Maybe in fear of April meeting

U. S. NAVAL OCEANOGRAPHIC OFFICE
WASHINGTON, D. C. 20390

23 April 1965

NAVY review(s) completed.

PURCHASE DESCRIPTION

FOR

A SYSTEM ANALYSIS AND DESIGN STUDY FOR AN AUTOMATED INTELLIGENCE DATA HANDLING SYSTEM (IDHS)

1.0 SCOPE

The Contractor shall conduct a system analysis and design study for an automated Intelligence Data Handling System (IDHS) for the U. S. Naval Oceanographic Office (NAVOCEANO).

Both the analysis and the design shall include all existing NAVOCEANO/IDHS operations, as well as all forseeable future NAVOCEANO/IDHS requirements.

The study shall be initiated by a data collection phase which shall be followed by a data reduction phase. Collectively, these phases constitute the analysis or requirements portion of the study. They in turn are to be followed by the preparation of a NAVOCEANO/IDHS Operational Concept and System Development Plan, which represents the design portion of the study.

Present and anticipated interface requirements with all NAVOCEANO data interchange organizations shall also be established by the Contractor, and types, formats, and amounts of these data shall be considered in the Operational Concept and in the System Development Plan. Maximum utilization shall be made of the ACIC*/IDHS Operational Concept and System Developmental Plan. In particular, the Contractor shall transfer as many common and similar design features to the

*Aeronautical Chart and Information Center, St. Louis, Missouri

ENCLOSURE (1)

NAVOCEANO/IDHS study as is economically feasible. The Contractor shall, in addition, analyze the files at the Army Map Service (AMS) that are common to those of NAVOCEANO. The Contractor shall document each of the four major study phases as well as submit monthly status reports to NAVOCEANO and to the Contracting Office.

2.0 DATA COLLECTION

The data collection phase is specified in terms of the operational areas to be analyzed and the methods to be utilized during the analysis. They are both discussed in the following paragraphs.

2.1 Areas of Collection

The study shall include the analysis of the data handling operations of eight NAVOCEANO Divisions. (Two of these Divisions are at the Navy Yard Annex, Wash., D. C., and the others are at Suitland, Maryland.) They are: The Nautical Chart, Maritime Safety, and Aeronautical Chart Divisions in the Technical Production Department; the Geodesy, Gravity, Magnetics, and Hydrographic Divisions in the Hydrographic Surveys Department. Both of these Departments report to the Deputy Commander for Hydrography. The Bathymetry Division is in the Oceanographic Surveys Department, which reports to the Deputy Commander for Oceanography. The following paragraphs describe the mission and function of each Branch of the Divisions in which IDHS type operations are currently being performed. Enclosure (1) shows the organizational relationship of those Departments and Divisions. (Specifically excluded from this study are all scientific and technical, management and production control, and accounting operations.) IDHS operations and products to be investigated by the Contractor shall include, but not be limited to, those items underlined in paragraphs 2.1.1 through 2.1.8.4.

2.1.1 Maritime Safety

2.1.1.1 Nautical Information Branch

Provides for the issuance of navigational warnings and dissemination of nautical information; develops and monitors intelligence collection; collects, evaluates, and disseminates information on underwater installations and other obstructions.

2.1.1.2 Geography Branch

Provides geographic intelligence and conducts such research as may be necessary; edits geographic names, sovereignties, and boundary lines for all NAVOCEANO charts and publications; maintains index of geographic names; maintains files of standard name charts, source information, and reference files of additional material on other agencies; maintains a Department of Defense Nautical Chart Library of foreign charts.

2.1.1.3 Sailing Directions Branch

Provides Sailing Directions for foreign waters; classified Sailing Directions for selected areas; Fleet Guides for continental and overseas U. S. Naval Bases; World Port Index; and Distances Between Ports. Also provides ocean and coastal routes; prepares navigational studies for naval missions; and provides specific reports on coastal, port, and routing subjects.

2.1.2 Nautical Chart

2.1.2.1. Cartographic Branch

Provides new and revised editions of nautical and special military charts; hydrographic information for maps and charts of other DoD agencies; and evaluates foreign nautical chart programs.

2.1.2.2 Construction Branch

Provides, for reproduction, smooth drafts of all charts prepared by the Nautical Chart Division; makes supplemental nautical chart compilations as assigned; compiles and constructs special operational and technical charts, graphics and indexes; maintains catalogs of charts and publications; prepares graphics for textual materials and illustrations, and diagrams for visual aids; and operates the automatic digital coordinatograph system.

2.1.2.3 Chart Maintenance Branch

Provides the analysis, evaluation, and compilation of cartographic and intelligence data for the correction of nautical charts, Notice to Mariners chartlets, new chart editions or revision of printing plates or negatives, and modification of foreign nautical charts required by the Navy.

2.1.2.4 Photogrammetry Branch

Provides photogrammetric survey and compilation services; specifications for the accomplishment of aerial cartographic photography and for photogrammetric field control surveys; field evaluations of aerial cartographic photography missions; cartographic and aerial photographic research and evaluation services, special photographic reproduction services, and technical guidance in photogrammetric uses.

2.1.3 Aeronautical Chart

2.1.3.1 Requirements Analysis Branch

Analyzes and interprets Navy requirements related to aeronautical charts and publications; and performs development to improve graphic and narrative presentations.

2.1.3.2 Aeronautical Information Branch

Provides aeronautical data by periodicals, messages, etc., aeronautical navigational charts; operational and intelligence data for world-wide coverage; and services for conventional and military programs.

2.1.3.3 Cartographic Branch

Provides aeronautical, loran, approach, landing, and special purpose charts and mosaics.

2.1.3.4 Publications Branch

Provides operational and intelligence information on seaplane facilities; publications for planning, operational, and intelligence purposes; special operational studies of seaplane facilities; instrument approach procedures; and maintains required specifications.

2.1.3.5 Construction Branch

Provides color separation originals for the reproduction of aeronautical, loran, instrument approach, and special charts and mosaics; reproduction originals for graphics such as aeronautical catalog plates, instrument departure plates, and video mapping plates; and illustrations and retouched photographs for flight information publications.

2.1.4 Hydrographic

2.1.4.1 Field Branch

Analyzes requirements for hydrographic information for use with advanced surface and sub-surface navigational systems and proposes related survey operations; plans, prepares specifications for, and conducts such surveys; analyzes, evaluates, and processes field survey data for final draft; prepares related studies, reports, manuals, and instructions.

2.1.4.2 Analysis and Evaluation Branch

Evaluates and prepares reports on the results achieved by users of publications; analyzes performance of improved instrumentation and end product compatibility with program requirements.

2.1.4.3 Editing Branch

Performs final compilation, review, and edit of Field Branch originated data; monitors smooth drafting and reproduction phases as necessary, and makes final review of printed product.

2.1.4.4 Coastal Surveys Branch

Analyzes requirements for hydrographic information; proposes, plans, and performs required surveys; analyzes and processes field survey observations and Shipboard Survey System data; prepares final hydrographic sheets, reports, and related texts, and maintains hydrographic information within area of interest.

2.1.5 Magnetics

2.1.5.1 Airborne Branch

Prepares plans and specifications for and conducts airborne geomagnetic surveys; prepares specifications for survey aircraft; installs, maintains, and calibrates survey equipment aboard aircraft and trains personnel in its operation and use; and processes and evaluates geomagnetic survey data.

2.1.5.2 Geomagnetic Data Library

Establishes, organizes, and maintains overall control responsibility of a library of geomagnetic data for DoD; prepares and disseminates data catalogs and answers requests for data from other government and private activities.

2.1.5.3 Marine Branch

Prepares plans and specifications for and conducts marine geomagnetic surveys; installs, maintains, and calibrates geomagnetic survey equipment aboard vessels and trains personnel in its operation and use; establishes geomagnetic temporal control and recording stations, and processes and evaluates geomagnetic survey data.

2.1.5.4 Development Branch

Conducts studies and research in geomagnetism and related phenomena; conducts investigations and tests to evaluate and improve geomagnetic survey equipment and techniques; prepares performance specifications for the procurement, development, or modification of survey instruments; prepares technical manuals and instructions; and provides technical training and assistance.

2.1.6 Gravity

2.1.6.1 Field Survey Branch

Conducts terrestrial, nautical, and aerial survey operations observing the intensity of the earth's gravity and related data including position, elevation or depth, calibrates and maintains instruments and equipment; performs preliminary computations on survey data.

2.1.6.2 Analysis Branch

Computes and adjusts survey data, including various anomalies, deflection of the vertical, geoid heights, etc.; compiles gravimetric charts; prepares interpretation of data and technical reports; maintains liaison as directed and investigates new techniques for data assimilation.

2.1.6.3 Development Branch

Conducts studies and research in gravimetry and related phenomena; investigates, tests and evaluates modifications to gravity instruments and measurement techniques; prepares performance specifications for the procurement, development, or modification of instruments; prepares technical manuals and instructions; and provides technical training and assistance.

2.1.7 Geodesy

2.1.7.1 Applied Geodesy Branch

Collects, evaluates, and disseminates geodetic survey results for use in compilation of nautical and aeronautical charts, graphics and associated materials required for special projects; and prepares systematic evaluation of foreign geodetic control for the National Intelligence Studies; produces special data in support of missiles and advanced electronic positioning systems.

2.1.7.2 Computing Branch

Computes and adjusts data from Navy geodetic control surveys and astronomic observations; provides advice in the preparation of original specifications; develops formulas and procedures for computation of special projects information; and originates or monitors computations required for grid position transformations, special projections, and harmonic analysis of tide observations made during hydrographic surveys; produces special data in support of missiles and advanced electronic positioning systems .

2.1.8 Bathymetry

2.1.8.1 Data Control Branch

Receives, acknowledges, indexes, catalogs, and files all bathymetric data; processes and films source data for stowage at the Emergency Relocation Center and for various recovery systems; maintains and disseminates documented data to other Branches of the Division; makes preliminary evaluation of incoming data, and recommends the promulgation of Notices to Mariners on dangers to navigation; prepares, and transcribes sounding data for automated data processing.

2.1.8.2 Analysis Branch

Processes, evaluates, and maintains master plotting and collection sheets; analyzes, evaluates, and maintains plotted and digitized sounding data; compiles bathymetric sheets for the International Hydrographic Bureau; prepares contoured delineations of sea floor topography; reviews and edits manuscript bathymetric charts; and provides selected sounding data for use in the charting program of the Office.

2.1.8.3 Field Branch

Plans, prepares specifications for, and conducts bathymetric surveys for engineering and scientific purposes; provides operational reports, and processes all data acquired during surveys; evaluates procedures and techniques relating to the acquisition of survey data.

2.1.8.4 Special Studies Branch

Prepares topographic studies of sea floor for scientific, military, and engineering applications; provides

bathymetric information services; studies the development of automation and mechanization systems for the collection and processing of bathymetric data; conducts research into and develops techniques applicable to the improved maintenance and utilization of bathymetric data; and recommends equipment and/or operating procedures to be used.

2.2 Methods of Collection

The Contractor shall employ the Information Flow technique during the data gathering phase. This technique was utilized on Air Force contract AF30(602)3593 to collect data for the ACIC/IDHS, and on the NAVOCEANO and AMS files that are common to those at ACIC.

The Information Flow technique requires that answers be obtained, during interviews, to predetermined questions concerning present and future NAVOCEANO files and equipments. A record of each interview shall be prepared by the Contractor, and submitted to NAVOCEANO for content review. In addition to the answers to the standard questions, the record shall reference all "materials received" during the interview, such as documents, forms, tabulations.

This phase of the program shall be completed after two months, with the Contractor submitting a report to NAVOCEANO and Contracting Office. Contained in the report shall be two types of tables, the first of which lists all of interview records, letters, and memoranda that are produced by the Contractor to this point in the study. The list of "materials received" from NAVOCEANO shall also be included. The second type of table is a dossier index. There are three categories of dossier indexes: files, equipments, and organization elements. Interview records, letters, memoranda and materials received shall be assigned to each category of dossier index as appropriate.

The Contractor shall also include tables, in a separate section of the report, for the AMS and ACIC files that have been determined to be common to those of NAVOCEANO.

3.0 DATA REDUCTION

The Contractor shall provide detailed flow charts, showing the existing operation of each of the eight Divisions.

The Contractor shall tabulate all non-narrative data obtained on the NAVOCEANO files and equipments.

This phase of the study shall be completed after the third month of the contract with a report submitted by the Contractor to NAVOCEANO and to the Contracting Office. Included in the report shall be all of the flow charts and other data discussed above.

The report shall also define the present and planned data interchanges with NAVOCEANO's interfacing organizations. In addition, the Contractor shall specify the file handling operations that are common between NAVOCEANO and AMS, and NAVOCEANO and ACIC. (The latter information shall be obtained from but not limited to existing interview records on the common files of these two organizations.)

4.0 OPERATIONAL CONCEPT

The Contractor shall submit an operational concept that shall discuss the following factors for each of the eight major divisions defined in 2.0 above, and shall furnish information as necessary for NAVOCEANO to prepare a Data Automation Plan. The Contractor shall utilize the analysis and design features of the ACIC/IDHS project to the maximum extent possible.

4.1 General System Design Considerations

4.1.1 Automatic recreation of all master data files in the event of inadvertent file destruction.

4.1.2 Updating and purging of the files.

4.1.3 Utilization of currently available personnel and skills to the maximum extent.

4.1.4 The system shall be capable of operating continuously with no more than one (1) hour of down-time during any 48 hour period.

4.1.5 The system shall be sufficiently flexible as to require minimum modifications of space, power, and other environmental facilities.

4.2 File Creation

4.2.1 Establishment of indexing requirements.

4.2.1.1 Identify the types and volume of inputs.

4.2.1.2 Appropriate search parameters.

4.2.2 Establishment of retrieval and processing requirements.

4.2.2.1 Response times.

4.2.2.2 File formats.

4.2.2.3 Outputs including formats.

4.2.2.4 Selection of query language.

4.2.3 Consideration of the relationships and necessary correlation between the defined major areas. (NAVOCEANO Divisions).

4.3 System Organization Plan

4.3.1 Data Flow

4.3.1.1 Personnel functional requirements.

4.3.1.2 Quality control procedures.

4.3.1.3 Security factors.

4.3.2 Facility organization.

4.3.3 Establishment of operating procedures.

4.3.3.1 "In-house" operations.

4.3.3.2 Relationship with other systems.

4.4 Personnel and Training

4.4.1 Manning requirements.

4.4.2 Training program needs.

4.5 Report

The Contractor shall provide NAVOCEANO and the Contracting Office with a report describing the Operational Concept at the end of the fifth month of the contract.

4.6 Briefing

The Contractor shall brief NAVOCEANO and the Contracting Office on the Operational Concept, at the time that the report is submitted.

5.0 SYSTEM DEVELOPMENT PLAN

The Contractor shall submit a System Development Plan which shall propose at least two approaches or solutions with various trade-off factors such as manpower, costs, training and support required, efficiency, etc., sufficient for evaluation and selection of a workable system with given resources.

The plan shall contain estimated time and cost factors for implementation by each of the following methods:

a. Complete implementation within twelve months.

b. Phased implementation (over periods of two and three years) by geographical area; for example, by continent, by countries, etc.

c. Phased implementation (over periods of two and three years) by function; for example, by chart library, geographic names, etc.

The plan shall also include but not be limited to stipulations indicated below:

5.1 Specifications for the creation and maintenance of the data files - numbers, types, and content.

5.2 Specifications for indexing, retrieval, and processing

5.2.1 Detailed procedures for the selected indexing system.

5.2.2 Specifications for the query language.

5.2.3 Processing and/or computational system requirements.

5.3 Recommended automatic data processing equipment capabilities

5.3.1 Input-Output capability.

5.3.2 Memory size and type.

5.3.3 Access time.

5.3.4 Instruction repertoire.

5.3.5 General environmental requirements, space, air conditioning, etc.

5.4 Personnel manning requirements

5.5 Overall system scheduling (Major Milestone Charts).

5.6 Report

A report, describing the System Development Plan, shall be submitted by the Contractor to NAVOCEANO and the Contracting Office, at the end of the sixth month of the contract.

5.7 Briefing

The Contractor shall brief NAVOCEANO and the Contracting Office on the System Development Plan, at the time that the report is submitted.

6.0 MONTHLY REPORTS

The Contractor shall submit monthly reports to NAVOCEANO and the Contracting Office on or before the tenth calendar day of each contractual month. The reports shall include, but not be limited to, the following information:

6.1 Contractor activities since the last reporting period.

6.2 Status or summary, as appropriate, of the activities to the period being reported on.

6.3 Activities planned for the following reporting period.

7.0 GOVERNMENT FURNISHED EQUIPMENT

NAVOCEANO will make available to the Contractor at no cost at the U. S. Naval Oceanographic Office, Suitland, Maryland, office space, desks, chairs, local telephone service, typing service (not to exceed 8 man-hours per day), and reproduction services (up to 10 copies) to be used or required by Contractor personnel at NAVOCEANO while conducting this study.