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FOCUS - FISHERIES OCEANOGRAPHY COOPERATIVE USERS SYSTEM

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ABSTRACT

Because of increased pressure on living marine resources, scientific interest is being focused on relationships between environmental fluctuations and the interannual variability of fish stocks. Understanding these relationships demands the availability of comprehensive environmental data sets, in a user friendly form and on time and space scales that are applicable to fisheries. In response to this need, NOAA's Northwest and Alaska Fisheries Center (NWAFC) and Pacific Marine Environmental Laboratory (PMEL) have jointly developed a data base management system known as FOCUS (Fisheries Oceanography Cooperative Users System) for use in investigations on ocean-fishery variability and interactions in the Bering Sea and Gulf of Alaska. The system offers the ability to associate, join and directly analyze two or more data types from various environmental and fisheries data sets and computer systems in order to develop statistical summaries, time series plots, contour plots and other integrated data analyses. This report presents a technical description of how FOCUS establishes software compatibility among existing data sets and analysis packages within a distributed data base environment.

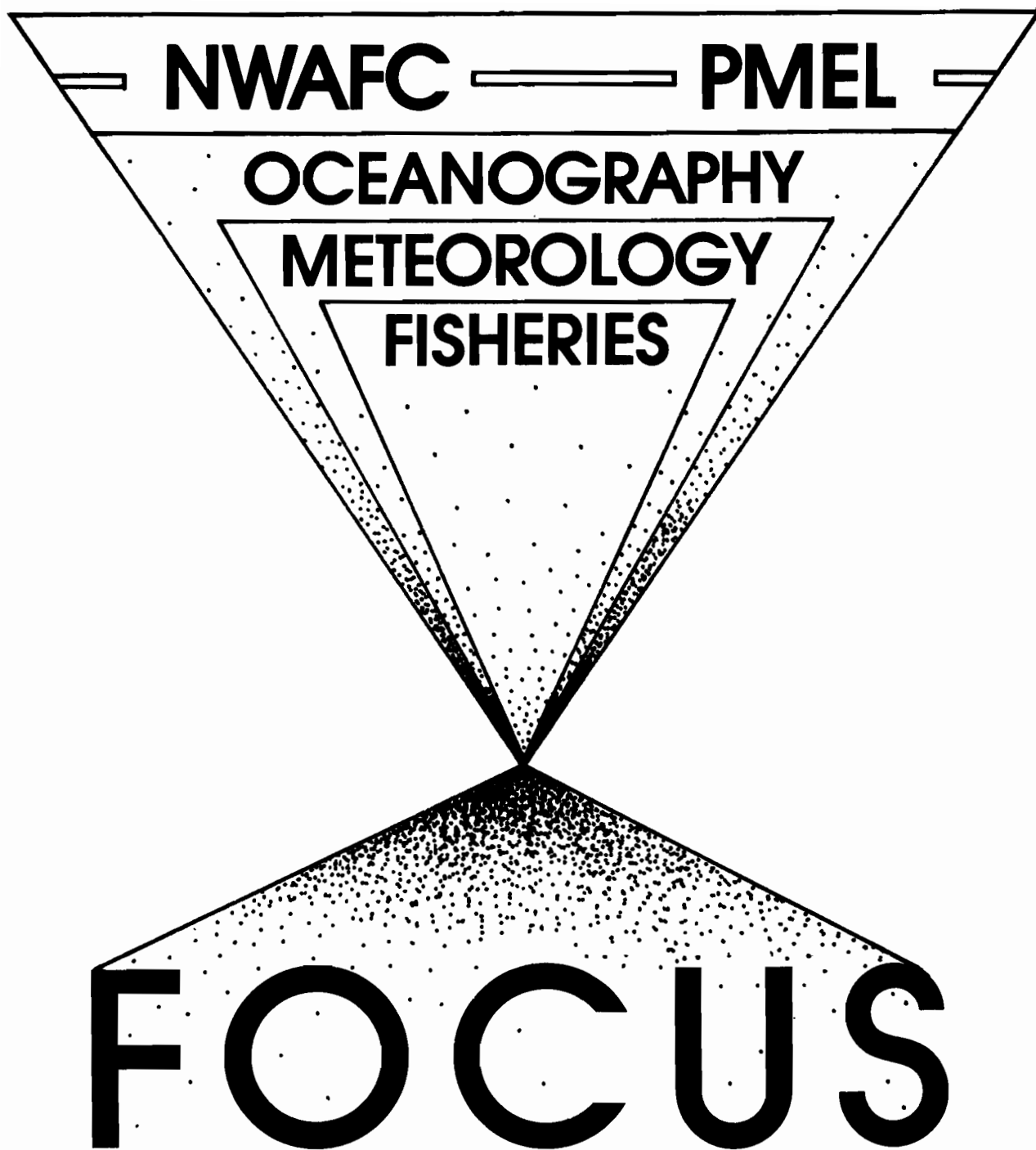


Figure 1. FOCUS facilitates cross-disciplinary research in fisheries oceanography.

1.0 INTRODUCTION

In the fall of 1982, the director of NOAA, Dr. John V. Byrne, allocated funds to the Northwest and Alaska Fisheries Center (NWAFC) and the Pacific Marine Environmental Laboratory (PMEL) to establish a fisheries oceanography data base management system that would serve as a regional information resource for research. The purpose of the project, besides opening up new communication and cooperative work between the two NOAA units, was to prepare for extended research emphasis in fisheries oceanography by NOAA and other cooperating agencies and universities. The focus for these investigations will be to study relationships between biological variability (i.e., fluctuations in resource availability), factors affecting population recruitment, and variations in the physical ocean environment. Geographic areas to be emphasized initially are the Eastern Bering Sea and Gulf of Alaska. The mission of FOCUS is to:

- 1) Identify accesses or assemble the appropriate oceanographic, meteorological, and fisheries data sets, based upon anticipated needs for fisheries oceanography research.
- 2) Serve as a user-friendly mechanism for providing compatibility between the existing data sets so that subsets of data from separate systems can be selected, associated, and then used for analysis.

Historically, much of the data of interest has been stored at scattered locations, with limited standardization and access. Researchers at PMEL have had access to fisheries data only on an ad hoc basis and researchers at NWAFC have had limited access to environmental data. FOCUS facilitates accesses to data from the various major sources (PMEL, NWAFC, U.S. Navy, NODC, Canadian Marine Environmental Data Service, and others) by providing a centralized, regional information system (see Figure 1). Data coverage will be increased

as the project evolves by identifying new sources of data and integrating these into the system. In the past, fisheries and environmental data have usually had to be analyzed separately because of their different sources. Technical barriers to data exchange existed because of the residence of the NWAFC and PMEL data bases on different computers with differences in data formats, codes, and organization. FOCUS facilitates cross-disciplinary research involving ecological modeling, time-series analyses, and statistical comparisons by providing the ability to associate, join, and directly compare two or more types of data.

2.0 SYSTEM DESIGN

2.1 FOCUS Strategy

In developing a system strategy, it was realized that it would not be desirable to combine all the data and functions of both environmental and fishery data systems into a merged system on a single computer. The response time of such a merged system would be slow, system overhead would be excessive and the laboratories could lose control of their data by becoming dependent on an external system. The existing data systems have evolved for specific purposes. For example, the RACEBASE at NWAFC was designed to organize fishery trawl data while the R2D2 system at PMEL was designed to store and analyze oceanographic data. The two systems will continue to evolve independently in order to efficiently serve the changing needs of their respective user groups.

Recognizing the unique capabilities designed into these varied data systems, the development strategy concentrated on creating interfaces between the systems. Thus, FOCUS operates in a "distributed environment" with individual data sets and analysis packages partitioned among the various research labs

and their respective host computers. FOCUS resides on the NOAA Control Data Corporation (CDC) Cyber 170/750 computer located in Boulder, Colorado. Several other major environmental data bases (see Appendix A) also reside on this computer. The major fishery data base at the NWAFC (RACEBASE) is stored on a Burroughs 7811 located in Seattle, Washington. Eventually, additional data bases and computer systems may be incorporated.

Due to the complexity of the system interfaces and the differing goals of the various researchers, the system requirements were difficult to define. Therefore, it was decided to design FOCUS as a prototype system. In terms of the level of sophistication of data base management systems as presented by Lientz (1981), FOCUS currently provides the user with a low level of support in that the user still must be aware of the logical distribution of data and have an overall sense of the global data structure. However, as system requirements for a fisheries-oceanography data base evolve, FOCUS will be modified and upgraded.

2.2 System Structure

FOCUS serves as a mechanism for providing compatibility between the existing data sets and thus entire data bases (RACEBASE, R2D2, etc.) have been incorporated into the overall system. A tiered directory is used to index data within the system. FOCUS provides a global data index that lists data sets, their access system, time and geographic limits, data types, and other related information (see Figure 2). This index is maintained using Relational Information Management (RIM), a data base management package which follows the concepts of a relational data base model using free-field English-like commands to facilitate data definition, update, and retrieval (University of Washington, 1982). For more detailed information about a given data file, the user would

FOCUS DATA INDEX: FLOW DIAGRAM

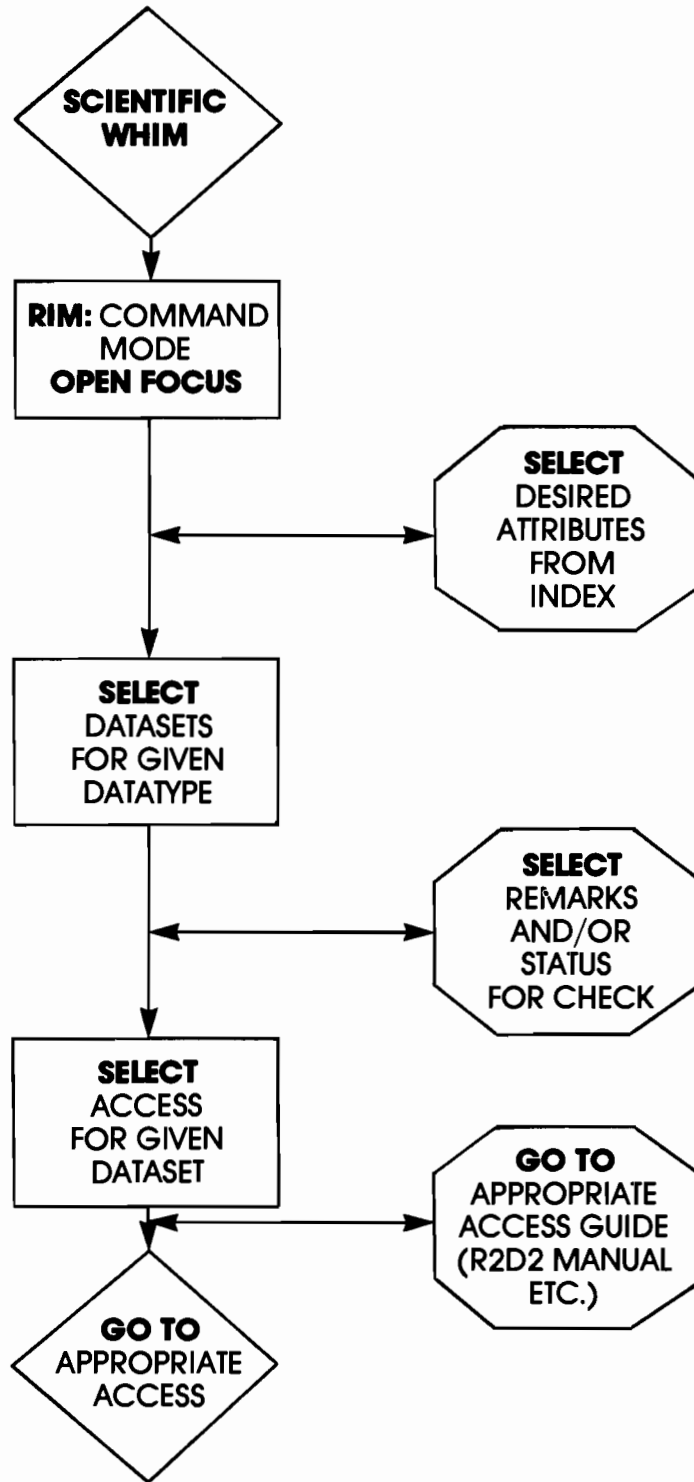


Figure 2. FOCUS data index: flow diagram.

access the local index related to a specific data base. RIM is also used to maintain a FOCUS data dictionary which abstracts all the variable names, formats, meanings and other associated information.

Once a data set has been identified, the entire file or a subset can be extracted using the procedures associated with its respective data base. FOCUS then uses a series of menu-driven interactive programs (identified as the "black box" in Figure 3) to transform the attributes of the data subset into standard "FOCUS data relations." All codes and units are standardized and the data is stored under the user's account in card image format according to a predefined relational schema.

FOCUS then loads the relations into a "mini relational data base" (MRDB) using RIM. Through iterative uses of this procedure, several data subsets from different sources can be accumulated on one mini data base. In most cases the MRDB would only contain a few data subsets at a given time. However, it could conceivably contain all the information from several data bases depending upon the needs of the user. The MRDB concept and the selection of software tools available within RIM allow the researcher to associate, join and directly analyze two or more data types from various data sets and computers.

The user has the option of saving his files after creating either the "FOCUS data relations" or the "mini relational data base." Additionally, the user can initiate another series of menu driven programs that will backtrack through the system and output a "user data file." This file contains data in the format required for a given application. Each of the major data systems (R2D2, RACEBASE, METLIB) has a series of unique application programs for processing and analysis purposes. The "user data file" can also be in a card image format to facilitate using other applications or statistical packages such as SPSS and BMD.

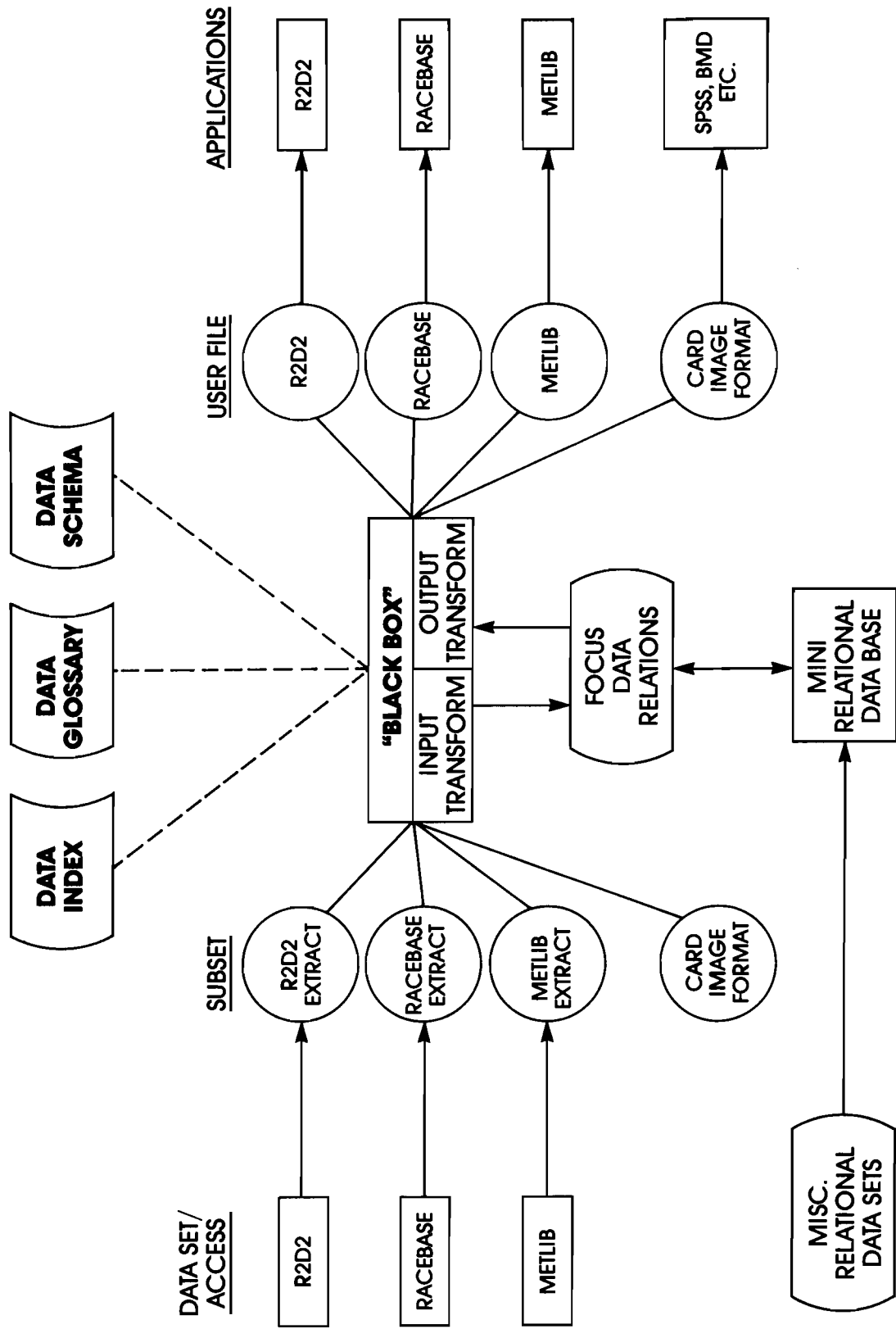


Figure 3. FOCUS system design.

The relational aspects of FOCUS enable readily sortable data formats to be created in a standardized fashion so that processing techniques and data applications may be run with greater efficacy. Thus research efforts may be consolidated just as data bases and analysis programs have been, accessing in a single integrated system a wide variety of complex interaction computations. The relational approach facilitates the sorting process, along with data editing, plotting and problem isolation within the system. Finally, the "black box" design provides the essential liaison between these capabilities across an assembly of data bases (most of which were collected and designed for different purposes) in order to output statistical summaries, profiles, time series plots, and various other data summaries. The system represents an extremely useful product for ocean data users as well as fisheries research and management. Ultimately, the linking of existing data bases into a user-friendly relational data base management system will facilitate communication and cooperation between oceanographers, meteorologists and fishery scientists that has previously been lacking for this resource-rich region.

3.0 SYSTEM OPERATION

There are four CDC user numbers related to FOCUS as follows:

FOCUS - contains the data index and a series of procedure files.

FODOC - contains a documentation file.

FOSOUR - contains the source code.

FOLIB - contains the object code.

On each of the four user numbers, there is a file with the same name for every program module within the FOCUS system. For each procedure on UN=FOCUS there

is a file with the same name on UN=FODOC containing the documentation, a file on UN=FOSOUR containing the source code, and a file on UN=FOLIB containing the object code. An occasional user need only be concerned with UN=FOCUS as it contains the procedures which will initiate execution of each program module and UN=FODOC as it contains documentation on the schema for the "FOCUS Data Relations."

To explain how FOCUS might be utilized, let us consider a simple demonstration that compares a sea surface or bottom temperature time series to the estimated abundance of pre-juvenile red king crab. The user would take the following steps to "focus" his data.

- 1) Start R2D2 on the CDC and sort by latitude/longitude, month/year and compute mean temperatures at desired depth. Generate a data subset or extract using R2D2's user data file format.
- 2) Run RACEBASE routines on the Burroughs to generate an output file listing the abundance of pre-juvenile red king crab. This file would then be transferred in card image format to the CDC computer using a stranger tape.
- 3) Start FOCUS, which would read the two data subsets and transform their attributes into standard "FOCUS data relations" with codes and units standardized.
- 4) FOCUS would load these data relations into a "mini relational data base" using RIM. The user can then use RIM commands to build a new relation that would associate temperature and estimated abundance.

- 5) Specify an output analysis option such as SPSS or BMD. FOCUS then retrieves the appropriate attributes from the "mini relational data base" and builds a user file with the required format (card image, in this case). The user can then run the analysis on the CDC or transfer the file to the Burroughs.

The following sections 3.1 to 3.4 describe the procedures required at each step in the operation of FOCUS. A "user friendly" interactive routine that will guide the user through these steps in a menu driven fashion is under development. This routine will have a "Help File" and be self explanatory.

3.1 Selecting a Data Subset

FOCUS operates in a distributed data base environment containing a number of data bases or systems that often have their own detailed index. However, the initial location of a desired data set can be made by use of the FOCUS Data Index. This index resides as a RIM relation within the FOCUS data base under UN=FOCUS. An abstract of attributes for the relation INDEX is listed in Appendix A. Attributed names are limited to eight characters and have been abbreviated where necessary. The attributes providing general information on the data set such as data set name, time and space limits, remarks, etc. are of type "TEXT", "INT", or "REAL" as appropriate. The attributes identifying specific data types such as CTD, XBT, etc. are all numeric and have a value of 1 when the data set contains that data type or a value of 0 if it does not. RIM commands are used to select data sets by specifying a desired list of attributes (see Figure 2). If more detail is required, an index associated with the appropriate data base should be searched.

Definition of the following terms are offered for clarity.

Data file: A collection of logically related data records treated as one unit of information.

Data set: One or more data files of similar information.

Data base: One or more data sets and associated access routines.

Data system: One or more data bases and associated applications software.

Appendix A also contains an abstract of some of the major data bases currently associated with FOCUS. The Data Glossary (see Appendix B) is an abstract of variable names and their respective formats, units and codes from each of the more common data sets.

3.2 Generating a FOCUS Data Relation

Upon identifying the desired data set, a data subset or extract is made using the procedures associated within its respective data base. The next step requires that all codes and units be standardized and that the data be stored as a "FOCUS data relation" according to a predefined relational schema (see Appendix C). FOCUS provides the following program modules to make this transformation automatically for a known data subset:

PROGRAM	DATA SUBSET
R2FCAT	RACEBASE catch data
R2FCM	R2D2 current meter data
R2FHAUL	RACEBASE haul data
R2FLEN	RACEBASE length frequency data
R2FPG	R2D2 pressure gauge data
R2FSPEC	RACEBASE specimen data
R2FSTD	R2D2 STD data

To initiate execution of a given module, a submit file is created containing input and output file names and the module's procedure name (i.e., R2FCAT/UN=FOCUS). Detailed instructions and a sample submit file for each module are provided in Appendix D. Note that a given module may produce multiple relations (i.e., cruise, cast, and profile relations for R2D2 STD data). Additional program modules to accommodate other types of data subsets will be integrated into the system as time and resources allow.

For types of data subsets where no program module exists, FOCUS may still be used if the data follows a relational schema and is in card image format. At this point the system is ready to build a "mini relational data base".

3.3 Building a Mini Relational Data Base

To facilitate combining data from different sources, FOCUS loads data from the "FOCUS data relations" onto a RIM data base identified as the "Mini Relational Data Base" (MRDB) in Figure 3. Program module CARDRIM makes this transformation automatically (see Appendix D). Additional data relations can be accumulated in the MRDB through successive runs of CARDRIM. After several data subsets have been loaded onto the MRDB, RIM commands such as intersect, join, or select can be used to associate the data in any desired fashion. New data relations can be formed and simple statistics such as minimum, maximum, average, and sum can be computed.

These relations are easily converted back into "FOCUS data relations" through the use of program RIMCARD (see Appendix D). Note that any card image format may be specified for RIMCARD. However, a predefined schema must be followed to later create one of the standard "user data files".

3.4 Creating a User Data File

All files are saved on the user's account after every step in the FOCUS process. These files (a card image file or a RIM data base) can be used as input for any application package that can accommodate their format. For certain applications, however, FOCUS provides the following program modules that create a standard "user data file" automatically:

PROGRAM	APPLICATION
F2RCAT	RACEBASE catch file
F2RCM	R2D2 current meter file
F2RHAUL	RACEBASE haul file
F2RLEN	RACEBASE length file
F2RPG	R2D2 pressure gauge file
F2RSPEC	RACEBASE specimen file
F2RSTD	R2D2 STD file

These modules transform the data according to the required formats, units and codes. In some cases, more than one data relation is needed for input. See Appendix D for detailed operating instructions. Additional program modules to accommodate other types of application programs will be integrated into FOCUS as time and resources allow.

4.0 SYSTEM DEMONSTRATIONS

To demonstrate FOCUS, two hypotheses pertinent to fisheries oceanography were developed and appropriate data from existing data sets were assembled and analyzed. These hypotheses were not intended to be scientifically significant but rather were presented to indicate the potential utility of FOCUS.

The first demonstration, an analysis of the relationship between hydrography and pollock egg distributions in Shelikof Strait, was conducted by Dr. Art Kendall of NWAFC and Mr. Ron Reed of PMEL. Pollock egg density data from a 1981 cruise of the NOAA Ship *Miller Freeman* was available at NWAFC. This data was transferred to the CDC computer in Boulder, Colorado and loaded onto a FOCUS "mini relational data base." At PMEL, CTD data from the same cruise was selected using R2D2 and also loaded onto FOCUS. Within FOCUS, the two data sets were associated and reformatted as an R2D2 compatible file. R2D2 was then used to produce plots showing the station locations, temperature and egg densities (see Figures 4-6).

The second demonstration was conducted by Dr. L. Incze and Mr. M. K. McDowell of NWAFC and Dr. J. D. Schumacher of PMEL. They looked at the relationship between degree days (an indicator of bottom temperature) and the abundance of four year old king crabs. The data from both sets was keyed directly onto a FOCUS mini relational data base as there were only a small number of data points. Within FOCUS this data was associated and reformatted as a card image file compatible with the Statistical Package For The Social Sciences (SPSS) (Nie *et al.*, 1975). SPSS was used to produce a scatter plot and the related statistics (see Figure 7).

4.1 Demonstration of Relationship Between Hydrography and Pollock Egg Distributions in Shelikof Strait

Following the discovery in 1980 of a walleye pollock spawning concentration in Shelikof Strait, in 1981 an intensive effort was made to document the distribution of eggs and larvae from that spawning. Four ichthyoplankton sampling cruises to the area from March to May allowed us to determine the time and area of spawning and trace the drift of the larvae as they grew. Temperature and salinity data were collected with CTD's at each plankton station. These data can be used to study several questions about these eggs and larvae, such as: What are the water characteristics where spawning occurs? What would be the implied drift of eggs and larvae, based on hydrographic conditions? What is the developmental rate of eggs from this spawning (developmental rate is highly correlated with temperature)? FOCUS, using R2D2, has demonstrated the capability to combine hydrographic data with pollock egg catch data and produce charts which will allow easy visual comparisons. Now that these two types of data are part of the same data base, analyses can be performed to explain the influence of hydrography on distribution of pollock eggs and larvae.

The egg concentrations (Figures 5 and 6) reveal that the largest amounts were confined to two regions in the southern part of the Strait. The concentrations within these areas are generally orders of magnitude greater than elsewhere. There does not appear to be any very obvious correlation with temperature at 25 m (Figure 4). The geostrophic flow at the sea surface, referred to 100 db does not reveal a very direct relation with egg concentration either except that the general southward flow might have resulted in some downstream advection from the northern region. The productive area near 57.5°N, 155°W may be influenced by various factors that are not related to these physical variables.

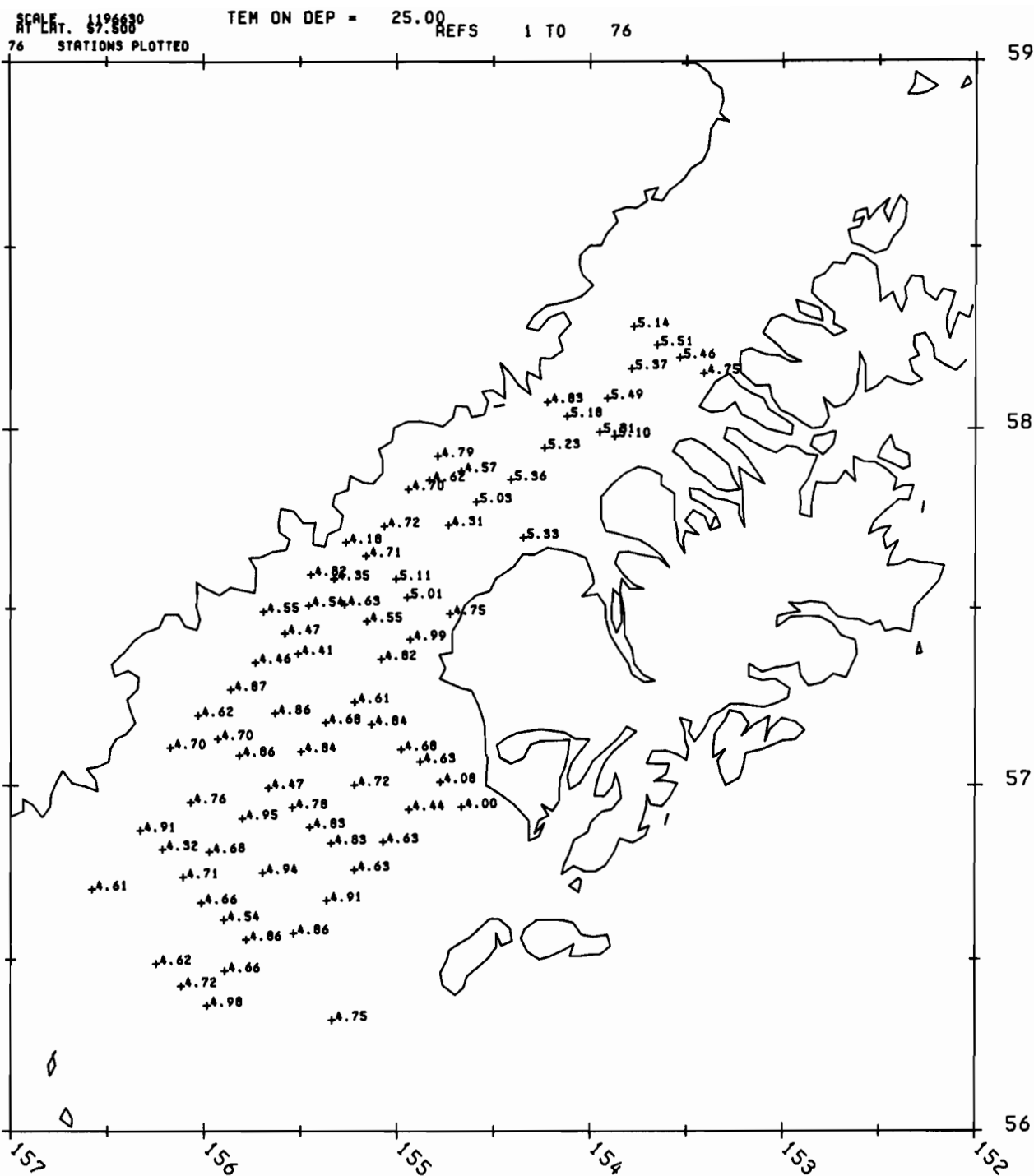
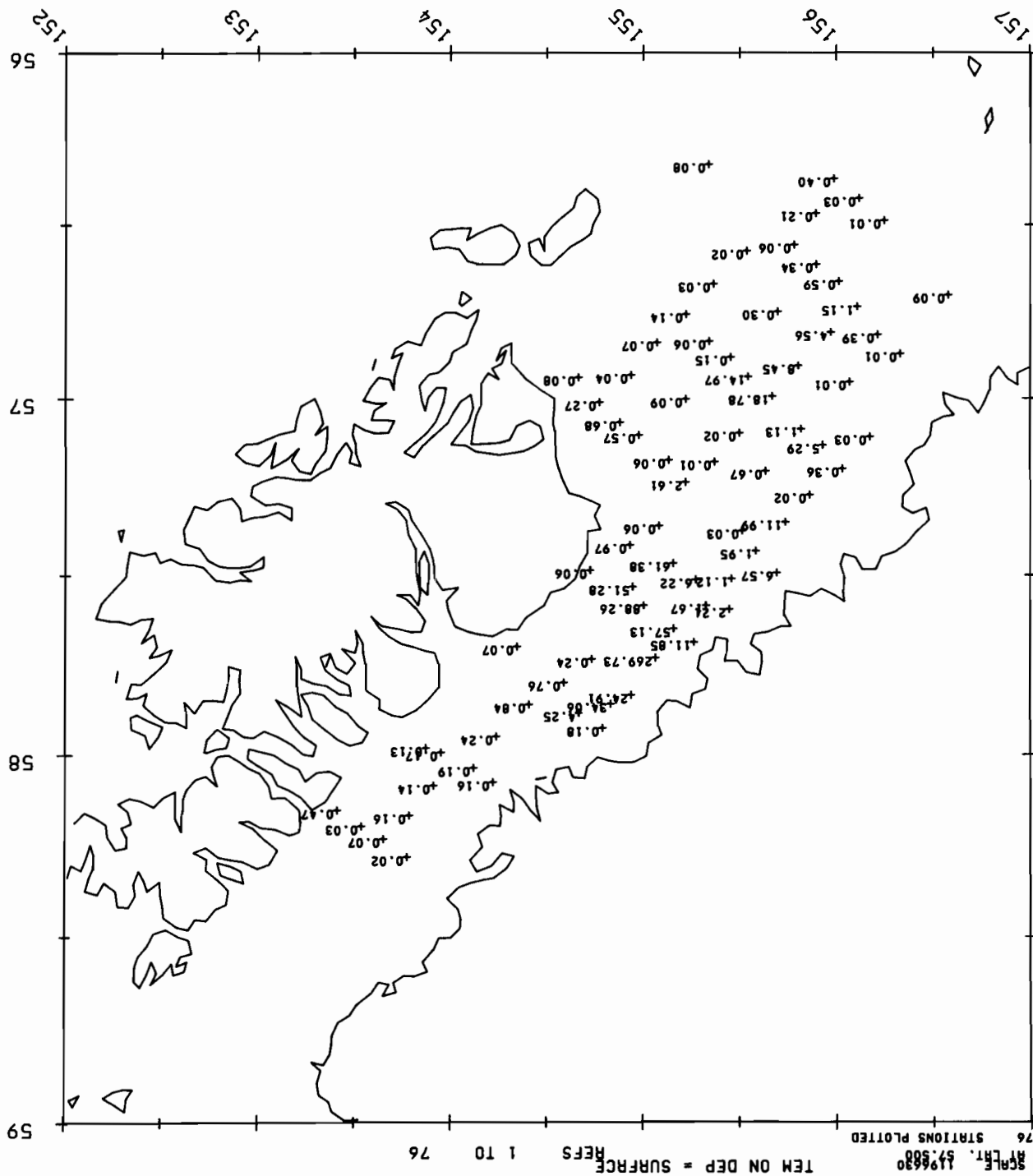


Figure 4. Temperature at 25 m depth.

Figure 5. Pollock egg density M2.



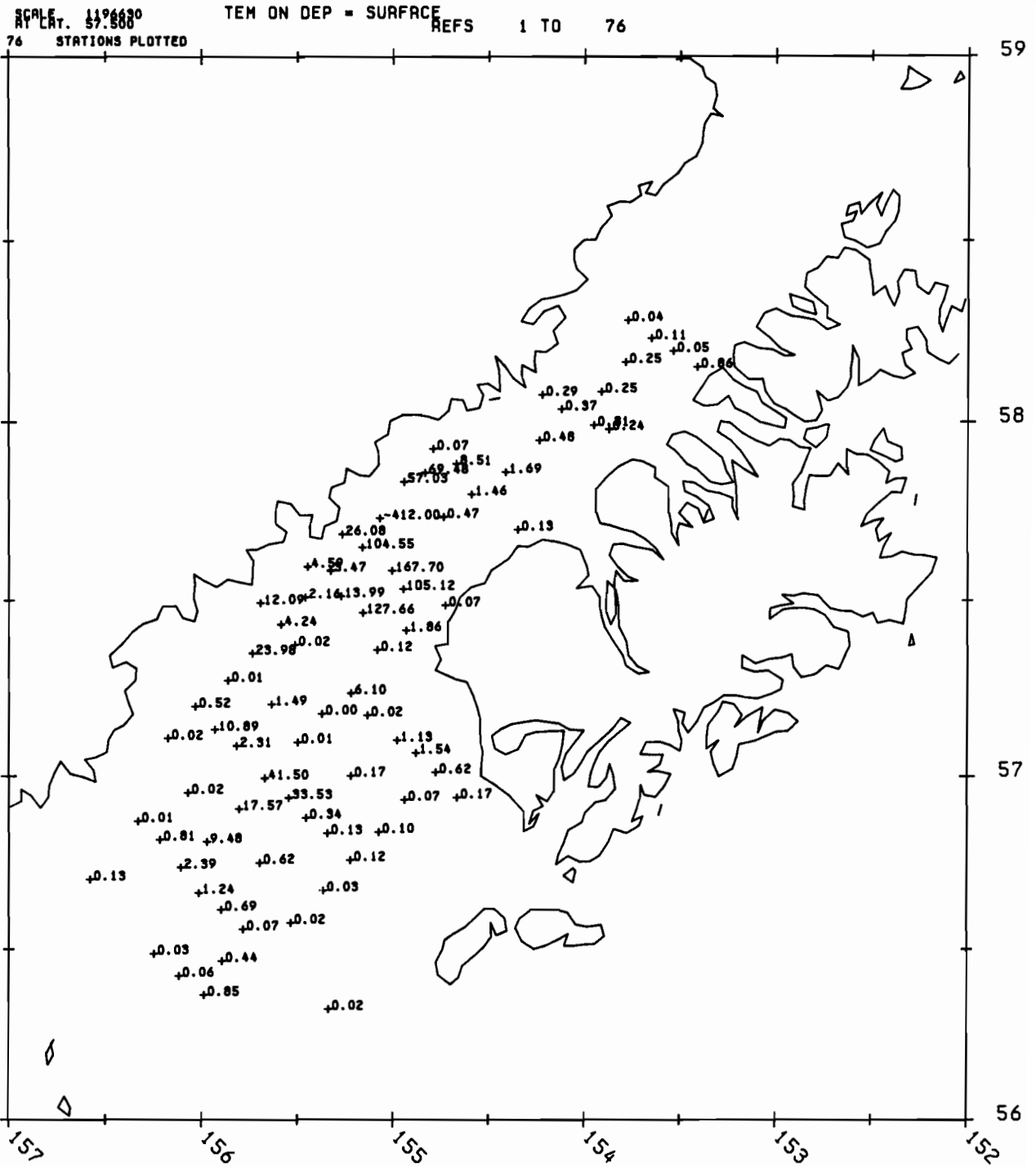


Figure 6. Pollock egg density M3.

4.2 Demonstration of Relationship Between An Index of Environmental Conditions and Year Class Strength of Red King Crab in the Southeast Bering Sea

An index of abundance of four-year-old king crabs was calculated from the resource survey data base of the National Marine Fisheries Service, Seattle. The index is based on crabs with carapaces measuring 70 to 85 mm length (see Weber, 1967, Table 12; McCaughran and Powell, 1977, Table 6). The sampling catches cannot be corrected to estimate true population of four-year-old crabs since the relative vulnerability of the size range of crab to survey gear is not known. Crabs of this age, however, are widely distributed, and data on sampling catches are not overly patchy. The population index for four-year-olds which is based on crabs actually caught therefore provides a reasonable standard for comparing the relative abundance of various year classes.

The area surveyed in the southeastern Bering Sea has varied over time, but virtually all of the red king crab population has been sampled since 1970. Data from 1971 could not be used in this analysis which otherwise covers the period from 1970 to 1983. Since the index is based on four-year-old crabs, the time series covers year classes of crabs hatched and recruited to the benthos from the planktonic larval stage between 1966 and 1979.

The parameter used to represent environmental conditions was air temperature. Surface airways data was obtained from the National Weather Service for stations at Cold Bay and St. Paul, Alaska. The mean of the two daily averaged temperatures was computed for a given winter (November to June) and degree days for each year were calculated. Coachman and Charnell (1979) showed that this measure was correlated to bottom water temperatures over the middle shelf domain of the Bering Sea. Since recruitment from larvae to benthos occurs primarily in the coastal domain, the degree day index was not converted to bottom water temperature.

A scatter diagram showing the relation of the crab and temperature indices is shown in Figure 7. The linear relation between the two time series of indices was not statistically significant ($r = 0.21$). The relation between indices is clearly not straightforward. Several possible explanations exist: 1) degree days computed from air temperatures at Cold Bay and St. Paul are not the best index of coastal domain water temperatures, 2) the direct influence of water temperature upon king crab larvae is minor, i.e., other environmental factors supercede temperature, and 3) temperature and other abiotic and biotic environmental conditions interact in complex ways to influence the abundance of year classes of crabs. As the environmental data base is expanded, direct observations of water temperature in the coastal domain may be available for construction of sea temperature index, and other indices, e.g., offshore transport during planktonic life stage, can be evolved. While the results of the comparison between crab and temperature indices was not definitive, it has demonstrated the utility of FOCUS.

FOCUS DEMONSTRATION
 DEGREE DAYS VS. FOUR YEAR OLD CRAB POPULATION
 FILE NAME (CREATION DATE = 83/09/22.)

83/09/22. 12.59.22. PAGE 2

SCATTERGRAM OF (DOWN) DEGREE
 (ACROSS) CRABPOP

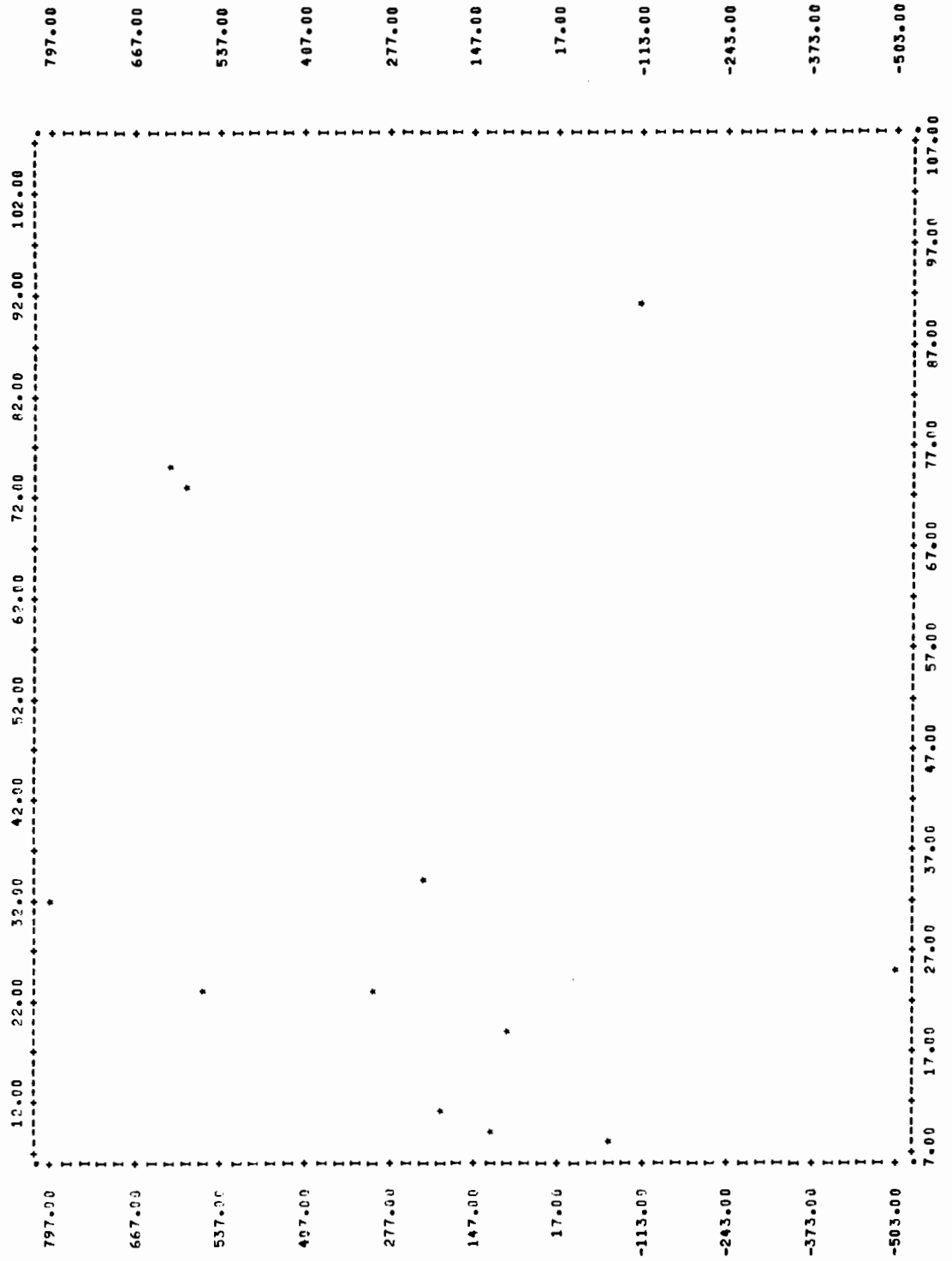


Figure 7. Degree days vs. four year old crab population.

5.0 ACKNOWLEDGMENTS

FOCUS has been a cooperative project and its design reflects an accumulation of thoughts and ideas from many individuals. Guidance was provided by the "FOCUS Advisory Committee" (see Appendix E) which consisted of fifteen members from both NWAFC and PMEL and one from the International Pacific Halibut Commission. Sections of this memorandum were taken in part or whole from a paper presented at the "The Third Working Symposium on Oceanographic Data Systems 1983, Woods Hole Oceanographic Institution, MA (Parker and McConaghy, 1983). This project was supported by the NOAA Administrator's Discretionary Fund.

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7.0 APPENDICES

APPENDIX A.

DATA INDEX

Index Attributes

The FOCUS data index is composed of a number of standard attributes that are used to describe the data sets available to FOCUS. A user can select any number of attributes to provide information on data sets of interest. The following is a list of the attributes currently in use along with their descriptions. This list will expand as more data is acquired and more attributes are needed to describe all of the data sets. Descriptive attributes may be TEXT, an integer (INT), or REAL. This is specified in parentheses after the attribute name as is the number of characters which can be entered for the text attributes. All data type attributes are type INT with a value of 1 or 0, depending on whether that data type is included in the data set.

A. Descriptive attributes

1. DATASET (TEXT, 8): The name given to a data set. Usually an acronym or abbreviation that should be easily recognized by potential users.
2. RELFILE (TEXT, 8): The name of some other data set that directly relates to the primary data set, such as a separate header file for large data sets.
3. SOURCE (TEXT, 20): A recognized acronym or combination of acronyms that defines the agency or source from which the data set was obtained.
4. ACCESS (TEXT, 10): Refers to the appropriate data base, computer, or other medium on which the data currently resides. Examples would

be R2D2 (data base), CDC (computer) and TAPE (if not yet loaded on computer).

5. SDATE (INT, 1): A four digit integer that indicates the start year and month (YR MO) of the data set.
6. EDATE (INT, 1): A four digit integer that indicates the end year and month (YR MO) of the data set.
7. LOWLAT (REAL, 1): A four digit real number that indicates, in decimal degrees, the low latitude limit of the area covered by the data set. North latitude is assumed.
8. HILAT (REAL, 1): A four digit real number that indicates in decimal degrees, the high latitude limit of the area covered by the data set. North latitude is assumed.
9. RIGHTLON (REAL, 1): A real number that indicates the eastern longitude limit in decimal degrees of the the area covered by the data set. A positive value implies west longitude and a negative number denotes east longitude.
10. LEFTLON (REAL, 1): A real number that indicates the western longitude limit in decimal degrees, of the area covered by the data set. A positive value applies to west longitude and a negative value refers to east longitude.
11. RECORDS (INT, 1): An integer indicating the number of stations included in a data set.
12. STATUS (TEXT, 20): A three word code to describe the current status of a data set. Status codes are listed elsewhere in Appendix A.
13. REMARKS (TEXT, 40): A short written description of the data set.

B. Data type attributes

1. CTD: Profile data including temperature, salinity, and depth.
2. XBT: Digitized expendable bathythermograph data including temperature and depth.
3. HYDROCAST: Temperature, salinity and depth profile data as collected with Nansen or Niskin bottles at intermittent levels.
4. SPM: Suspended particulate matter, as derived from the light attenuation measurements of a transmissometer.
5. SURFTEMP: Water surface temperature.
6. CURRENT: Current meter time series data including U and V vector components, speed and usually temperature. May also include salinity, pressure and light attenuation.
7. BOTPRESS: Bottom pressure time series as collected by a moored pressure gauge. May also include temperature time series.
8. SEALEVEL: Sea level time series measurements typically measured by coastal tide gauges. Usually expressed as monthly means.
9. RIVERFLO: Volumetric flow measurements for major rivers. Usually expressed as monthly means.
10. 500MBHT: Refers to the height above sea level of the 500 millibar air pressure surface.
11. SFCTEMP: Surface air temperature.
12. THICKNESS: A meteorological parameter referring to the vertical air column thickness between the 500 mb and 1000 mb pressure surfaces.
13. WINDVEL: Wind velocity time series measurements, usually expressed as U and V components.
14. AIRTEMP: Air temperature measurements.

15. AIRPRES: Air pressure measurements.
16. GROUND: Refers to ground (bottom) fish measurements of species composition, length frequencies and age structure.
17. PELAGIC: Refers to open ocean, mid water fish measurements of species composition, length frequencies and age structure.
18. CRAB: Refers to measurements of crab size, year class and abundance.
19. PHYTO: Measurements of phytoplankton.
20. ZOO: Measurements of zooplankton.
21. LARVAL: Measurements of fish and crab larvae.
22. NUTRIENT: Nutrient measurements including NO_3 , PO_4 , S_1O_4 , NH_3 and others.
23. OXYGEN: Dissolved O_2 measurements.
24. CHLOR: Chlorophyll measurements.
25. CARBON: Carbon measurements.

Status codes

The following is a list of the code words used to describe the current status of data sets included in FOCUS.

1. a. "FOCUS" - All data from a data set is accessible and included in FOCUS.
- b. "FOCUS/Partial %" - Some but not all data from a data set is included in FOCUS. Partial % would describe the approximate percentage of data accessible.
2. "POSSESS/location/who" - Physically have possession of, or access to, a data set but not yet included in FOCUS. Location would describe where data is stored such as PMEL, CDC, B7811, etc. Who would indicate who currently has knowledge of the data set.
3. "SOURCE/date/who" - Data has not yet been acquired from the source. Date would describe when the data was requested from the source. Who would indicate who requested this data and/or has information on status of the data set.

Data Sets

Alaska Trollers Association Logbook Program: This cooperative venture between the Alaska Trollers Association, University of Alaska Sea Grant, NMFS and the Alaska Department of Fish and Game has produced descriptive summaries of sea surface temperatures, and wind velocity for the southeast Alaska area since 1976 (in conjunction with the salmon commercial catch information). These data are available on time and space scales with fishery data, and fill the geographical gap in data between Canadian and OCSEAP survey programs.

FNOC Surface Pressure Fields: Six-hourly synoptic sea surface pressure analysis by 1° intervals since 1946, along with wind speed and direction summaries have been obtained. In addition, geostrophic winds computed from these pressure fields have been generated for 49 locations throughout the Gulf of Alaska and Bering Sea.

MEDS: The Marine Environmental Data Service Branch of Canada, Department of Fisheries and Oceans (Ottawa). This division manages all physical, chemical and biological oceanographic data collected by the Ocean Science Surveys off the Canadian coast, as well as acquisitions through other government, university, industry and foreign research in waters adjacent to Canada.

Extracts were prepared by MEDS for FOCUS to include all relevant data in the west coast area of interest. These include data from shore-based seawater sampling and tide gauge stations, bathythermograph, Nansen bottle and CTD casts. Sea surface temperature and salinity observations from British Columbia light stations since 1934 constitute some of the longest time series available in this area. Finally, observations taken continuously since 1956 at Ocean Weather Station "P" (50°N, 145°W) represents an important time series

of temperature, salinity, dissolved chemistry and primary/secondary productivity in the central Gulf of Alaska.

METLIB: A FORTRAN program library for deriving earth-located time series of geostrophic, gradient, or surface winds from sea level pressure (SLP) and ancillary fields gridded on a polar stereographic projection. Such fields are generated at the National Meteorological Center (NMC) and at Fleet Numerical Oceanographic Central (FNOC). The library also contains programs for contouring scalars, such as SLP or wind speed, and for plotting vector arrows with a map background. PMEL has tape files of associated data for the Bering Sea and Gulf of Alaska (Overland *et al.*, 1980).

MOODS: U.S. Navy Fleet Numerical Oceanography Center's (FNOC) "Master Oceanographic Observations Data Set." The MOODS compilation contains over 3.6 million observations on comprehensive 9-track monthly tapes (6250 BPI), including National Oceanographic Data Center (NODC) files, unclassified U.S. Navy data and Japanese bathythermograph data (Fleet Weather Facility, Yokosuka). It represents one of the most complete sets of subsurface profile data for global oceanography, with continuous updating capabilities. The operational analysis run provides subsurface data to 700 m (below which profiles blend with deep climatology).

An extract was produced by FNOC and FOCUS that includes most hydrographic information compiled since 1923 in the subarctic Pacific region from 48°-67°N and 122°W-150°E. Most of the data collected under OCSEAP (see R2D2 below) were also merged into the MOODS format as part of the compilation. Software is being developed by William Otto at ERL, Boulder, Colorado, that will permit convenient access to MOODS data in an R2D2-compatible data file.

NDBOMET: National Data Buoy Office (NOAA) data obtained from weather buoys moored in the Pacific east of 180°W and north of 50°N. Measurements

include wind speed, gust and direction; air temperature and pressure; and sea surface temperature.

NWAFBC BT: The NOAA/NMFS Northwest and Alaska Fisheries Center in Seattle has collected bathythermograph observations in the region of interest since 1954. Included are approximately 6,000 traces in the Gulf of Alaska and 5,000 in the Bering Sea, taken on over 150 cruises. These data represent a source of hydrographic information on time and space scales coincident with fisheries research surveys.

NWS STATION: National Wether Service Data from Bering Sea stations located at Cold Bay, St. Paul, Nome, and Providence Bay (USSR). This set includes time series data of atmospheric temperature and pressure, wind speed and direction, and relative humidity. The data were all daily averaged and historically inclusive back through 1955 for the Cold Bay, St. Paul and Nome stations and back through 1975 for Providence Bay.

PROBES: Processes and Resources of the Bering Sea Shelf (NSF). Data from these cruises is concentrated in the 1978-81 spring-summer period. Included are approximately 2,000 CTD casts (1 m-averaged), nutrients and dissolved chemistry, primary and secondary productivity, carbon and nitrogen productivity estimates, pollock ichthyoplankton studies (its sole fisheries component) and various meteorological observations.

RACEBASE: The resource assessment survey data base and analysis system at the NWAFBC. This system was designed to process data from ground fish surveys. The data base contains information from approximately 30 years of such surveys in the Pacific Northwest and Alaska regions.

RACEBASE currently represents the central fisheries data and analysis capacity within FOCUS. It includes a variety of functions for reporting and analysis such as data listings, statistics, plots, and data editing and checking.

Organized in a relational concept, the various data files within the system may be associated through common data elements. This relational concept also provides a wide range of opportunities for interfacing with other major data bases (Mintel and Smith, 1981).

RIVERFLOW: Monthly mean flow (in FT³/sec) for major U.S. rivers. This data was collected by the U.S. Geological Survey. Inclusiveness dates are unknown at the present time.

R2D2: A Rapid Retrieval Data Display analysis package developed at PMEL for CTD and current meter data processing (Pearson et al., 1979), (Pearson, 1981). This data set has been organized for the Outer Continental Shelf Environmental Assessment Program (OCSEAP), a systematic mesoscale physical oceanographic and meteorological study in Alaska waters. Nearly two million observations for 49 coastal stations and 600,000 marine observations since 1972 are included, along with the National Climatic Center's (NCC) Tape Data Family 11 and summaries for selected stations.

A variety of other meteorological data sources were integrated by the OCSEAP efforts such as the National Weather Service, U.S. Navy and Air Force and Alaska's Arctic Environmental Information and Data Center. Data from 12,000 CTD/STD hydrographic casts, over 600 current meter and pressure gauge records and over 6,000 casts from 80 research cruises are included.

Sea Level: The NOAA National Ocean Survey (NOS) has calculated monthly mean sea level from hourly data at tide gauge stations in the Gulf and the Bering Sea since the 1940's, providing continuous time series data for circulatory calculations in the region. These data were compiled and edited by Dr. K. Wyrтки of the University of Hawaii.

SHIPOBS: FNOC's surface marine weather observations ("Ship Observations"). These are real-time radio messages from merchant, research, naval, Coast Guard

and fishing vessels, both foreign and domestic. The data recorded include surface sea and air (wet and dry) temperatures, wind speeds and direction, sea state and a variety of other meteorological observations.

An extract has been prepared for FOCUS that includes observations compiled since 1960 in the area of interest.

APPENDIX B.
DATA GLOSSARY

BASE	RECNAME	VARNAME	UNITS	CODE
MEDS OCEANS IV	DERIVEDP	DEPTH	- 0 -	MEDS
MEDS OCEANS IV	DERIVEDP	GPANOM	ERGS/G	- 0 -
MEDS OCEANS IV	DERIVEDP	PEANOM	ERGS/CM2	- 0 -
MEDS OCEANS IV	DERIVEDP	POTTEMP	C	- 0 -
MEDS OCEANS IV	DERIVEDP	PRESS	DBAR	- 0 -
MEDS OCEANS IV	DERIVEDP	PRESS	DBAR	- 0 -
MEDS OCEANS IV	DERIVEDP	SIGMAPT	- 0 -	- 0 -
MEDS OCEANS IV	DERIVEDP	SIGMAT	- 0 -	- 0 -
MEDS OCEANS IV	DERIVEDP	SVA	ML/G	- 0 -
MEDS OCEANS IV	DERIVEDP	TYPE4	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	DEPTH	M	- 0 -
MEDS OCEANS IV	O DETAIL	DEPTH	M	- 0 -
MEDS OCEANS IV	O DETAIL	HOUR	GMT	- 0 -
MEDS OCEANS IV	O DETAIL	MINUTE	- 0 -	- 0 -
MEDS OCEANS IV	O DETAIL	PARI	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIC	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIE	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARII	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIIC	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIIE	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIII	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIIC	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIIE	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIV	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIVC	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARIVE	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARV	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARVC	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PARVE	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PRESM/C	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	PRESS	DBAR	- 0 -
MEDS OCEANS IV	O DETAIL	PRESS	DBAR	- 0 -
MEDS OCEANS IV	O DETAIL	SALT	G/KG	- 0 -
MEDS OCEANS IV	O DETAIL	SALT/E	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	SDSPM/C	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	SOUNDSP	M/SEC	- 0 -
MEDS OCEANS IV	O DETAIL	TEMP	C	- 0 -
MEDS OCEANS IV	O DETAIL	TEMP/E	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	TYPE3	- 0 -	MEDS
MEDS OCEANS IV	O DETAIL	WIREOUT	M	- 0 -
MEDS OCEANS IV	ST MASTR	AIRPRES	MBAR	- 0 -
MEDS OCEANS IV	ST MASTR	AIRTEMP	C	- 0 -
MEDS OCEANS IV	ST MASTR	CLASS	- 0 -	MEDS
MEDS OCEANS IV	ST MASTR	CLOUDS	- 0 -	WM02700
MEDS OCEANS IV	ST MASTR	COUNTRY	- 0 -	MEDS
MEDS OCEANS IV	ST MASTR	CRUISE	- 0 -	MEDS
MEDS OCEANS IV	ST MASTR	DAY	- 0 -	- 0 -
MEDS OCEANS IV	ST MASTR	DEPTH	- 0 -	MEDS
MEDS OCEANS IV	ST MASTR	HOUR	GMT	- 0 -
MEDS OCEANS IV	ST MASTR	INSTITU	- 0 -	MEDS

BASE	RECNAME	VARNAME	UNITS	CODE
MEDS OCEANS IV	ST MASTR	LATDEG	DEGREE	- 0 -
MEDS OCEANS IV	ST MASTR	LATMIN	MINUTES	- 0 -
MEDS OCEANS IV	ST MASTR	LATNS	- 0 -	- 0 -
MEDS OCEANS IV	ST MASTR	LONDEG	DEGREE	- 0 -
MEDS OCEANS IV	ST MASTR	LONEW	- 0 -	- 0 -
MEDS OCEANS IV	ST MASTR	LONMIN	MINUTES	- 0 -
MEDS OCEANS IV	ST MASTR	MARSDEN	- 0 -	- 0 -
MEDS OCEANS IV	ST MASTR	MONTH	- 0 -	- 0 -
MEDS OCEANS IV	ST MASTR	NUMDEPT	- 0 -	- 0 -
MEDS OCEANS IV	ST MASTR	SWELDIR	DEGREES	- 0 -
MEDS OCEANS IV	ST MASTR	SWELLHT	.5M	- 0 -
MEDS OCEANS IV	ST MASTR	SWELLPD	SECONDS	- 0 -
MEDS OCEANS IV	ST MASTR	TYPE2	- 0 -	MEDS
MEDS OCEANS IV	ST MASTR	UNASIGN	- 0 -	- 0 -
MEDS OCEANS IV	ST MASTR	WAVEHT	.5M	- 0 -
MEDS OCEANS IV	ST MASTR	WAVEPD	SECONDS	- 0 -
MEDS OCEANS IV	ST MASTR	WETBULB	C	- 0 -
MEDS OCEANS IV	ST MASTR	WINDDIR	DEGREE	- 0 -
MEDS OCEANS IV	ST MASTR	WINDSPD	M/SEC	- 0 -
MEDS OCEANS IV	ST MASTR	WWCODE	- 0 -	WMO4677
MEDS OCEANS IV	ST MASTR	YEAR	- 0 -	- 0 -
METLIB	DATA	DATA	- 0 -	- 0 -
METLIB	DATA	DAY	- 0 -	- 0 -
METLIB	DATA	FLAG	- 0 -	METLIB
METLIB	DATA	HOUR	GMT	- 0 -
METLIB	DATA	MONTH	MM	- 0 -
METLIB	DATA	OBS	- 0 -	METLIB
METLIB	DATA	TYPE	- 0 -	METLIB
METLIB	DATA	YEAR	YY	- 0 -
METLIB	HEADER	GRIDID	- 0 -	METLIB
METLIB	HEADER	IFACT	- 0 -	METLIB
METLIB	HEADER	IMC	- 0 -	- 0 -
METLIB	HEADER	JMC	- 0 -	- 0 -
METLIB	HEADER	XIS	- 0 -	- 0 -
METLIB	HEADER	XJS	- 0 -	- 0 -
R2D2CM	MDATA	BOTTOM	M	- 0 -
R2D2CM	MDATA	DEPTH	M	- 0 -
R2D2CM	MDATA	FETIME	YYJDHMM	- 0 -
R2D2CM	MDATA	FLENGTH	- 0 -	- 0 -
R2D2CM	MDATA	FSTIME	YYJDHMM	- 0 -
R2D2CM	MDATA	INCOMNT	- 0 -	PMEL
R2D2CM	MDATA	LAT	DDMM.MM	- 0 -
R2D2CM	MDATA	LODSTAT	- 0 -	PMEL
R2D2CM	MDATA	LONG	DDDMM.MM	- 0 -
R2D2CM	MDATA	MASTREF	- 0 -	- 0 -
R2D2CM	MDATA	METER	- 0 -	PMEL
R2D2CM	MDATA	MOORING	- 0 -	PMEL
R2D2CM	MDATA	PROJECT	- 0 -	PMEL
R2D2CM	MDATA	REFNUM	- 0 -	- 0 -
R2D2CM	MDATA	SALT	G/KG-1	- 0 -
R2D2CM	MDATA	U	CM/SEC	- 0 -
R2D2CM	MDATA	V	CM/SEC	- 0 -

BASE	RECNAME	VARNAME	UNITS	CODE
R2D2CM	MHEADER	BOTTOM	M	- 0 -
R2D2CM	MHEADER	CMPRESS	DBAR	- 0 -
R2D2CM	MHEADER	CMTEMP	C	- 0 -
R2D2CM	MHEADER	DEPTH	M	- 0 -
R2D2CM	MHEADER	FETIME	YYJDHHMM	- 0 -
R2D2CM	MHEADER	FLENGTH	- 0 -	- 0 -
R2D2CM	MHEADER	FSTIME	YYJDHHMM	- 0 -
R2D2CM	MHEADER	INCOMNT	- 0 -	PMEL
R2D2CM	MHEADER	LAT	DDMM.MM	- 0 -
R2D2CM	MHEADER	LODSTAT	- 0 -	PMEL
R2D2CM	MHEADER	LONG	DDDMM.MM	- 0 -
R2D2CM	MHEADER	MASTREF	- 0 -	- 0 -
R2D2CM	MHEADER	METER	- 0 -	PMEL
R2D2CM	MHEADER	MOORING	- 0 -	PMEL
R2D2CM	MHEADER	PROJECT	- 0 -	PMEL
R2D2CM	MHEADER	REFNUM	- 0 -	- 0 -
R2D2CM	MDATA	BOTTOM	M	- 0 -
R2D2CM	MDATA	CASTNUM	- 0 -	- 0 -
R2D2CM	MDATA	CRUISE	- 0 -	PMEL
R2D2CM	MDATA	GMT	YYJDHHMM	- 0 -
R2D2CM	MDATA	LAT	DDMM.MM	- 0 -
R2D2CM	MDATA	LIGHT	0/0	- 0 -
R2D2CM	MDATA	LONG	DDDMM.MM	- 0 -
R2D2CM	MDATA	MASTREF	- 0 -	- 0 -
R2D2CM	MDATA	PI	- 0 -	PMEL
R2D2CM	MDATA	REFNUM	- 0 -	- 0 -
R2D2CM	MDATA	SALT	G/KG-1	- 0 -
R2D2CM	MDATA	STATION	- 0 -	PMEL
R2D2CM	MDATA	TEMP	C	- 0 -
R2D2CM	MDATA	UNASIGN	- 0 -	- 0 -
R2D2CM	MDATA	VESSEL	- 0 -	PMEL
R2D2CM	MHEADER	BOTTOM	M	- 0 -
R2D2CM	MHEADER	CASTNUM	- 0 -	- 0 -
R2D2CM	MHEADER	CRUISE	- 0 -	PMEL
R2D2CM	MHEADER	GMT	YYJDHHMM	- 0 -
R2D2CM	MHEADER	LAT	DDMM.MM	- 0 -
R2D2CM	MHEADER	LONG	DDDMM.MM	- 0 -
R2D2CM	MHEADER	LONG	DDDMM.MM	- 0 -
R2D2CM	MHEADER	PI	- 0 -	PMEL
R2D2CM	MHEADER	REFNUM	- 0 -	- 0 -
R2D2CM	MHEADER	SDEPTH	M	- 0 -
R2D2CM	MHEADER	SERLEN	- 0 -	- 0 -
R2D2CM	MHEADER	STATION	- 0 -	PMEL
R2D2CM	MHEADER	VESSEL	- 0 -	PMEL
RACEBASE	CATCH	CRUISE	- 0 -	NWAF
RACEBASE	CATCH	HAUL	- 0 -	- 0 -
RACEBASE	CATCH	NUMBER	- 0 -	- 0 -
RACEBASE	CATCH	SPECIES	- 0 -	NWAF
RACEBASE	CATCH	VESSEL	- 0 -	NWAF
RACEBASE	CATCH	WEIGHT	LBS	- 0 -
RACEBASE	HAUL	ACCESS	- 0 -	NWAF
RACEBASE	HAUL	BOTTOM	FATHOMS	- 0 -

BASE	RECNAME	VARNAME	UNITS	CODE
RACEBASE	HAUL	BTYPE	- 0 -	NW AFC
RACEBASE	HAUL	CLOUDS	- 0 -	- 0 -
RACEBASE	HAUL	CRUISE	- 0 -	NW AFC
RACEBASE	HAUL	DAY	- 0 -	- 0 -
RACEBASE	HAUL	DIST	NM	- 0 -
RACEBASE	HAUL	DUR	HOURS	- 0 -
RACEBASE	HAUL	DYNO	- 0 -	NW AFC
RACEBASE	HAUL	ECHOSDR	- 0 -	NW AFC
RACEBASE	HAUL	EQUILIB	HOURS	- 0 -
RACEBASE	HAUL	GEAR	- 0 -	NW AFC
RACEBASE	HAUL	GRDEPTH	FATHOMS	- 0 -
RACEBASE	HAUL	GTEMP	C	- 0 -
RACEBASE	HAUL	HAUL	- 0 -	- 0 -
RACEBASE	HAUL	HAULTYP	- 0 -	NW AFC
RACEBASE	HAUL	IDZONE	- 0 -	- 0 -
RACEBASE	HAUL	INACT	- 0 -	NW AFC
RACEBASE	HAUL	INPFC	- 0 -	NW AFC
RACEBASE	HAUL	LAT	DDMM.MM	- 0 -
RACEBASE	HAUL	LONG	DDDMM.MM	- 0 -
RACEBASE	HAUL	MONTH	- 0 -	- 0 -
RACEBASE	HAUL	PERFORM	- 0 -	NW AFC
RACEBASE	HAUL	QUARTER	- 0 -	- 0 -
RACEBASE	HAUL	RPM	- 0 -	- 0 -
RACEBASE	HAUL	SBLAT	- 0 -	- 0 -
RACEBASE	HAUL	SBLON	- 0 -	- 0 -
RACEBASE	HAUL	STEMP	C	- 0 -
RACEBASE	HAUL	STRATUM	- 0 -	NW AFC
RACEBASE	HAUL	TRACE	FATHOMS	- 0 -
RACEBASE	HAUL	VAR1	- 0 -	- 0 -
RACEBASE	HAUL	VAR2	- 0 -	- 0 -
RACEBASE	HAUL	VESSEL	- 0 -	NW AFC
RACEBASE	HAUL	WIREOUT	FATHOMS	- 0 -
RACEBASE	HAUL	YEAR	- 0 -	- 0 -
RACEBASE	LENGTH-F	CRUISE	- 0 -	NW AFC
RACEBASE	LENGTH-F	FREQ	- 0 -	- 0 -
RACEBASE	LENGTH-F	HAUL	- 0 -	- 0 -
RACEBASE	LENGTH-F	LENGTH	MM	- 0 -
RACEBASE	LENGTH-F	LENTYPE	- 0 -	NW AFC
RACEBASE	LENGTH-F	SEX	- 0 -	NW AFC
RACEBASE	LENGTH-F	SPECIES	- 0 -	NW AFC
RACEBASE	LENGTH-F	SUBSAMP	- 0 -	NW AFC
RACEBASE	LENGTH-F	VESSEL	- 0 -	NW AFC
RACEBASE	POSITION	CRUISE	- 0 -	NW AFC
RACEBASE	POSITION	DFGEOD	NM	- 0 -
RACEBASE	POSITION	DFHAUL	NM	- 0 -
RACEBASE	POSITION	DFLORAN	NM	- 0 -
RACEBASE	POSITION	ELAT	DDMM.MM	- 0 -
RACEBASE	POSITION	ELATLR	DDMM.MM	- 0 -
RACEBASE	POSITION	ELON	DDDMM.MM	- 0 -
RACEBASE	POSITION	ELONLR	DDDMM.MM	- 0 -
RACEBASE	POSITION	ERDNG1	- 0 -	- 0 -
RACEBASE	POSITION	ERDNG2	- 0 -	- 0 -

BASE	RECNAME	VARNAME	UNITS	CODE
RACEBASE	POSITION	ERT1	- 0 -	- 0 -
RACEBASE	POSITION	ERT2	- 0 -	- 0 -
RACEBASE	POSITION	HAUL	- 0 -	- 0 -
RACEBASE	POSITION	SLAT	DDMM.MM	- 0 -
RACEBASE	POSITION	SLATLR	DDMM.MM	- 0 -
RACEBASE	POSITION	SLON	DDDMM.MM	- 0 -
RACEBASE	POSITION	SLONR	DDDMM.MM	- 0 -
RACEBASE	POSITION	SRDNG1	- 0 -	- 0 -
RACEBASE	POSITION	SRDNG2	- 0 -	- 0 -
RACEBASE	POSITION	SRT1	- 0 -	- 0 -
RACEBASE	POSITION	SRT2	- 0 -	- 0 -
RACEBASE	POSITION	VESSEL	- 0 -	NW AFC
RACEBASE	SPECIMEN	AGE	YEARS	- 0 -
RACEBASE	SPECIMEN	CRUISE	- 0 -	NW AFC
RACEBASE	SPECIMEN	DETERM	- 0 -	NW AFC
RACEBASE	SPECIMEN	FREQ	- 0 -	- 0 -
RACEBASE	SPECIMEN	HAUL	- 0 -	- 0 -
RACEBASE	SPECIMEN	LENGTH	MM	- 0 -
RACEBASE	SPECIMEN	MATCODE	- 0 -	NW AFC
RACEBASE	SPECIMEN	MATURE	- 0 -	NW AFC
RACEBASE	SPECIMEN	SEX	- 0 -	NW AFC
RACEBASE	SPECIMEN	SPECID	- 0 -	- 0 -
RACEBASE	SPECIMEN	SPECIES	- 0 -	NW AFC
RACEBASE	SPECIMEN	STRATUM	- 0 -	NW AFC
RACEBASE	SPECIMEN	VESSEL	- 0 -	NW AFC
RACEBASE	SPECIMEN	WEIGHT	GRAMS	- 0 -

VARNAME	MEANING
ACCESS	ACCESSORIES CODE
AGE	AGE
AIRPRES	AIR PRESSURE
AIRTEMP	AIR TEMPERATURE
BOTTOM	BOTTOM DEPTH
BTYPE	BOTTOM TYPE
CASTNUM	CAST NUMBER
CLASS	USED BY MEDS
CLOUDS	CLOUD COVER
COMPRESS	CURRENT METER PRESSURE
CMTEMP	CURRENT METER TEMPERATURE
COUNTRY	COUNTRY
CRUISE	CRUISE
DATA	DATA
DAY	DAY
DEPTH	DEPTH OF SAMPLE
DETERM	SAMPLE TYPE
DFGEOD	DISTANCE FISHED (GEOD)
DFHAUL	DISTANCE FISHED (HAUL)
DFLORAN	DISTANCE FISHED (LORAN)
DIST	DISTANCE FISHED, NM
DUR	DURATION OF HAUL
DYNO	DYNAMOMETER CODE
ECHOSDR	ECHOSOUNDER CODE
ELAT	END LATITUDE
ELATLR	LORAN BASED END LATITUDE
ELON	END LONGITUDE
ELONLR	LORAN BASED END LONGITUDE
EQUILIB	EQUILIBRIUM, START FISHING
ERDNG1	LORAN END READING 1
ERDNG2	LORAN END READING 2
ERT1	LORAN END RATE 1
ERT2	LORAN END RATE 2
FETIME	FILTERED DATA END TIME
FLAG	MISSING DATA FLAG
FLENGTH	FILTER LENGTH
FREQ	FREQUENCY
FSTIME	FILTERED DATA START TIME
GEAR	GEAR CODE
GMT	TIME
GPANOM	GEOPOTENTIAL ANOMALY
GRDEPTH	GEAR DEPTH
GRIDID	GRID ID
GTEMP	GEAR TEMPERATURE
HAUL	NWAF C HAUL NUMBER
HAULTYP	HAUL TYPE
HOUR	HOUR
IDZONE	DEPTH ZONE
IFACT	DEGREE OF INTERPOLATION
IMC	GRID I DIMENSION
INACT	ACTIVE/INACTIVE FLAG
INCOMNT	USED BY R2D2

VARNAME	MEANING
INPFC	INPFC STRATUM CODE
INSTITU	INSTITUTION
JMC	GRID J DIMENSION
LAT	LATITUDE
LATDEG	LATITUDE DEGREES
LATMIN	LATITUDE MINUTES
LATNS	NORTH/SOUTH CODE (N/S)
LENGTH	LENGTH (SHRIMP IN .1MM)
LENTYPE	LENGTH TYPE CODE
LIGHT	LIGHT ATTENUATION
LODSTAT	USED BY R2D2
LONDEG	LONGITUDE DEGREES
LONEW	EAST/WEST CODE (E/W)
LONG	LONGITUDE
LONMIN	LONGITUDE MINUTES
MARSDEN	MARSDEN SQUARE CODE
MASTREF	R2D2 MASTER REFERENCE NUMBER
MATCODE	MATURITY CODE TABLE
MATURE	MATURITY CODE
METER	METER NAME
MINUTE	TIME: MINUTES
MONTH	MONTH
MOORING	MOORING NAME
NUMBER	NUMBERS CAUGHT
NUMDEPT	NUMBER OF DEPTHS
OBS	FORECAST CODE
PARI	PARAMETER FIELD I
PARIC	PARAMETER FIELD I CODE
PARIE	PARAMETER FIELD I QC
PARII	PARAMETER FIELD II
PARIIC	PARAMETER FIELD II CODE
PARIIE	PARAMETER FIELD II QC
PARIII	PARAMETER FIELD III
PARIIIC	PARAMETER FIELD III CODE
PARIIIE	PARAMETER FIELD III QC
PARIV	PARAMETER FIELD IV
PARIVC	PARAMETER FIELD IV CODE
PARIVE	PARAMETER FIELD IV QC
PARV	PARAMETER FIELD V
PARVC	PARAMETER FIELD V CODE
PARVE	PARAMETER FIELD V QC
PEANOM	POTENTIAL ENERGY ANOMALY
PERFORM	PERFORMANCE CODE
PI	PRINCIPAL INVESTIGATOR
POTTEMP	POTENTIAL TEMPERATURE
PRESM/C	PRESSURE M/C
PRESS	PRESSURE
PROJECT	PROJECT NAME
QUARTER	QUARTER
REFNUM	R2D2 REFERENCE NUMBER
RPM	RPM
SALT	SALINITY

VARNAME	MEANING
SALT/E	SALINITY QUALITY CONTROL
SBLAT	STATISTICAL BLOCK LATITUDE
SBLON	STATISTICAL BLOCK LONGITUDE
SDEPTH	START DEPTH
SDSPM/C	SOUNDSP MEASURED/CALIBRATED
SERLEN	SERIES LENGTH
SEX	SEX
SIGMAPT	SIGMA POTENTIAL TEMPERATURE
SIGMAT	SPECIFIC GRAVITY ANOMALY
SLAT	START LATITUDE
SLATLR	LORAN BASED START LATITUDE
SLON	START LONGITUDE
SLONR	LORAN BASED START LONGITUDE
SOUNDSP	SOUND SPEED
SPECID	SPECIMEN ID NUMBER
SPECIES	SPECIES CODE
SRDNG1	LORAN START READING 1
SRDNG2	LORAN START READING 2
SRT1	LORAN START RATE 1
SRT2	LORAN START RATE 2
STATION	STATION NUMBER
STEMP	SURFACE TEMPERATURE
STRATUM	STRATUM
SUBSAMP	SAMPLE TYPE CODE
SVA	SPECIFIC VOLUME ANOMALY
SWELDIR	SWELL DIRECTION
SWELLHT	SWELL HEIGHT
SWELLPD	SWELL PERIOD
TEMP	TEMPERATURE
TEMP/E	TEMP QUALITY CODE
TRACE	TRACE DEPTH
TYPE	DATA TYPE CODE
TYPE2	USED BY MEDS
TYPE3	USED BY MEDS
TYPE4	USED BY MEDS
U	FILTERED U COMPONENT
UNASIGN	UNASSIGNED
V	FILTERED V COMPONENT
VAR1	UNASSIGNED
VAR2	UNASSIGNED
VESSEL	VESSEL
WAVEHT	WAVE HEIGHT
WAVEPD	WAVE PERIOD
WEIGHT	WEIGHT
WETBULB	WETBULB TEMPERATURE
WINDDIR	WIND DIRECTION
WINDSPD	WIND SPEED
WIREOUT	WIRE OUT, SCOPE
WWCODE	PRESENT WEATHER
XIS	ORIGIN I COORDINATE
XJS	ORIGIN J COORDINATE
YEAR	YEAR

APPENDIX C.
DATA SCHEMA - FOCUS DATA RELATIONS

Notes

1. All alphabetic fields are left-justified.
2. All numeric fields are right-justified.
3. All decimal points are explicit, i.e., there are no implied decimal points.
4. Missing values are represented by blank fields.

FOCUS Cruise File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
CRUISE	A10	Cruise name
VESSEL	1X,A10	Vessel name
PI	1X,A10	Chief scientist

FOCUS Cast File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
CRUISE	A10	Cruise name
EVENT	I4	Cast number
STATION	1X,A5	Station name
LAT	F8.2	Latitude, DDMM.MM
LONG	F9.2	Longitude, DDDMM.MM
YEAR	I3	Year, last two digits
MONTH	I3	Month, 1-12
DAY	I3	Day, 1-31
HOUR	I5.4	Hour and minutes, 2400 clock, HHMM (000-2359)
BOTTOM	I5	Bottom depth, meters

FOCUS STD Profile File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
CRUISE	A10	Cruise name
EVENT	I4	Cast number
STATION	1X,A5	Station name
DEPTH	I5	Depth, meters
TEMP	F6.2	Temperature, degrees celsius
SALT	F6.2	Salinity, 0/00
LIGHT	F5.2	Light attenuation, +++UNITS+++
OXYGEN	F5.2	Oxygen, +++UNITS+++

FOCUS Mooring File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
PROJECT	A10	Project name
MOORING	1X,A10	Mooring name
LAT	F8.2	Latitude, DDMM.MM
LONG	F9.2	Longitude, DDDMM.MM
BOTTOM	I5	Bottom depth, meters

FOCUS Meter File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
PROJECT	A10	Project name
MOORING	1X,A10	Mooring name
METER	1X,A5	Meter name
DEPTH	I5	Depth, meters

FOCUS Current Meter Time Series File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
PROJECT	A10	Project name
MOORING	1X,A10	Mooring name
METER	1X,A5	Meter name
YEAR	I3	Year, last two digits
MONTH	I3	Month, 1-12
DAY	I3	Day, 1-31
HOUR	I5.4	Hour and minutes, 2400 clock, HHMM (0000-2359)
U	F6.1	East-west current component, cm/sec
V	F6.1	North-south current component, cm/sec
TEMP	F6.2	Temperature, degrees celsius
PRESS	F9.2	Pressure, millibars
SALT	F6.2	Salinity, ‰

FOCUS Pressure Gauge Time Series File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
PROJECT	A10	Project name
MOORING	1X,A10	Mooring name
METER	1X,A5	Meter name
YEAR	I3	Year, last two digits
MONTH	I3	Month, 1-12
DAY	I3	Day, 1-31
HOUR	I5.4	Hour and minutes, 2400 clock, HHMM (0000-2359)
PRESS	F9.2	Pressure, millibars
TEMP	F6.2	Temperature, degrees celsius

FOCUS Haul File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
CRUISE	A10	Cruise name
EVENT	I4	Haul number
LAT	F8.2	Latitude, DDMM.MM
LONG	F9.2	Longitude, DDDMM.MM
YEAR	I3	Year, last two digits
MONTH	I3	Month, 1-12
DAY	I3	Day, 1-31
HOUR	I5.4	Hour and minutes, 2400 clock, HHMM (0000-2359)
DEPTH	I4	Gear depth, meters

BOTTOM	I4	Bottom depth, meters
DUR	F5.2	Duration of haul in hours, and fractions thereof
DIST	F6.2	Distance fished, nautical miles
HTYPE	I2	Haul type
STRATUM	I4	Stratum
TRACE	I4	Trace depth, meters
SST	F6.2	Surface temperature, degrees celsius
TEMP	F6.2	Gear temperature, degrees celsius
BTYPE	I3	Bottom type code
WIREOUT	I4	Wire out (also known as ↑SCOPE↑), meters
GEAR	I4	Gear code
DOOR	I4	Door and accessories code
PERFORM	I2	Performance code

FOCUS Catch File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
CRUISE	A10	Cruise name
EVENT	I4	Haul number
SPECIES	I6.5	Species code
WEIGHT	F8.1	Weight, in pounds
NUMBER	I7	Numbers

FOCUS Length File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
CRUISE	A10	Cruise name
EVENT	I4	Haul number
SPECIES	I6.5	Species code
SEX	I2	Sex code
LENGTH	I5	Length, in mm
FREQ	I4	Frequency
STYPE	I2	Sample type
LTYPE	I2	Length type

FOCUS Specimen File

<u>Attribute</u>	<u>Format</u>	<u>Description</u>
CRUISE	A10	Cruise name
EVENT	I4	Haul number
STRATUM	I4	Stratum
SPECIES	I6.5	Species code
SEX	I2	Sex code
MATURE	I2	Maturity code
LENGTH	I5	Length, in mm
WEIGHT	F7.1	Weight, in grams
AGE	I3	Age, in years
DETERM	I5	Sample type/determination/structure
ID	I6	Specimen identification number
MATCODE	I3	Maturity code table

APPENDIX D.
SOFTWARE ABSTRACT

SOFTWARE ABSTRACT

I. Generating a FOCUS data relation

<u>Program</u>	<u>Description</u>
R2FCAT	Convert RACEBASE catch file into FOCUS catch file
R2FCM	Convert R2D2 current meter user data file into FOCUS files
R2FHAUL	Convert RACEBASE haul file into FOCUS haul file
R2FLEN	Convert RACEBASE length file into FOCUS length file
R2FPG	Convert R2D2 pressure gauge user data file into FOCUS files
R2FSPEC	Convert RACEBASE specimen file into FOCUS specimen file
R2FSTD	Convert R2D2 STD user data file into FOCUS files

II. Building a mini relational data base

<u>Program</u>	<u>Description</u>
CARDRIM	Convert card-image file into RIM relation
RIMCARD	Convert RIM relation into card-image file

III. Creating a user data file

<u>Program</u>	<u>Description</u>
F2RCAT	Convert FOCUS catch file into RACEBASE catch file
F2RCM	Convert FOCUS current meter files into R2D2 user data file
F2RHAUL	Convert FOCUS haul file into RACEBASE haul file
F2RLEN	Convert FOCUS length file into RACEBASE length file
F2RPG	Convert FOCUS pressure gauge files into R2D2 user data file
F2RSPEC	Convert FOCUS specimen file into RACEBASE specimen file
F2RSTD	Convert FOCUS STD files into R2D2 user data file

PROGRAM R2FCAT

This program converts a RACEBASE catch file into a FOCUS catch file.

The FOCUS cruise name is derived from the RACEBASE vessel and cruise numbers. The FOCUS cruise name is of the form VVVCCC where VVV and CCC are the RACEBASE vessel and cruise numbers, respectively.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Input RACEBASE catch file.
TAPE2	Output FOCUS catch file.
OUTPUT	Printout. The printout is described below.

Submit File Example

```
R2FCAT,T30.  
USER,WINNIE,POOH.  
CHARGE,Z83001,WINNIE.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OTOADY  
DEFINE,CATCH/CT=S,M=R.  
GET,R2FCAT/UN=FOCUS.  
R2FCAT,TAPE1=RACECAT,TAPE2=CATCH.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.

2. Output files

- A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct Access files are always permanent.
- B. This program does not rewind the output files, either before or after processing.

PROGRAM R2FCM

This program converts a R2D2 current meter user data file into FOCUS current meter files.

NOTE: A user data file from R2D2 may contain data from instruments other than current meters, e.g. pressure gauges, wind gauges, etc. This program only processes current meter data. Data from instruments other than current meters are ignored. A message is printed if the R2D2 user data file contains data from instruments other than current meters. A current meter has a meter name which is either numeric or begins with the letter N.

Files

File assignments are made by equating the actual file name to the default file name, e.g. if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Input R2D2 current meter user data file.
TAPE2	Output FOCUS mooring file.
TAPE3	Output FOCUS meter file.
TAPE4	Output FOCUS current meter time series file (hourly).
TAPE5	Output FOCUS current meter time series file (six-hourly).
OUTPUT	Printout. The printout is described below.

Submit File Example

The output FOCUS files should be direct access as they are usually very large.

```
R2FCM,T40.  
USER,WINNIE,POOH.  
CHARGE,Z83001,WINNIE.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OTHUMPER  
DEFINE,MOORING,METER,CM286,CM35/CT=S,M=R.  
GET,R2FCM/UN=FOCUS.  
R2FCM,CMUDF,MOORING,METER,CM286,CM35.
```


Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM R2FHAUL

This program converts a RACEBASE haul file into a FOCUS haul file.

The FOCUS cruise name is derived from the RACEBASE vessel and cruise numbers. The FOCUS cruise name is of the form VVVCCC where VVV is the vessel number and CCC are the RACEBASE vessel and cruise numbers, respectively.

NOTE: The depths in the RACEBASE haul file must be in fathoms. This program converts the depths in fathoms to depths in meters (the converted depths are rounded to the nearest meter).

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Input RACEBASE haul file.
TAPE2	Output FOCUS haul file.
OUTPUT	Printout. The printout is described below.

Submit File Example

```
R2HAUL,T10.  
USER,JAMES,BOND.  
CHARGE,Z83001,JAMES.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OGOLDFINGER  
DEFINE,HAUL/CT=S,M=R.  
GET,R2FHAUL/UN=FOCUS.  
R2FHAUL,TAPE1=RACEHAL,TAPE2=HAUL.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct Access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM R2FLEN

This program converts a racebase length file into a focus length file. The FOCUS cruise name is derived from the RACEBASE vessel and cruise numbers. The FOCUS cruise name is of the form VVVCCC where VVV and CCC are the RACEBASE vessel and cruise numbers, respectively.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u>	
<u>File name</u>	<u>Description</u>
TAPE1	Input RACEBASE length file.
TAPE2	Output FOCUS length file.
OUTPUT	Printout. The printout is described below.

Submit File Example

```
R2FLEN,T45.
USER,WATER,RAT.
CHARGE,Z83001,WATER.
ROUTE,OUTPUT,UN=PMELTRM,DEF.
HEADING. OTOADY
DEFINE,LENGTH/CT=S,M=R.
GET,R2FLEN/UN=FOCUS.
R2FLEN,TAPE1=RACELEN,TAPE2=LENGTH.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM R2FPG

This program converts a R2D2 pressure gauge user data file into focus pressure gauge files.

NOTE: A user data file from R2D2 may contain data from instruments other than pressure gauges, e.g. current meters, wind gauges, etc. This program only processes pressure gauge data. Data from instruments other than pressure

gauges are ignored. A message is printed if the R2D2 user data file contains data from instruments other than pressure gauges. A pressure gauge has a gauge name which begins with the letters PG or TG.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Input R2D2 pressure gauge user data file.
TAPE2	Output FOCUS mooring file.
TAPE3	Output FOCUS meter file.
TAPE4	Output FOCUS pressure gauge time series file (hourly).
TAPE5	Output FOCUS pressure gauge time series file (six-hourly).
OUTPUT	Printout. The printout is described below.

Submit File Example

The output FOCUS files should be direct access as they are usually very large.

```
R2FPG,T50.  
USER,WINNIE,POOH.  
CHARGE,Z83001,WINNIE.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OTHUMPER  
DEFINE,MOORING,METER,PG286,PG35/CT=S,M=R.  
GET,R2FPG/UN=FOCUS.  
R2FPG,PGUDF,MOORING,METER,PG286,PG35.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.

2. Output files

- A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
- B. This program does not rewind the output files, either before or after processing.

PROGRAM R2FSPEC

This program converts a RACEBASE specimen file into a FOCUS specimen file.

The FOCUS cruise name is derived from the RACEBASE vessel and cruise numbers. The FOCUS cruise name is of the form VVVCCC where VVV and CCC are the RACEBASE vessel and cruise numbers, respectively.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Input RACEBASE specimen file.
TAPE2	Output FOCUS specimen file.
OUTPUT	Printout. The printout is described below.

Submit File Example

The output FOCUS files should be direct access as they are usually very large.

```
R2FSPEC,T25.  
USER,WINNIE,POOH.  
CHARGE,Z83001,WINNIE.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OTHUMPER  
DEFINE,SPECMEN/CT=S,M=R.  
GET,R2FSPEC/UN=FOCUS.  
R2FSPEC,TAPE1=RACESPE,TAPE2=SPECMEN.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM R2FSTD

This program converts a R2D2 STD user data file into a FOCUS STD file.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Input R2D2 STD user data file.
TAPE2	Output FOCUS cruise file.
TAPE3	Output FOCUS cast file.
TAPE4	Output FOCUS STD profile file.
OUTPUT	Printout. The printout is described below.

Submit File Example

The output FOCUS files should be direct access as they are usually very large.

```
R2FSTD,T45.  
USER,WATER,RAT.  
CHARGE,Z83001,WATER.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OTOADY  
DEFINE,CRUISE,CAST,PROFILE/CT=S,M=R.  
GET,R2FSTD/UN=FOCUS.  
R2FSTD,TAPE1=STDUDF,TAPE2=CRUISE,TAPE3=CAST,TAPE4=PROFILE.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM CARDRIM

This program loads a card-image file into a RIM relation. The input data are appended onto the end of the RIM relation. For the purposes of this program a card-image file is a file which can be listed with the list command or with XEDIT. The file need not be 80 columns wide, but each record in the file must have the same format.

It is assumed that the RIM database exists prior to running this program and that the schema for the relation has been defined. If not then the program prints an error message and terminates.

Missing values should be represented by blank fields. Blank fields are the only representation of missing values which are recognized by this program. Non-blank fields are considered to be valid data values. Specifically, zero (0) is not considered to be a missing value. Blank fields are converted into the RIM representation for missing values -0-.

Limitations

This program can only be used to load data into a RIM relation using INT, REAL, or text attributes. RIM relations containing double precision, vector, or matrix attributes cannot be loaded with this program. Furthermore, the attribute lengths must not be variable. RIM relations using variable length attributes cannot be loaded with this program.

Files

File assignments are made by equating the actual file name to the default file name, e.g. if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Input card-image file.
INPUT	Control cards. The control cards are described below.
OUTPUT	Printout. The printout is described below.

Control cards

The control cards may appear in any order and are free form with the following exceptions:

- 1) Only columns 1-80 may be used. Columns beyond 80 are ignored.
- 2) Each control card must begin and end on the same line.
- 3) Only one control card may appear on a line.

Each control card consists of a keyword followed by the control card contents.

< CONTROL CARD > ::= < KEYWORD > < CONTENT >

<u>Keyword</u>	<u>Content</u>
DATABASE	The content is the name of the RIM database. Example: DATABASE EBS82 This control card is required. Exactly one database control card must be used. It is not necessary to make the three RIM database files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the database files belong to another user or reside on magnetic tape then all three RIM database files must be made local prior to running this program.
RELATION	The content is the name of the RIM relation onto which the data are to appended. Example: RELATION STD82 This control card is required. Exactly one relation control card must be used.
FORMAT	The content is the format of the input card-image file. The format must consist of FORTRAN77 format descriptors enclosed in parentheses. Example: FORMAT(A3, I3, I4, F8.2, F9.3) This control card is required.

If needed, the format control card can be continued on succeeding lines by prefixing each continuation line with the keyword format. For example, the following is equivalent to the above example...

```
FORMAT( A3, I3, I4,  
FORMAT F8.2, F9.3 )
```

The RIM attribute types must match the format descriptors left-to-right. For example, if the format control card is `FORMAT(I3, IX, A, F6.1)` then the first RIM attribute must be of type INT, the second attribute of type TEXT, and the third attribute of type REAL. If the attribute types do not match the format descriptors then the program prints an error message and terminates.

There are several limitations on the content of the format control card.

1. Parentheses may not appear within the format specification; only the outside pair of parentheses are allowed and they must be present. Thus `FORMAT(I6, 14(I2, I3))` is not allowed.
2. The following format descriptors are allowed....
A, I, F, E, G, X, T, TL, TR, BN, BZ, SP, SS, S. All other format descriptors are disallowed.

USER The content is the RIM modify password for the relation.
Example: `USER BLUEBIRD`
This control card is optional.
This control card has the same effect as the RIM user command. If the RIM relation has a modify password then the user control card must be used. If the RIM relation does not have a modify password then the user parameter should not be used.

NOCHECK This control card turns rule checking off.
Example: `NOCHECK`
This control card is optional.
This control card has the same effect as the RIM `NOCHECK` command. If rules are defined for the RIM relation then the rules are checked as the data are loaded unless the `NOCHECK` control card is used.

COMMENT The `COMMENT` control card is ignored and can be used for documentation.

Submit File Example

In the following example the input card-image file is called STD, the RIM database is called EBS (which is contained in the FILES EBS1, EBS2, EBS3), and the RIM relation is called STDPRO. This example loads the contents of STD into the relation STDPRO.

```
/JOB
CARDRIM,T40.
USER,MICKEY,MOUSE.
CHARGE,Z83001,MICKEY.
ROUTE,OUTPUT,UN=PMELTRM,DEF.
HEADING. OYOGI BEAR
GET,CARDRIM/UN=FOCUS.
CARDRIM,TAPE1=STD.
/EOR
DATABASE EBS
RELATION STDPRO
FORMAT( A10, I4, 1X, A5, I5, 2F6.2, 2F5.2 )
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM RIMCARD

This program converts a RIM relation into a CARD-IMAGE file.

Missing values (-0-) in the RIM relation are converted to blanks in the output CARD-IMAGE file.

Limitations

This program can only be used to dump data from a RIM relation using INT, REAL, or TEXT attributes. RIM relations containing double precision, vector,

or matrix attributes cannot be dumped with this program. Furthermore, the attribute lengths must not be variable. RIM relations using variable length attributes cannot be dumped with this program.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Output CARD-IMAGE file.
INPUT	Control cards. The control cards are described below.
OUTPUT	Printout. The printout is described below.

Control Cards

The control cards may appear in any order and are free form with the following exceptions:

- 1) Only columns 1-80 may be used. Columns beyond 80 are ignored.
- 2) Each control card must begin and end on the same line.
- 3) Only one control card may appear on a line.

Each control card consists of a keyword followed by the control card contents.

< CONTROL CARD > ::= < KEYWORD > < CONTENT >

<u>KEYWORD</u>	<u>CONTENT</u>
DATABASE	The content is the name of the RIM database. Example: Database EBS82 This control card is required. Exactly one database control card must be used. It is not necessary to make the three RIM database files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the database files belong to another user or reside on magnetic tape then all three RIM data base files must be made local prior to running this program.
RELATION	The content is the name of the RIM relation. Example: Relation STD82 This control card is required. Exactly one relation control card must be used.
FORMAT	The content is the format of the output card-image file. The format must consist of FORTRAN77 format descriptors enclosed in parentheses. Example: Format (A7, I3, I4, F8.2, F9.3)

This control card is required.

If needed, the format control card can be continued on succeeding lines by prefixing each continuation line with the keyword format. For example, the following is equivalent to the above example...

```
Format (A7, I3, I4,  
Format F8.2, F9.3 )
```

The RIM attribute types must match the format descriptors left-to-right. For example, if the format control card is format (I3, 1X, A, F6.1) then the first RIM attribute must be of type INT, the second attribute of type TEXT, and the third attribute of type REAL. If the attribute types do not match the format descriptors then the program prints an error message and terminates.

There are several limitations on the content of the format control card.

1. Parentheses may not appear within the format specification; only the outside pair of parentheses are allowed and they must be present. Thus format (I6, 14(I2, I3)) is not allowed.
2. The following format descriptors are allowed...
A, I, F, E, G, X, T, TL, TR, BN, BZ, SP, SS, S.
All other format descriptors are disallowed.

COMMENT The comment control card is ignored and can be used for documentation.

Submit File Example

In the following example the RIM database is called CRABS (which is contained in the files CRABS1, CRABS2, CRABS3), the RIM relation is called REDKING, and the output CARD-IMAGE file is called LENFREQ.

```
/JOB  
RIMCARD,T35.  
USER,ROBIN,HOOD.  
CHARGE,Z83001,ROBIN.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OJOAN OF ARC  
DEFINE,LENFREQ/CT=S,M=R.  
GET,RIMCARD/UN=FOCUS.  
RIMCARD,TAPE1=LENFREQ.  
/EOR  
DATABASE CRABS  
RELATION REDKING  
FORMAT ( I3, 2I4, 3I3, I5, F8.2, F9.2, 2F5.2 )
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM F2RCAT

This program converts a FOCUS catch file into a RACEBASE catch file.

RACEBASE requires numeric vessel and cruise codes. The RACEBASE vessel and cruise numbers are derived from the FOCUS cruise name. The FOCUS cruise name must be of the form VVVCCC where VVV is the vessel number and CCC is the cruise number. The vessel and cruise numbers must be integers; the vessel number may be one, two, or three digits; the cruise number must be three digits. If the FOCUS cruise name is not in the above form the program prints an error message and terminates.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u>	
<u>File name</u>	<u>Description</u>
TAPE1	Output RACEBASE catch file.
TAPE2	Input FOCUS catch file.
OUTPUT	Printout.
	The printout is described below.

Submit File Example

F2RCAT,T15.
USER,WINNIE,POOH.
CHARGE,Z83001,WINNIE.
ROUTE,OUTPUT,UN=PMELTRM,DEF.

HEADING. OTHUMPER
DEFINE,RACECAT/CT=S,M=R.
GET,F2RCAT/UN=FOCUS.
F2RCAT,TAPE1=RACECAT,TAPE2=CATCH.

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM F2RCM

This program converts FOCUS current meter files into a R2D2 current meter user data file.

R2D2 requires the current meter time series data to occur at hourly and six-hourly intervals. The FOCUS system does not have these requirements. If the input FOCUS data do not occur at the intervals required by R2D2 then linear interpolation can be used to generate the missing data. Refer to the control cards.

Files

File assignments are made by equating the actual file name to the default file name, e.g. if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u>	
<u>File name</u>	<u>Description</u>
TAPE1	Output R2D2 current meter user data file.
TAPE2	Input FOCUS mooring file.
TAPE3	Input FOCUS meter file.
TAPE4	Input FOCUS current meter time series file (hourly).
TAPE5	Input FOCUS current meter time series file (six-hourly).
INPUT	Control cards. The control cards are described below.
OUTPUT	Printout. The printout is described below.

Control Cards

The control cards may appear in any order and are free form with the following exceptions:

- 1) Only columns 1-80 may be used. Columns beyond 80 are ignored.
- 2) Each control card must begin and end on the same line.
- 3) Only one control card may appear on a line.

Each control card consists of a keyword followed by the control card contents.

< CONTROL CARD > ::= < KEYWORD > < CONTENT >

<u>Keyword</u>	<u>Content</u>
----------------	----------------

Submit File Example

R2D2 requires the output user data file to be direct access.

```

/JOB
F2RCM,T50.
USER,WATER,RAT.
CHARGE,Z83001,WATER.
ROUTE,OUTPUT,UN=PMELTRM,DEF.
HEADING. OTOADY
DEFINE,CMUDF/CT=S,M=R.
GET,F2RCM/UN=FOCUS.
F2RCM,TAPE1=CMUDF,TAPE2=MOORING,TAPE3=METER,TAPE4=CM286,TAPE5=CM35.
/EOR
+++ CONTROL CARDS GO HERE +++

```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The data and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM F2RHAUL

This program converts a FOCUS haul file into a RACEBASE haul file.

RACEBASE requires numeric vessel and cruise codes. The RACEBASE vessel and cruise numbers are derived from the FOCUS cruise name. The FOCUS cruise name must be of the form VVVCCC where VVV is the vessel number and CCC is the cruise number. The vessel and cruise numbers must be integers; the vessel number may be one, two, or three digits; the cruise number must be three digits. If the FOCUS cruise name is not in the above form the program prints an error message and terminates.

NOTE: The depths in the FOCUS haul file must be in meters. This program converts depths in meters to depths in fathoms (the converted depths are rounded to the nearest fathom).

Files

File assignments are made by equating the actual file name to the default file name, e.g. if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u>	<u>Description</u>
TAPE1	Output RACEBASE haul file.
TAPE2	Input FOCUS haul file.
OUTPUT	Printout. The printout is described below.

Submit file example

```
F2RHAUL,T10.  
USER,WATER,RAT.  
CHARGE,Z83001,WATER.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OTOADY  
DEFINE,RACEHAL/CT=S,M=R.  
GET,F2RHAUL/UN=FOCUS.  
F2RHAUL,TAPE1=RACEHAL,TAPE2=HAUL.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM F2RLEN

This program converts a FOCUS length file into a RACEBASE length file.

RACEBASE requires numeric vessel and cruise codes. The RACEBASE vessel and cruise numbers are derived from the FOCUS cruise name. The FOCUS cruise name must be of the form VVCCC where VVV is the vessel number and CCC is the cruise number. The vessel and cruise numbers must be integers; the vessel number may be one, two, or three digits; the cruise number must be three digits. If the FOCUS cruise name is not in the above form the program prints an error message and terminates.

Files

File assignments are made by equating the actual file name to the default file name, e.g. if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default File name</u>	<u>Description</u>
TAPE1	Output RACEBASE haul file.
TAPE2	Input FOCUS haul file.
OUTPUT	Printout. The printout is described below.

Submit file example

```
F2RLEN,T40
USER,WINNIE,POOH.
CHARGE,Z83001,WINNIE.
ROUTE,OUTPUT,UN=PMELTRM,DEF.
HEADING. OTHUMPER
DEFINE,RACELEN/CT=S,M=R.
GET,F2RLEN/UN=FOCUS.
F2RLEN,TAPE1=RACELEN,TAPE2=LENGTH
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM F2RPG

This program converts FOCUS pressure gauge files into a R2D2 pressure gauge user data file.

R2D2 requires the pressure gauge time series data to occur at hourly and six-hourly intervals. The FOCUS system does not have these requirements. If the input FOCUS data do not occur at the intervals required by R2D2 then linear interpolation can be used to generate the missing data. Refer to the control cards.

Files

File assignments are made by equating the actual file name to the default file name, e.g. if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Output R2D2 pressure gauge user data file.
TAPE2	Input FOCUS mooring file.
TAPE3	Input FOCUS meter file.
TAPE4	Input FOCUS pressure gauge time series file (hourly).
TAPE5	Input FOCUS pressure gauge time series file (six-hourly).
INPUT	Control cards. The control cards are described below.
OUTPUT	Printout. The printout is described below.

Control cards

The control cards may appear in any order and are free form with the following exceptions:

- 1) Only columns 1-80 may be used. Columns beyond 80 are ignored.
- 2) Each control card must begin and end on the same line.
- 3) Only one control card may appear on a line.

Each control card consists of a keyword followed by the control card contents.

< CONTROL CARD > ::= < KEYWORD > < CONTENT >

<u>KEYWORD</u>	<u>CONTENT</u>
----------------	----------------

Submit File Example

R2D2 requires the output user data file to be direct access.

```
/JOB
F2RPG,T50.
USER,WATER,RAT.
CHARGE,Z83001,WATER.
ROUTE,OUTPUT,UN=PMELTRM,DEF.
HEADING. OTOADY
DEFINE, PGUDF/CT=S,M=R.
GET,F2RPG/UN=FOCUS.
F2RPG,TAPE1=PGUDF,TAPE2=MOORING,TAPE3=METER,TAPE4=PG286,TAPE5=PG35.
/EOR
↓ ↓ ↓ GAP CONTROL CARDS GO HERE ↓ ↓ ↓
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM F2SPEC

This program converts a FOCUS specimen file into a RACEBASE specimen file.

RACEBASE requires numeric vessel and cruise codes. The RACEBASE vessel and cruise numbers are derived from the FOCUS cruise name. The FOCUS cruise name must be of the form VVVCCC where VVV is the vessel number and CCC is the cruise number. The vessel and cruise numbers must be integers; the vessel number may be one, two, or three digits; the cruise number must be three digits. If the FOCUS cruise name is not in the above form the program prints an error message and terminates.

Files

File assignments are made by equating the actual file name to the default file name, e.g., if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Output RACEBASE specimen file.
TAPE2	Input FOCUS specimen file.
OUTPUT	Printout. The printout is described below.

Submit File Example

```
F2RSPEC,T30.  
USER,WINNIE,POOH.  
CHARGE,Z83001,WINNIE.  
ROUTE,OUTPUT,UN=PMELTRM,DEF.  
HEADING. OTHUMPER  
DEFINE,RACESPE/CT=S,M=R.  
GET,F2RSPEC/UN=FOCUS.  
F2RCM,TAPE1=RACESPE,TAPE2=SPECIMEN.
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The date and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

PROGRAM F2RSTD

This program converts FOCUS STD files into a R2D2 STD user data file.

R2D2 requires that the depths occur at one meter intervals. The FOCUS system does not have this requirement. If the FOCUS STD data are not at one meter intervals then linear interpolation can be used to generate the missing data. Refer to the GAP control card.

Files

File assignments are made by equating the actual file name to the default file name, e.g. if TAPE1 is the default file name and MYFILE is the actual file name then the file assignment is TAPE1=MYFILE. File assignments follow the program name, are separated by commas, and may appear in any order. Refer to the notes section below for more information on files.

<u>Default</u> <u>File name</u>	<u>Description</u>
TAPE1	Output R2D2 STD user data file.
TAPE2	Input FOCUS cruise file.
TAPE3	Input FOCUS cast file.
TAPE4	Input FOCUS STD profile file.
INPUT	Control cards. The control cards are described below.
OUTPUT	Printout. The printout is described below.

Control Cards

The control cards may appear in any order and are free form with the following exceptions:

- 1) Only columns 1-80 may be used. Columns beyond 80 are ignored.
- 2) Each control card must begin and end on the same line.
- 3) Only one control card may appear on a line.

Each control card consists of a keyword followed by the control card contents.

< CONTROL CARD > ::= < KEYWORD > < CONTENT >

<u>Keyword</u>	<u>Content</u>
GAP	The content is the maximum distance, in meters, over which interpolation will be performed. Example: GAP 5 This control card is optional. If the GAP control card is not used then if a cast has a gap in the recorded depths (i.e. the depths are not at one meter intervals) then the cast will be bypassed, i.e. the cast will not appear in the output R2D2 STD user data file. A message is printed if a cast is bypassed.

If the GAP control card is used then if a cast has a gap in the recorded depths and the gap is less than or equal to the value specified on the control card then linear interpolation is used to fill in the missing data values. If a cast has a gap in the recorded depths and the gap is greater than the value specified on the control card then the cast is bypassed and a message is printed.

COMMENT The comment control card is ignored and can be used for documentation.

Submit File Example

R2D2 requires the STD user data file to be direct access.

```
/JOB
F2RSTD,T45.
USER,WATER,RAT.
CHARGE,Z83001,WATER.
ROUTE,OUTPUT,UN=PMELTRM,DEF.
HEADING. OTOADY
DEFINE,STDUDF/CT=S,M=R.
GET,F2RSTD/UN=FOCUS.
F2RSTD,TAPE1=STDUDF,TAPE2=CRUISE.TAPE3=CAST,TAPE4=PROFILE.
/EOR
GAP 2
```

Printout

The printout consists of a few lines (less than a page) which summarize the execution of the program. The data and time, file names, record counts, and error messages, if any, are printed. The contents of the input and output files are not printed.

Notes

1. Input files
 - A. It is not necessary to make the input files local before running this program. If the files are not local then the program will make them local. There are exceptions, however. If the input files belong to another user or reside on a magnetic tape then the files must be made local prior to running this program.
 - B. This program rewinds the input files before processing but does not rewind the input files after processing.
2. Output files
 - A. When the program ends the output files are local. If the output files are indirect access then it is the responsibility of the user to make them permanent. Direct access files are always permanent.
 - B. This program does not rewind the output files, either before or after processing.

APPENDIX E.
FOCUS ADVISORY COMMITTEE

<u>NAME</u>	<u>ORGANIZATION/DIVISION</u>
*David McConaghy	PMEL
**Murray Hayes	NWAFRC/RACE
**Jim Schumacher	PMEL
Sam Bledsoe	NWAFRC/OFIS
Dale Bretschneider	PMEL
Judy Gray	PMEL
Jim Ingraham	NWAFRC/REFM
Douglas McLain	Pacific Environmental Group, Monterey
Michael McPhail	NWAFRC/RACE
Paul Moen	PMEL
Jim Overland	PMEL
Kenneth Parker	IPHC
Ron Reed	PMEL
Gary Smith	NWAFRC/RACE
Nancy Pola Swan	NWAFRC/REFM
Bill Turnbull	PMEL

*Committee chairman.

**Scientific coordinator.