standby or back-up equipment for the conventional depth recording units now being employed.

IR 68-14

OCEANOGRAPHIC CRUISE SUMMARY - UNITAS VIII CRUISE AROUND SOUTH AMERICA AUGUST - DECEMBER 1967, by Laurie E. Jarvela, Mar 1968, 13 pp.

This report presents the results of oceanographic operations conducted aboard U. S. Navy ships during the UNITAS VIII cruise around South America for the period 18 August to 2 December 1967.

PUB NO.

TITLE/NOMENCLATURE

IR 68-16

TIDAL COMPARISONS IN THE MEKONG DELTA, by Julian Josephson, Mar 1968, 17 pp.

This report presents the average time and height differences between Sai-Gon (Phu-An) and various tide stations maintained by the Republic of Vietnam Directorate of Navigation. The period of observation comprises 2 January - 31 May 1967.

IR 68-17

OCEANOGRAPHIC CRUISE SUMMARY - EASTERN GULF OF MAINE AND CONTINENTAL MARGIN, by Vance G. Sprague, Jr. Feb 1968, 20 pp.

This publication presents the results of a survey conducted by USNS Silius Bent (T-AGS-26) during September - October 1966 to investigate the geological structure of Georges Bank, the Continental Slope, and Rise, and the Sohn Abyssal Plain.

IR 68-18

REMOTE SENSING IN OCEANOGRAPHY, by Boyd E. Olson, Mar 1968, 36 pp.

This report reviews experience in sensing oceanographic conditions from aircraft and projects plans for extending some of these capabilities for more remote sensing from satellites. Remote sensing has found its greatest application in providing rapid coverage of large oceanographic areas for synoptic and analysis and oceanographic prediction.

IR 68-20

OCEANOGRAPHIC DATA REPORT - SAN CLEMENTE ISLAND AREA JULY AND AUGUST 1967, by A. Russell Mooney, Robert K. Oser, Mar 1968, 43 pp.

This report presents oceanographic data collected during July and August 1967 aboard the USNS DAVIS (T-AGOR 5) in the San Clemente Island deep submergence rescue vehicles test range and sea lab III areas.

IR 68-21

INVESTIGATIONS IN DETERMINING ASTRONOMIC LATITUDES AND THEIR COMPUTER PROGRAMS, by Larry B. Bourquin, Apr 1968, 189 pp.

Several methods of collecting and reducing stellar data to obtain astronomic latitudes have been investigated and are summarized in this report. Considered herein are various stellar coordinate systems, observing procedures, refraction models, and instrumentation.

PUB NO.

TITLE/NOMENCLATURE

IR 68-22

A COMPARISON OF SYNOPTIC TEMPERATURE - DEPTH OBSERVATIONS IN THE TONGUE OF THE OCEAN, BAHAMAS, by Gilbert S. Ruggles, Mar 1968, 25 pp.

This report summarizes the results of these synoptic temperature-depth data comparisons and briefly discusses the significance of the data comparisons in terms of horizontal temperature gradients in the TOTO.

IR 68-23

OCEANOGRAPHIC CRUISE SUMMARY BAFFIN BAY - DAVIS STRAIT - LABRADOR SEA, SUMMER 1967, by Joseph H. Kravitz and Louis A. Codispoti, May 1968, 20 pp.

This report presents a two-phase operation that was conducted in the Baffin Bay area during the summer of 1967. The first phase was a bottom sediment survey. The second phase was an oceanographic survey.

IR 68-24

OCEANOGRAPHIC CRUISE SUMMARY - DYE DISPERSAL STUDY IN DA NANG BAY, REPUBLIC OF VIETNAM, AUGUST 1967, by Martial Car, May 1968, 16 pp.

This report presents the results of studies in flushing and dye dispersal conducted in various tests. The amount of time and tidal cycles required to flush contaminants and the methods used are discussed.

IR 68-26

A GUIDE TO THE FORMATTING OF OCEANOGRAPHIC DATA, by Walter E. Yergen, Apr 1968, 10 pp.

A guide to the effective formatting of oceanographic data variables is submitted. Data recording is conceived as a process of counting discrete "confidence measure" intervals over the range of measures used to describe a data variable. Formulae are provided defining the minimum count of intervals required to divide the range, and for calculating the minimum size of a binary number field chosen to contain the interval counter.

IR 68-27

OCEANOGRAPHIC CRUISE SUMMARY - GEOPHYSICAL INVESTIGATIONS IN THE NORTHERN LABRADOR SEA, by G. Leonard Johnson, May 1968, 7 pp.

A cooperative Naval Oceanographic Office, University of Wisconsin, and U. S. Coast Guard, geological, geophysical survey was conducted in the northern Labrador Sea during August and September 1967. Bathymetry, magnetics, seismic reflection, and seismic refraction observations were obtained.

PUB NO.

TITLE/NOMENCLATURE

IR 68-30

OCEANOGRAPHIC CRUISE SUMMARY - BERING SEA, by Kenneth A. Countryman and Martin T. Bourkland, Jun 1968, 8 pp.

The Naval Oceanographic Office conducted a survey in the northern Bering Sea during 25 January to 25 February 1968 to determine the differences in physical and chemical conditions between summer and winter in Zaliv Anadyrskiy and northern Bering Sea.

IR 68-33

POSITIONING THE GULF STREAM WITH AIRBORNE RADIATION THERMOMETER DATA, by John C. Wilkerson, May 1968, 13 pp.

Systematic surveys with an infrared thermometer from an altitude of 300 meters are providing near-synoptic sea surface temperature data for the Gulf Stream area.

IR 68-35

A TAUT WIRE BUOY ARRAY FOR ENVIRONMENTAL MONITORING IN AUTECH, by Richard F. Rooney, Oct 1967, 38 pp.

This report describes a significant and unique prototype electronic system, the Taut Wire Buoy Array (TWBA), functioning in the Tongue of the Ocean as a permanently installed deep-water environmental monitor.

IR 68-36

SPACECRAFT OCEANOGRAPHY 1964-1967, by Charles C. Bates and John W. Sherman III, 18 pp.

It is the purpose of this paper to relate briefly what has been going on in the area of spacecraft oceanography for the past three years and to provide a brief outlook for the future.

IR 68-37

OCEANOGRAPHIC CRUISE SUMMARY - DENMARK STRAIT, APRIL - MAY 1965, by Kenneth A. Countryman, Jul 1968, 12 pp.

This report describes an oceanographic survey conducted in the Denmark Strait aboard USS EDISTO (AGB 2) during the period 18 April to 8 May 1965.

IR 68-38

OCEANOGRAPHIC DATA - AGOR CRUISE 046608 (MILOC 66) USNS JAMES M. GILLISS (T-AGOR 4), by Richard G. Evans and Larry K. Hawkins, Jul 1968, 77 pp.

This report presents a review of the data collected aboard USNS GILLISS (T-AGOR 4) in July 1966. The survey was part of a multi-ship, synoptic study of environmental oceanography in the eastern Atlantic Ocean.

PUB NO.	TITLE/NOMENCLATURE
IR 68-39	DESIGN, AND REPRODUCTION OF THE HO/BC CHART, by Donald H. Parker, May 1968, 15 pp. This report describes a new series of charts, HO/BC charts, and the advantages of these charts which are being produced by the Naval Oceanographic Office.
IR 68-40	CURRENT MEASUREMENTS AT TWO STATIONS IN THE MEKONG DELTA - REPUBLIC OF SOUTH VIETNAM, by Donald A. Burns, Jun 1968, 9 pp. This report presents near surface current measurements made in the Song Nha Be and Cua Soirap, Mekong Delta, during the summer of 1967.
IR 68-41	PHYSICAL ENVIRONMENTS OF THE MEKONG DELTA - PRELIMINARY INVESTIGATION, by Roger J. Van Wyckhouse, Jun 1968, 20 pp. This report is an assemblage of information on the physical environments of the Mekong Delta to aid Navy Personnel with operational problems. The delineation of the physical environments is based upon the interpretation of aerial photographs topographic and geologic maps and nautical charts.
IR 68-42	ADVANCE WATER LEVEL INFORMATION FOR DA NANG HARBOR - REPUBLIC OF VIETNAM - JUNE THROUGH DECEMBER 1968, by Donald A. Burns and Sheldon M. Lazanoff, May 1968, 27 pp. This report presents a simplified mathematical model using astronomical, meteorological and bottom slope parameters designed to forecast water heights for Da Nang.
IR 68-43	RECONNAISSANCE SURVEYS IN THE MEKONG DELTA, by Michael G. Paradis, Jun 1968, 13 pp. This report presents basic first hand information on the Riverine Reconnaissance Hydrographic Surveys that are currently taking place in the Mekong Delta of South Vietnam. It depicts comprehensively the operational procedures, intrinsic problems, and results of these surveys.

PUB NO.	TITLE/NOMENCLATURE
IR 68-45	PROJECT FLOOD, REPORT ON DATA COLLECTED BY MINE DIVISION 43, CENTRAL MEDITERRANEAN SEA, MAY 1965, by Atwood S. Barwick, Jul 1968, 48 pp. This report is a continuing series which contains oceanographic data collected by several mine divisions.
IR 68-47	SOUND VELOCITY CROSS SECTIONS OF THE WORLD'S OCEANS, PART I: EASTERN NORTH PACIFIC, by Henry L. Leopold, Jul 1968, 34 pp. This report presents twelve east-to-west and twelve south-to-north vertical sections of sound velocity. The sections show sound velocity gradients, locations of deep sound channel, and bottom velocity.
IR 68-48	OCEANOGRAPHIC SURVEY DEPARTMENT DATA FLOW PATTERNS, by Robert C. Lockerman, Jun 1968, 43 pp. This report graphically illustrates various steps in data collection and processing, collection rates, and ultimate repositories of major data types collected under the auspices of the Oceanographic Surveys Department, Naval Oceanographic Office.
IR 68-49	BOTTOM SEDIMENT DATA PROGRAM USERS GUIDE, by Frederick M. Maas, Jul 1968, 27 pp. This manual provides a reference for the users of the bottom sediment data program available in the Geology Section, Oceanographic Analysis Division, Naval Oceanographic Office. This program, used with a Calcomp plotter, plots bottom sediment notations on a mercator projection.
IR 68-51	SATELLITE NAVIGATION AS AN AID TO OCEAN SURVEYING, by William E. Hart, Jul 1968, 16 pp. This report affirms the fact that satellite navigation is an aid to ocean surveying. It discusses three satellite navigation methods; Doppler, Visual, and Ranging. In each case capabilities and limitations of the methods and prototype, or operational equipment are given.
IR 68-53	BIRDSEYE 1-68, 8-13 FEBRUARY 1968, Jul 1968, 30 pp. Project Birds Eye aims to improve ice observing techniques for continuing acquisitions of statistical and historical data for present and future application of military arctic operations.

PUB NO.

TITLE/NOMENCLATURE

IR 68-60

OCEANOGRAPHIC CRUISE SUMMARY - ENVIRONMENTAL RIVERINE SURVEY - SAI GON TO CAN GIO, VIETNAM, AUGUST - SEPTEMBER 1967, by Lloyd B. Bertholf, Ronald P. Kopenski, and Richard A. Stewart, Aug 1968, 30 pp.

This report presents the preliminary results of an environmental survey conducted during August and September 1967 in the Long Tau River between Sai Gon and Can Gio, Vietnam.

IR 68-61

EARTHQUAKES, TSUNAMIS, AND VOLCANOES IN THE NORTHEASTERN INDIAN OCEAN, Aug 1968, 13 pp.

This paper provides information on earthquakes, tsunamis, and volcanoes in the Northeastern Indian Ocean and adjacent land areas. Most of the seismic activity in this region has occurred along the Burma-Sunda Arcs the 89th Meridian between 5°N and 5°S and southwest of Ceylon.

ERRATA

TO

H. O. PUB 1-12

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The following publications have been printed and received since the publication of the Catalog of Informal Reports.

PUB NO

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IR 67-94

MARINE GEOPHYSICAL SURVEY DATA REGISTER - NW ATLANTIC AREA 1, by J. A. Ballard and R. G. Engler, 1967, 16 pp.

This report is the first in a series announcing the acquisition and cataloging of acoustic, geophysical, and ancillary oceanographic data collected by the NAVOCEANO's Marine Geophysical Survey. The data listed in this publication were collected by Alpine Geophysical Associates in Western North Atlantic Task Area 1.

IR 68-34

COMPARISON OF OBJECTIVE AND SUBJECTIVE ENVIRONMENTAL ANALYSES, by B. J. Thompson, 1968, 30 pp.

Objective and subjective techniques often yield contrasting analyses of oceanic thermal structure for the same time period. The causes of the contrast and comparison and verification of the resulting charts are discussed in this report.

IR 68-46

ICELAND SEA-SURFACE TEMPERATURE SURVEY - APRIL 1968, by R. L. Pickett and G. L. Athey, 1968, 12 pp.

An airplane equipped with an infrared radiation thermometer measured sea surface temperatures around Iceland in early April 1968.

IR 68-52

APPLICATIONS OF UNDERWATER PHOTOGRAMMETRY, by J. Pollio, 1968, 37 pp.

Photogrammetry "the science or art of obtaining reliable measurements by means of photography" has had little use underwater. The reason for this is in part due to the added constraining conditions imposed upon photography taken for photogrammetric analysis. The Deep Vehicles Branch, NAVOCEANO recently conducted an underwater photogrammetric mapping test to investigate the importance of these constraints with a calibrated 70 mm underwater camera (Rebikoff - modified Shipek) mounted on the wet submersible PEGASUS. The results of this test are presented in this publication.

IR 68-56

TEMPERATURE, SALINITY, AND DENSITY OF THE WORLD'S SEAS - EAST CHINA SEA, by S. E. Seim and A. R. Hamilton, 1968, 91 pp.

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IR 68-56
(con)

This report is part of a series of studies describing the temperature, salinity, and density of the various seas of the world. This part covers the East China Sea.

IR 68-58

OBSERVATIONS OF GULF STREAM MEANDERS - MARCH - APRIL 1967, by E. L. Corton, 1968, 19 pp.

This report describes an investigation of the northern edge of the Gulf Stream between 67° and 71° W.

IR 68-62

DESIGN AND OPERATIONAL PERFORMANCE OF MANNED SUBMERSIBLES, by R. P. Busby, 1968, 30 pp.

This work performed by these vehicles has been varied in an attempt to evaluate these vehicles as surveying platforms and to establish operational techniques.

IR 68-63

HYDRA SURVEY SYSTEM DEVELOPMENT - TEST AND EVALUATION, by J. N. Spinning, D. G. Dixon, and M. G. Paradis, 1968, 41 pp.

The U. S. Naval Oceanographic Office received an urgent requirement in November 1966 to conduct reconnaissance hydrographic surveys of the rivers and canals in the Mekong Delta of South Vietnam. The magnitude of the project revealed the need for a new approach to data acquisition, as conventional survey methods were too time-consuming and did not lend themselves to the hostile environment of the Mekong Delta. This publication discusses the development of a prototype hydrographic digital positioning and depth recording system (HYDRA Survey System). It also presents results of experimental test surveys conducted with the prototype HYDRA Survey System (HYDRA 1) at AUTEC Site 1 in the Bahamas and the modified HYDRA Survey System (HYDRA 2) near Ft. Walton Beach, Florida.

IR 68-64

OCEANOGRAPHIC CRUISE SUMMARY - ROSS SEA, ANTARCTICA - FEBRUARY 1968, by M. Car and L. A. Codispoti, 1968, 21 pp.

This report presents the results of a two-phase operation conducted in Antarctica by NAVOCEANO personnel in February 1968. The first phase was a study of the currents in Antarctica and the second phase consisted of occupying the annual ice potential stations in the Ross Sea in support of NAVOCEANO's Antarctic Ice Prediction Program.

IR 68-66

SEISMIC PROFILER TESTS CONDUCTED ABOARD USNS LYNCH (T-AGOR 7) IN THE

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IR 68-66
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BAHAMAS AND PUERTO RICO TRENCH DURING MARCH 1967, by Q. Carlson, 1968, 25 pp.

Seismic profiler tests were conducted aboard USNS LYNCH with EG&G's AGOR II Marine Seismic Profiling System. Shipboard recording and processing techniques are described and profiles are presented across Straits of Florida, at the exit of Northeast Providence Channel, east of San Salvador and over the Puerto Rico Trench.

IR 68-67

OCEANOGRAPHIC CRUISE SUMMARY - CAM RANH BAY-NHA TRANG-POULO CONDORE GROUP DECEMBER 1965 - MARCH 1966, by D. E. Kenney, 1968, 24 pp.

This report presents the result of a hydrographic/oceanographic survey conducted off the coast of the Republic of Vietnam aboard the USS SERRANO (AGS-24). The objectives of this survey were (1) to provide bottom sediment and current information to aid in the construction of hydrographic charts, and (2) to gather temperature, salinity, oxygen and water visibility data in a strategic area.

IR 68-68

WEIGHTING FACTORS AND CONFIDENCE LIMITS FOR SYNOPTIC SONIC LAYER DEPTH ANALYSES, by E. Khedouri, 1968, 13 pp.

This report presents the results of a study to derive weighting factors for data used in synoptic SLD analyses, and to determine the range of SLD variability that may be expected within a given period after an analysis has been completed. It was found that common criteria of variability can be employed in the entire western North Atlantic; and relative weighting factors, derived from the equation, are proposed.

IR 68-69

STATUS REPORT ON OMEGA AND A NAVOCEANO TEST, by D. J. Findlay, 1968, 30 pp.

OMEGA is a very low frequency (VLF) navigation system of extremely long range. When fully operational, the system will cover the entire world with eight transmitters.

IR 68-72

USE OF SATELLITE PHOTOGRAPHY TO SUPPLEMENT AERIAL ICE INFORMATION, by C. J. Potocky, 1968, 13 pp.

This report discusses the advantages and disadvantages of aircraft reconnaissance and satellites as sources of ice information. It is found that satellites serve as a valuable supplement to aircraft

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reconnaissance by indicating boundaries, large water openings and general concentrations, and are capable of providing large areal coverage.

IR 68-73

THREE DIFFERENT TECHNIQUES OF COLOR SEPARATION APPLIED TO CHARTING AND PRINTING, by D. D. Ghoha, 1968, 26 pp.

This publication discusses a modified process color separation technique which has been successfully applied to reproduce one Naval Oceanographic Aeronautical Chart Series. A significant reduction in press operating time resulted.

IR 68-74

SHIP ANEMOMETER HEIGHTS ABOVE MEAN WATER LEVEL, by D. C. Bunting, 1968, 20 pp.

The high degree of sensitivity of computed ocean wave spectra to wind speeds requires not only high accuracy in wind speed measurements but also a knowledge of the heights above mean water level at which the observations are taken. This paper contains a tabular listing of the anemometer heights on as many ships so equipped as were available at this writing.

IR 68-75

COMPARISON OF SHEAR STRENGTH MEASUREMENTS WITH THE LABORATORY VANE SHEAR AND FALL-CONE DEVICES, by R. S. Kuusler and N. T. Stiles, 1968, 22 pp.

This publication presents a comparison of strength values measured with laboratory van shear and fall-cone devices. A trend of the data toward linearity is suggested by correlation testing. However, the fall-cone and vane shear devices do not yield the same strength values. No definite relationship between tests made axially and radially to the core was found.

IR 68-76

SATELLITE PHOTOGRAPHY AS A MEANS OF DETERMINING WATER TEMPERATURE STRUCTURE, by P. R. LaViolette and S. K. Seim, 1968, 16 pp.

This report shows how the continuous coverage of the earth by satellite is a tempting tool to oceanographers in determining the relationship of moving cloud patterns with the thermal structure of the water.

IR 68-77

A TECHNIQUE FOR THE LOCATION OF MURKED SAND AND GRAVEL DEPOSITS IN

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IR 68-77
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SHALLOW-WATERS AREAS, by L. Breslau and H. Edgerton, 1968, 13 pp.

The location and delineation of buried sand and gravel deposits in shallow water areas can be accomplished by continuous seismic profiling from a ship underway. The continuous seismic profiling technique operates on the principle of generating an acoustic pulse in the water and recording the arrival times of acoustic echoes from the bottom and sub-bottom on an analogue correlation recorder. A survey in the Gulf of La Spezia, Italy, using the EOLG "Mud Penetrator" seismic profiling system, resulted in the mapping of a sand and gravel bar buried more than 10 feet below the floor of this mud-bottomed area.

IR 68-78

A RIVERBANK ECHO-RANGING SYSTEM FOR RIVERINE POSITIONING, by L. Breslau, R. Tittle, D. Krotser, and J. Fletcher, 1968, 20 pp.

This paper is a study of the feasibility of an echo-ranging system for riverine positioning. A commercial side-scan sonar equipment was used for the field experiments. The system was tested in Boston Harbor, Massachusetts, which has man-made embankments; and the Apalachicola River, Florida, which has natural riverbanks.

IR 68-80

TEMPERATURE, SALINITY, AND DENSITY OF THE WORLD'S SEAS: BERING SEA, by D. R. Hamilton and H. E. Seim, 1968, 80 pp.

This report is part of a series of studies describing the temperature, salinity, and density of various seas of the world. This part covers the Bering Sea.

IR 68-81

FREE FIELD INPUT DATA FORMATTING SCHEME, by W. E. Yergen, 1968, 8 pp.

A "free field data formatting scheme" is submitted as a "tool for storing a maximum data volume in limited computer memory reserves." Some applications to the formatting of ocean station data are provided as examples of technique. The advantages and disadvantages of this formatting scheme are discussed.

IR 68-82

OCEAN SURVEYING FROM MANNED SUBMERGIBLES, by R. F. Busby and J. M. Costin, 1968, 26 pp.

This publication discusses the performance of the bathyscaphes and second generation manned submersibles in relation to oceanographic/engineering surveys. Although little, if any, ocean surveying per

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IR 68-82 ss has been performed from submersibles, sufficient observations exist to indicate that surface-conducted surveying may produce an erroneous impression of the bottom and near-bottom environment.

IR 68-83 A MARINE MAGNETIC-TOPOGRAPHIC SURVEY SAN DIEGO, CALIFORNIA TO THE EQUATOR, by G. V. Shaeffer, 1968, 13 pp.

This report presents and describes the 5250 km (2835 nautical miles) of magnetic and bathymetric information collected by the USNS CHARLES H. DAVIS (T-AGOR 5) between San Diego, California, and the Equator, during March 1967 as part of the U. S. Naval Oceanographic Office's support of the Eastern Tropical Pacific (EASTROPAC) Investigation.

IR 68-84 OCEANOGRAPHIC OBSERVATIONS IN THE EASTERN TROPICAL PACIFIC - MARCH 1967, by G. V. Shaeffer, W. W. Van Atta, and S. W. Doray, 1968, 66 pp.

Oceanographic data were collected along the 85th meridian in the Eastern Tropical Pacific during March 1967. Temperature, salinity, dissolved oxygen, phosphate and silicate concentrations are presented graphically. Geostrophic calculations correlate well with the described circulation in the literature of this area. An easterly flowing South Equatorial Countercurrent between 40S and 80S was evidenced as far east as 850W. This current had previously been described as extending only to 950W.

IR 68-85 TSUNAMIS AND SEISMIC SHOCKS REPORTED FROM THE WESTERN NORTH AND SOUTH ATLANTIC AND THE COASTAL WATERS OF NORTHWESTERN EUROPE, by W. H. Barningham, 1968, 50 pp.

This publication is a listing of data on the majority of waves of seismic origin. Part I gives information on tsunamis and other large waves which have been reported from the western North and South Atlantic, while Part II gives similar information for the coastal waters of northwestern Europe.

IR 68-86 A GUIDE TO BIOLOGICAL SOUND-SCATTERING DATA COLLECTION AND INTERPRETATION, by E. Medina, Jr., 1968, 26 pp.

June 1966 marked the beginning of an accelerated effort on the part of the Biological Section to collect and analyze increased quantities of data on the phenomenon of biological sound scatter-

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ing in the sea. It was found that previous data lacked sufficient detail concerning the nature and distribution of biological sound scattering in the ocean which resulted in the redesign of data collection sheets and modifications in data collection procedures.

IR 68-87

SUITCASE OCEANOGRAPHY, by A. H. Haynes and B. L. Avery, 1968, 22 pp.

Recent developments in microelectronics and packaging techniques offer expanding opportunities to the oceanographic community for developing new highly flexible, portable data acquisition and processing systems. These "suitcase" systems will permit certain types of oceanographic survey work to be performed from non-oceanographic vessels or ships of opportunity. Since ship time represents a substantial portion of the overall cost of oceanographic data acquisition, significant savings are offered by the suitcase oceanography concept.

IR 68-92

CRUSTAL STRUCTURE OF THE NORTHEAST INDIAN OCEAN, 1968, 5 pp.

Seismic reflection and refraction measurements indicate that four separate velocity layers exist above the mantle in this area. Their combined thickness ranges from 4 to 8 km. The Mohorovicic Discontinuity occurs at a depth of 9.3 km above sea level in several of the seismic sections shown.

IR 68-93

SUBMARINE PHYSIOGRAPHY OF SOUTHEAST ASIA, 1963, 18 pp.

Various charts depicting the submarine physiography of the South China Sea area have been prepared from recent bathymetric information. This is an area of extremely complex geologic structure. Major features include five large basins, an island arc system, and the continental margin.

IR 68-94

CRUSTAL STRUCTURE OF THE INDONESIAN AREA, 1968, 9 pp.

Three crustal types exist within this area as shown by the accompanying profiles: a continental type north of the island arc system; an oceanic type south of Java Trench; and a transitional type between.

IR 68-95

SUBMARINE PHYSIOGRAPHY OF THE NORTHEAST INDIAN OCEAN, 1968, 16 pp

Major submarine features in the northeastern section of the Indian

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Ocean exhibit a general north-to-south parallelism. The continental slope off Ceylon is one of the steepest in the world; however, the sea floor is comparatively level over a great part of the area.

IR 68-96

EARTHQUAKES, TSUNAMIS, AND VOLCANOES OF SOUTHEAST ASIA, 1968, 13 pp.

This report discusses the severity and areas of concentration of earthquakes, tsunamis, and volcanoes which occur in the South-east Asia area.

IR 68-97

DESCRIPTION OF A DUAL COREN FOR OBTAINING PAIRED PISTON OR GRAVITY CORES, by A. Blackman and R. S. Anderson, 1968, 8 pp.

A simple method of obtaining paired cores spaced 3 meters apart with known relative azimuth is described. The instrument has been used successfully in water depths of 4000 meters.

IR 68-99

VISUAL OBSERVATIONS OF MANGANESE DEPOSITS ON THE BLAKE PLATEAU, by L. K. Hawkins, 1968, 19 pp.

Visual observations of manganese deposits on the Blake Plateau indicate that the occurrence of manganese as nodules, slabs or pavement may be related to localized environmental conditions. Manganese is concentrated at the crests of sand waves, and in areas of gentle slope grades locally from nodules to solid pavement.

IR 68-101

MARINE SEDIMENTS OFF SOUTHEAST ASIA, 1968, 38 pp.

This publication presents the results of a study of the bottom materials in the transitional region between the Pacific and Indian Oceans. The sediment pattern is complicated by irregular land and sea floor topography of the region. Five fundamental bottom types are distinguished, based on the average diameter of the particles making up the sediment. Special properties of the sediments have been studied to establish rates of accumulation, shear strengths, etc.

IR 68-102

FACTORS AFFECTING BIOLOGICAL OBSERVATIONS FROM THE ANWEPS AIRCRAFT, by G. Levenson, 1968, 6 pp.

Marine biological observations made from aircraft provide a rapid

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and effective means of determining synoptic distribution patterns of large marine organisms. Relatively large near-surface organisms are more readily observed from an aircraft than from a ship. The use of aircraft as observing platforms is limited primarily by air-sea interactions which create poor observing conditions.

IR 68-104

BIRDS EYE 2-68, 1-12 APRIL 1968, by R. G. Zuehl, 1968, 38 pp.

Project BIRDS EYE aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IR 68-107

A 350° PANORAMIC CAMERA FOR UNDERWATER USE, by R. L. Mairs and C. V. Bright, 1968, 13 pp.

This report concerns the development of an entirely new concept in underwater photography; a camera capable of taking high resolution and dimensionally precise photographic reproductions of horizontal panoramic views. This camera records almost the entire horizon on one photograph, giving a true perspective as to what was really observed. It has a field of view that includes 20° vertical and 350° around the horizon. For wide angle photography, this camera has none of the distortion characteristics of the conventional wide angle lenses.

IR 68-108

BIRDS EYE 3-68, 21 MAY - 10 JUNE 1968, R. F. Freeman, 1968, 133 pp.

Project BIRDS EYE aims to improve ice observing techniques for continuing acquisition of statistical and historical data for present and future application of military arctic operations.

IR 68-109

REQUIREMENT FOR SALINITY DATA IN THERMAL STRUCTURE PREDICTION, by R. W. James, 1968, 17 pp.

This publication is a result of a study to determine whether synoptic salinity data is necessary as an input to thermal structure predictions. It was found that errors in excess of 20 percent of the predicted layer depth are possible if synoptic salinity observations are neglected in slope waters during spring and summer and only when the winds are blowing.

IR 68-114

SEA SPIDER SITE SURVEY IN SUPPORT OF PROJECT PARKA, by C. L. Davis, 1968, 14 pp.

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IR 68-114
(con)

This publication presents the results of a survey conducted aboard the U. S. Coast and Geodetic Survey Ship McARTHUR to provide detailed information for implanting a Sea Spider for use in Project PARKA operations. The survey was conducted in May 1968 in the central North Pacific Ocean.

IR 68-115

INFRARED SCANNING THE ARCTIC PACK ICE, by R. D. Ketcham, Jr. and W. I. Wittmann, 1968, 30 pp.

The U. S. Naval Oceanographic Office conducted its first infrared scanning experiment in the Arctic Basin during daylight conditions in April 1964. Many miles of coincident infrared scanner imagery and vertical photography were obtained over a large area of the Arctic Basin pack ice between North Ellesmere Island and 87°N and in Baffin Bay. A surface control site for "ground truth" data was established on the pack ice at the drifting ice station ARLIS II, then located at 86°30'N 48°57'W. Several overflights at various altitudes were made in this area. The experiment demonstrated that quality sea ice information can be obtained during daylight periods using infrared scanning systems.

IR 68-117

OCEANOGRAPHIC CRUISE SUMMARY - DAVIS STRAIT, JULY - AUGUST 1968, by M. T. Pourkand, 1968, 10 pp.

The Naval Oceanographic Office and USCGC WESTWIND (WAGO-283) conducted an oceanographic survey in the Davis Strait area during the summer of 1968. The purpose of this survey was to study the mass transports and fluctuations of the Baffin Land and the West Greenland currents across Davis Strait through direct current measurements. Temperature, salinity, and nutrient data were collected. The oceanographic stations were reconcepted to study the time variability of the parameters.

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