GC
58
.H33
1972

National
Oceanographic
Data
Center

NODC

Salinity-Temperature-Depth (STD)

OUTPUT System

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National Oceanic &
Atmospheric Administration
US Dept of Commerce

NODC

Salinity-Temperature-Depth (STD)

OUTPUT System

by

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Data Bases and Systems Branch
Development Division

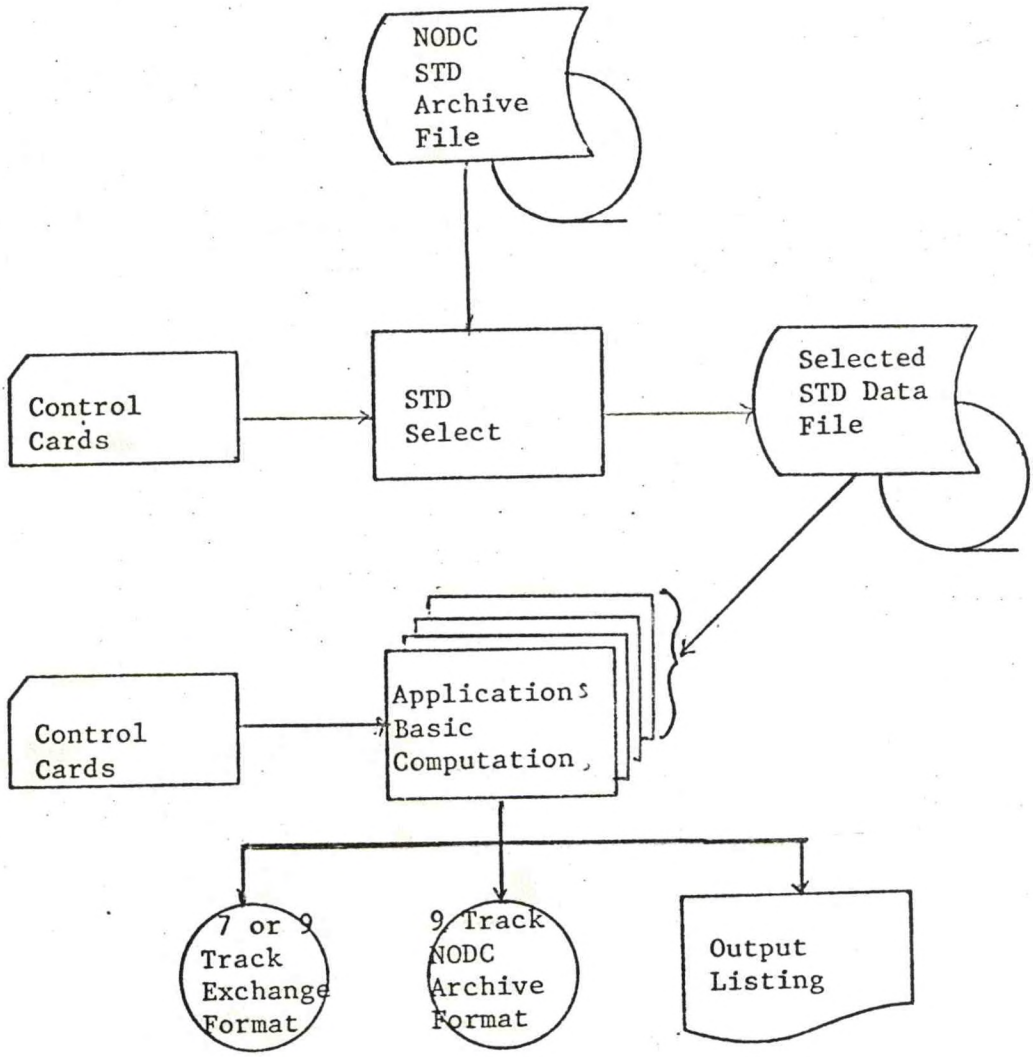
October 1972

CONTENTS

INTRODUCTION

The NODC STD OUTPUT SYSTEM has been designed to operate from data generated by the NODC STD FILE Maintenance System, whether this data be the primary geo-sorted data base or a special purpose time series file. The source for the NODC Primary STD file (file 61) will be composed of serially processed high resolution data (<5 m depth intervals) from a data logger or equivalent output. The processing done by the originator must include smoothing, spike removal, and any other adjustment intended to achieve Nansen cast accuracy. In the NODC Primary STD file, these high resolution data will be stored in "Flexure" point mode with a reproducibility along linear segments between flexure points of $\pm.03°C$ of temperature and $\pm.04°/_{oo}$ of salinity of the original digital values at corresponding depths. In addition to depth, temperature, and salinity, other parameters obtained with an STD lowering will be accommodated. This system will provide NODC with the immediate yet basic capability of selecting, computing dynamics and sound velocity, and putting out the results on magnetic tape and/or listings. The STD output system will be composed of sub-programs which will be utilized in a modular fashion to effectively obtain the desired outputs. This method will give NODC a cost-effective flexibility allowing for specified selection, computation and/or output modules to be added in the future without any changes in the existing sub-programs.

STD OUTPUT SYSTEM FLOWCHART



STD SELECTION PROGRAM

INPUT REQUIREMENTS

1. Any STD data in the NODC file format residing either on disk as the current working file or on tape as the geosort file. This includes tape files that are not considered as the primary data base (File 61).

2. Control cards to specify selection requirements.

OUTPUT REQUIREMENTS

1. Selected STD data in the NODC format on tape or disk.

FORMATS

1. STD file format (attached).

2. Control card format.

PROCESSING SPECIFICATIONS

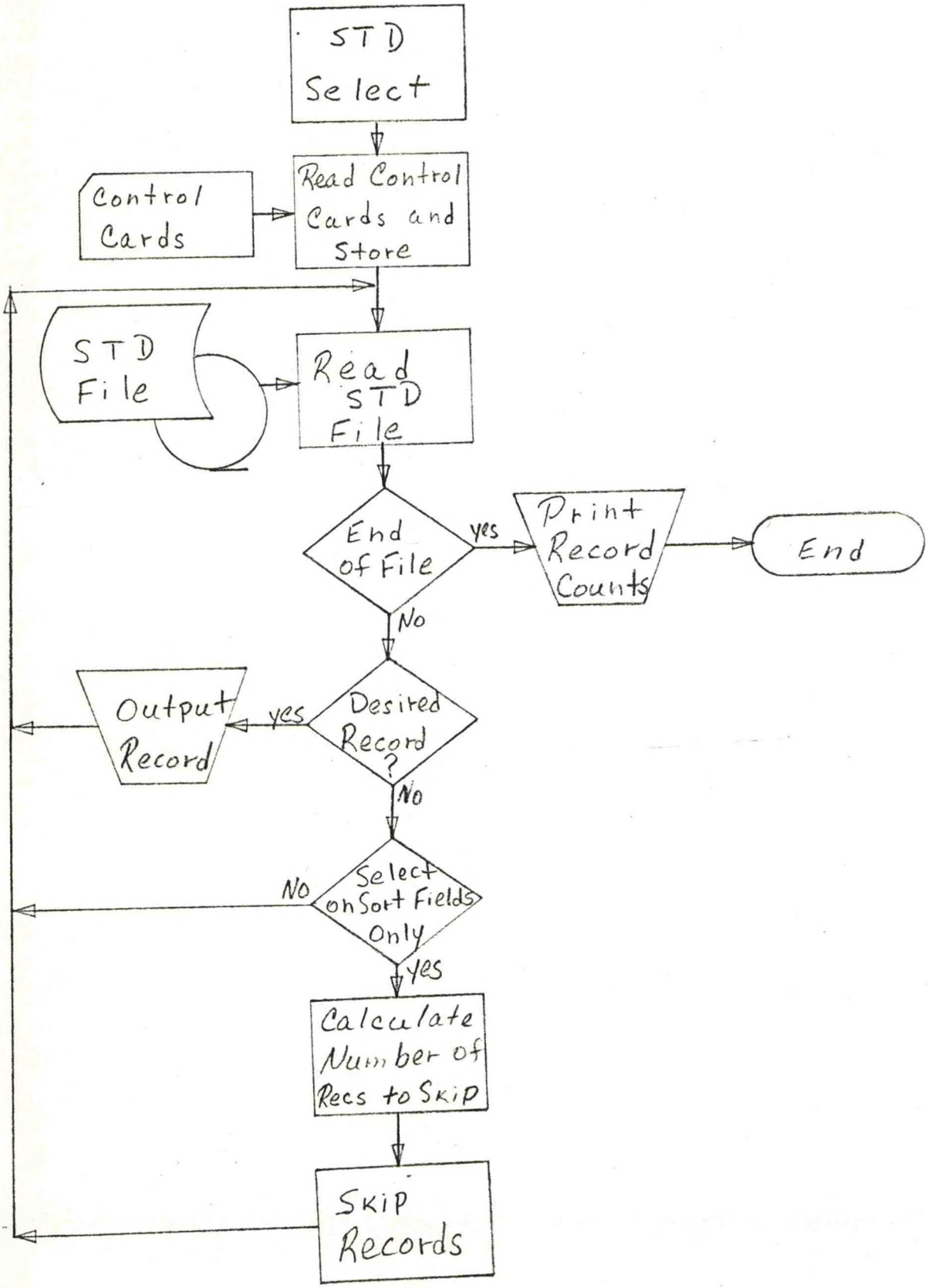
A. Now

This module selects STD data for subsequent applications using the sort fields as primary arguments and any parameter or combinations of parameters in the header record (Record No. 1) as secondary arguments. The selected casts (the header record and the following data record) will be put out on tape or disk for subsequent processing.

B. Near Future

Subsequent modules would select any portion of an STD cast using parameters in the header record and data record as arguments. In addition, the capability of the selected data to be reformatted into a user defined format or a format necessary for input to some applications routine (i.e., plots) will be available.

STD SELECTION LOGIC FLOWCHART



STD OUTPUT PROGRAMS

INPUT REQUIREMENTS

1. STD data in the NODC File Format.

2. Control Cards to specify what should be computed and what is the mode of the output.

OUTPUT REQUIREMENTS

1. STD File Format (Option).

2. Printout (Option) (Attached).

3. User specified format (Option).

4. Or combination of any of the above.

PROCESSING SPECIFICATIONS

The Basic application program should be composed of a variable path of logical calls to subprograms through the use of control cards to compute and put out the desired product.

A. The immediate computations required are:

   1. Sound velocity

      a. Using observed pressure

      b. Using computed pressure

   2. Dynamic Depth

   The equations are the same as those used in the SDII system.

   3. Printout (first four casts and last cast is in option).

   4. Tape character or exchange format.

   5. Combination of the above.

B. Compute modules having the next highest priority for completion.

1. Compute parameters at desired intervals of depth, temperature, salinity, or sigma-t.

a. Depth - Linearly interpolated associated parameters for depth intervals ranging from 1 to 100 meters.

b. Temperature - Linearly interpolate the associated parameters for temperature intervals ranging from 0.10 to 2.00°C.

c. Salinity - Linearly interpolate the associated parameters for salinity intervals ranging from 0.05 to .50%.

d. Sigma-t - Linearly interpolate the associated parameters for σt intervals ranging from .10 to 1.00.

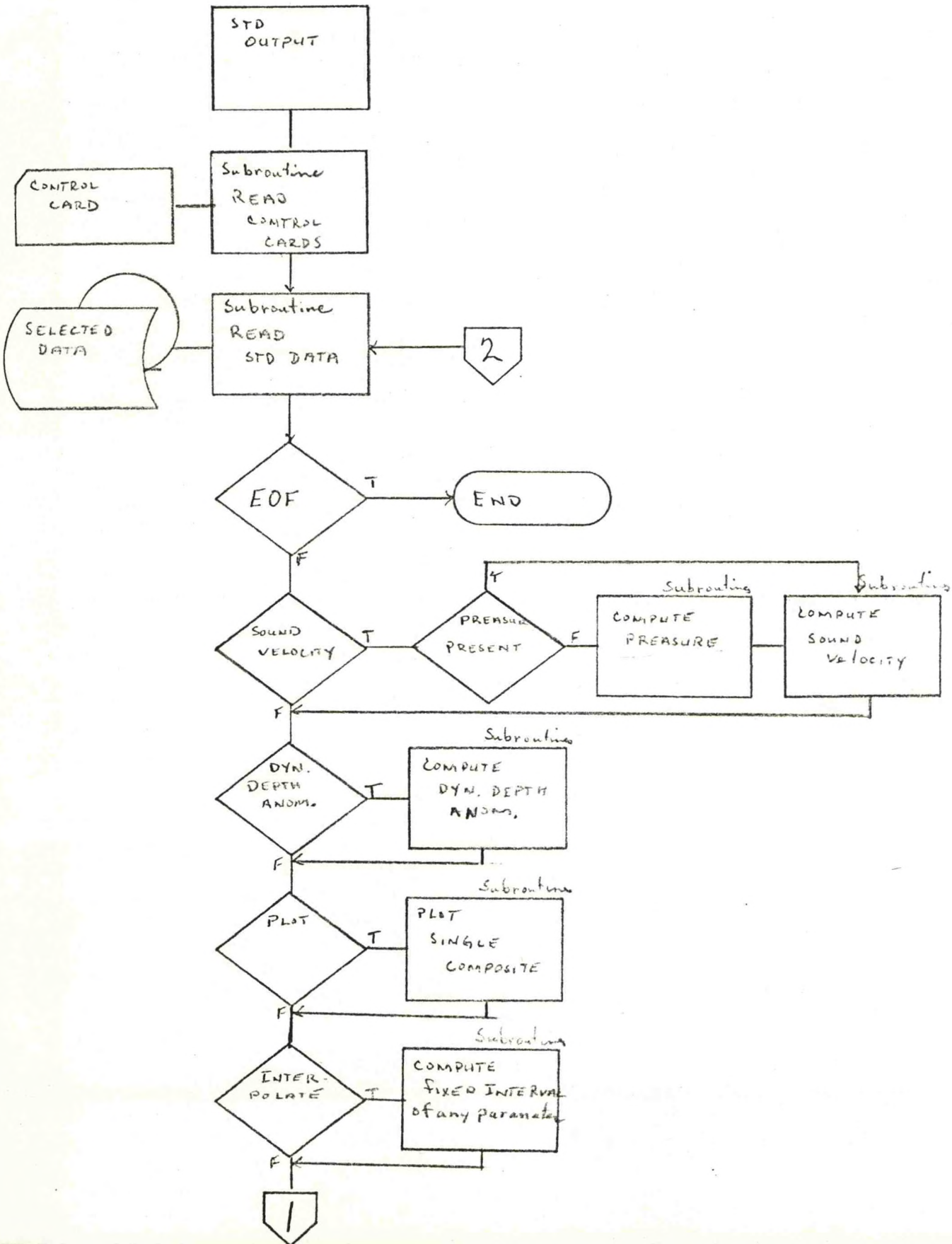
2. Plot

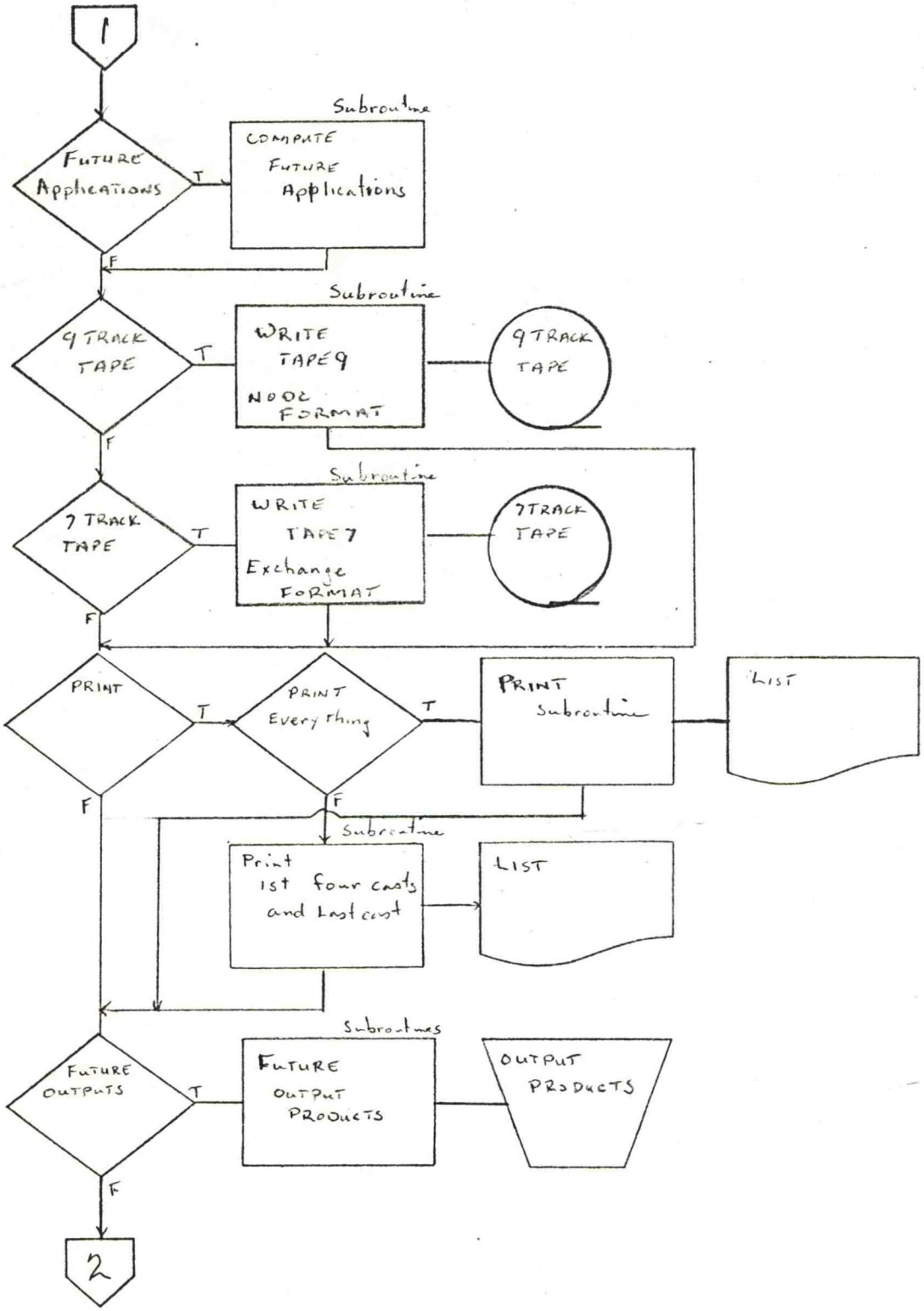
a. Single plots

b. Composite

3. Compute STD records to the 99 point Canadian System, Included in the maximum of 99 depth levels are the IAPSO standard depths.

STD OUTPUT LOGIC FLOW




1
Subroutine
FUTURE Applications
T
COMPUTE FUTURE Applications
F
Subroutine
9 TRACK TAPE
T
WRITE TAPE 9
NODE FORMAT
9 TRACK TAPE
F
Subroutine
7 TRACK TAPE
T
WRITE TAPE 7
Exchange FORMAT
7 TRACK TAPE
F
PRINT
T
PRINT Everything
T
PRINT Subroutine
LIST
F
F
Subroutine
Print 1st four costs and Last cost
LIST
Subroutines
FUTURE OUTPUTS
T
FUTURE OUTPUT PRODUCTS
OUTPUT PRODUCTS
F
2

A P P E N D I X A

Description of NODC Format

for

Vertical Profiling Devices

DESCRIPTION OF NODC FORMAT
FOR VERTICAL PROFILING DEVICES

First Record (Header)

POSITIONS/BYTES 1-2 — DECK NUMBER

The number identifying the STD file is 61.

POSITION/BYTE 3 — BLANK

This field is blank.

POSITIONS/BYTES 4-6 — NODC COUNTRY CODE

This 3-character code represents the nationality of the institution sponsoring or operating the platform during the particular survey. The first character is blank at present, but available for future expansion.

POSITIONS/BYTES 7-11 — NODC REFERENCE IDENTITY NUMBER

The Reference Identity Number is assigned by the Data Center for processing purposes to identify data taken during a particular cruise or observational period.

POSITIONS/BYTES 12-14 — CONSECUTIVE NUMBER

Casts are numbered consecutively within a cruise and start at 001.

POSITIONS/BYTES 15-16 (binary half word) — RECORD NUMBER

Consecutive Record Number within a cast - '001' for this record.

POSITIONS/BYTES 17-18 — OCEAN AREA

See appendix.

POSITIONS/BYTES 19-22 — TEN DEGREE SQUARE CANADIAN

See appendix.

POSITIONS/BYTES 23-24 — ONE DEGREE SQUARE CANADIAN

See appendix.

POSITION/BYTE 25 — FIVE DEGREE SQUARE

See appendix.

POSITIONS/BYTES 26-27 — TWO DEGREE SQUARE

See appendix.

POSITION/BYTE 28 LATITUDE HEMISPHERE

'N' or 'S' denotes hemisphere where observations were made.

POSITIONS/BYTES 29-30 LATITUDE DEGREES

Whole degrees of latitude at which observations were made.

POSITIONS/BYTES 31-32 LATITUDE MINUTES

Continuation of latitude location.

POSITION/BYTE 33 LATITUDE TENTHS OF MINUTES

Continuation of latitude location.

POSITION/BYTE 34 LONGITUDE HEMISPHERE

'E' or 'W' denotes hemisphere where observations were made.

POSITIONS/BYTES 35-37 LONGITUDE DEGREES

Whole degrees of longitude at which observations were made.

POSITIONS/BYTES 38-39 LONGITUDE MINUTES

Continuation of longitude location.

POSITION/BYTE 40 LONGITUDE TENTHS OF MINUTES

Continuation of longitude location.

POSITIONS/BYTES 41-42 YEAR

The last two digits of the year during which cast was taken.

POSITIONS/BYTES 43-44 MONTH

Continuation of date of observation. 01-12 represents the month.

POSITIONS/BYTES 45-46 DAY

Continuation of date. 01-31 appear in this field.

POSITIONS/BYTES 47-48 HOURS

Time of observation to the hour; 00-23 may be entered in this field.

POSITIONS/BYTES 49-50 MINUTES

Continuation of time. A number from 00-59 appears here.

POSITIONS/BYTES 51-56 NODC PLATFORM CODE

A 6-character alpha-numeric code, representing the platform from which the cast was taken.

POSITIONS/BYTES 57-61 DEPTH TO BOTTOM

The depth to the bottom of the ocean at the location where observations were made.

POSITIONS/BYTES 62-64 MINIMUM DEPTH

The first level with a valid depth temperature and salinity reported to the nearest whole meter.

POSITIONS/BYTES 65-69 MAXIMUM DEPTH

The deepest valid observed parameter reported to the nearest whole meter.

POSITIONS/BYTES 70-73 VERTICAL SAMPLE SPACING

The average spacing between depth intervals reported in centimeters.

POSITIONS/BYTES 74-81 ORIGINATOR'S CRUISE NUMBER

The cruise number assigned by the originator is retained in the NODC STD file.

POSITIONS/BYTES 82-86 ORIGINATOR'S STATION NUMBER

The originator's station (cast) number is retained in the NODC STD file.

POSITION/BYTE 87 DATA USE CODE

This is an NODC code indicator for data exchange. It is used for internal housekeeping purposes only.

POSITION/BYTE 88 SOURCE OF DATA CODE

A digit from 1-5 represents method by which data were obtained. Code is as follows: 1 - data logger, 2 - paper tape, 3 - digitized analog records, 4 - digitized analog signals, 5 - Nansen cast.

POSITION/BYTE 89 MODE OF DATA CODE

This code signifies type of data: 1 - serial data during descent, 2 - serial data during ascent, 3 - time series at fixed depth range, 4 - time series during descent.

POSITION/BYTE 90 TREATMENT OF DATA CODE

The relationship between data in this cast and the original data is given by this code: 0 - no compression, 1 - NODC compression, 2 - other.

POSITIONS/BYTES 91-94 FREE FIELD

These positions are reserved for future inventory requirements.

POSITIONS/BYTES 95-96 (binary half word) NUMBER OF PARAMETERS

This is the number of parameters represented in the following STD data.

POSITIONS/BYTES 97-98 (binary half word) NUMBER OF COMMENTS

This field is computed and represents the number of bytes in the comment portion of the record.

POSITIONS/BYTES 99-100 (binary half word) RECORD COUNT

The total number records for this STD cast. Record count = Header Record + the No. of Data Records.

POSITIONS/BYTES 101-106 PARAMETER CODE

This is a numeric code representing the parameter of the first data value for the first depth level or time interval.

POSITIONS/BYTES 107-108 PARAMETER UNITS

This numeric code indicates the units of the first parameter.

POSITION/BYTE 109 PARAMETER SCALE

This single digit number (N) represents the scaling factor of the parameter units. It describes the location of the decimal point within the integer parameter value (i.e., Real Value = Integer X10-N).

POSITION/BYTE 110 PERCENT PRESENT

Enter 0-9 to indicate the percentage of the total that this parameter is present within the cast.

POSITIONS/BYTES 111-120 SECOND PARAMETER INFORMATION

Similarly as above these ten bytes are used to describe the second parameter.

POSITION/BYTE 91+(N*10) to 100+(N*10) Nth PARAMETER INFORMATION

This is the location of the description of the last parameter where N equals the number of parameters. (POSITIONS/BYTES 95-96).

POSITION/BYTE 101+(10*N) to 100+(10*N)+C COMMENTS

This is the location of the comments for this cast. Where N = the number of parameters and C = the number of bytes of comments. In this portion of the header record 800 bytes are available for recording and storing any pertinent information regarding the data. Desirable information would be references to publications and procedures concerning the obtaining and reduction of these data. Infromation describing precisions and occurances of the measured variable and any other comments that will aid the NODC and future users of these data. At the end of the comments a dollar sign ($) must be entered.

The perferred order of the parameter descriptors and therefore the data value would be as follows:

Time, Depth Temperature Salinity Sigma-T, Sound Velocity

If any other parameter such as oxygen or ambient light is reported, it will be entered after sound velocity. If any of the above listed parameters are absent the ones to the right of the missing parameter will be shifted to the left. A blank parameter information field is not permitted.

DESCRIPTION OF THE NODC STD FORMAT

Seconds and subsequent Data Records

POSITIONS/BYTES 1-14 FIELD

These fields are the same as Record No. 1.

POSITIONS/BYTES 15-16 (binary) RECORD NUMBER

Consecutive record number within a STD cast. 2 is entered for the first data record, 3 for the second, etc., until the cast is completely described.

POSITIONS/BYTES 17-50 FIELDS

These fields are the same as Record No. 1.

POSITIONS/BYTES 51-52 (binary half word) NO. DEPTH LEVELS

The number of depth levels reported in this record is entered here. The number of levels is dependent upon the number of parameters observed. In most cases the number of levels will not be less than 68 or more than 340. It is conceivable that the last of the cast may have less than 68 because there is not enough data remaining to fill the entire 3456 byte record.

POSITIONS/BYTES 53-56 PARAMETER NO. 1

This is the value of the first parameter. It is reported as binary integer. The parameter name, and its units and scaling for this value is indicated by its corresponding parameter code, parameter units and parameters scale fields in the left to right scan of byte position 101-110 of the Header Record.

POSITIONS/BYTES 57-60 PARAMETER NO. 2

This is the binary value of the second parameter whose name, units and scaling is indicated by the corresponding non-blank parameter code, parameter units, and parameter scale fields in a left to right scan of byte position 111-120 of the Header Record.

POSITIONS/BYTES 61-92 PARAMETER VALUES (3 thru 10)

There are a maximum of 10 parameter values of 4 bytes each for each depth level. Immediately following the parameter values of a given depth level are the parameter values of the next level. This arrangement continues for a maximum of 68 levels and 10 parameter values/level.

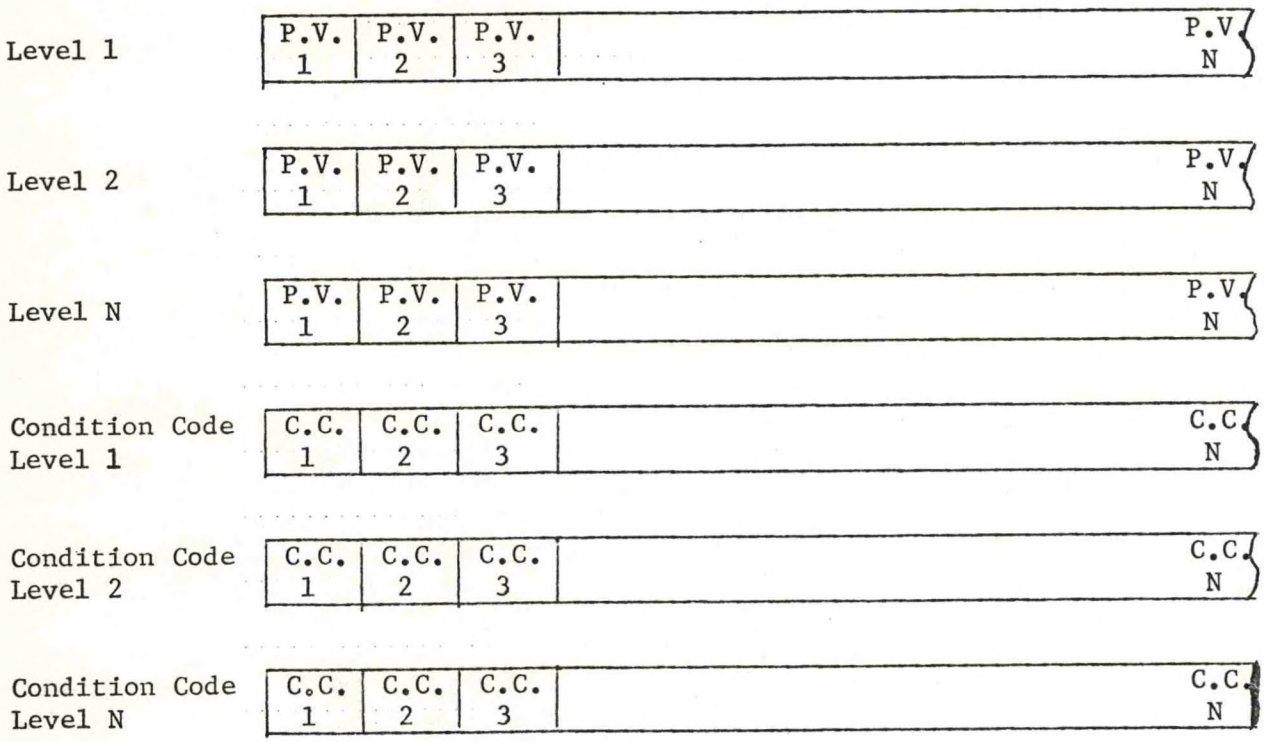
CONDITION CODES

Following the parameter values are the condition codes, one for each parameter, arranged in the same order as the corresponding parameter values. These one bute binary fields are used to denote the parameters for such things as plausible data or interpolated value, etc.

The following codes and their meaning applies to all parameter condition codes.

Parameter Condition Codes - 1 Byte Binary Number

Code	Meaning
1	Parameter value is absent at this level
2	Observed value
3	Interpolated from adjacent observed values
4	Interpolated from Nansen cast data
5	Plausible data
6	Doubtful data (exceeds range)
7	Instability (σ t only)



The above arrangement of parameters values and condition codes exists as a logical record with a maximum data length of 3452 bytes (not including record descriptor bytes).

NOTE:

The maximum size of a Data Record is 3452 bytes, 3400 bytes being used for the parameters reported in a complete record.

Parameters Reported	No. of Levels
2 at 5 bytes each = 10 bytes	3400 ÷ 10 = 340
3 at 5 bytes each = 15 bytes	= 226
4 at 5 bytes each = 20 bytes	= 170
5 at 5 bytes each = 25 bytes	= 136
6 at 5 bytes each = 30 bytes	= 113
7 at 5 bytes each = 35 bytes	= 97
8 at 5 bytes each = 40 bytes	= 85
9 at 5 bytes each = 45 bytes	= 75
10 at 5 bytes each = 50 bytes	= 68

The Data Record is repeated as often as necessary to fully describe the STD cast with the record number being increased by one for each record.

A P P E N D I X B

Description of NODC Exchange Format

for

Vertical Profiling Devices

DESCRIPTION OF NODC EXCHANGE FORMAT

FOR VERTICAL PROFILING DEVICES

First Record (Header)

POSITIONS/BYTES 1-2 DECK NUMBER

The number identifying the STD file is 61.

POSITIONS/BYTES 3-5 NODC COUNTRY CODE

This 3-character code represents the nationality of the institution sponsoring or operating the platform during the particular survey. The first character is blank at present, but available for future expansion.

POSITIONS/BYTES 6-10 NODC REFERENCE IDENTITY NUMBER

The Reference Identity Number is assigned by the Data Center for processing purposes to identify data taken during a particular cruise or observational period.

POSITIONS/BYTES 11-13 CONSECUTIVE NUMBER

Casts are numbered consecutively within a cruise and start at 001.

POSITIONS/BYTES 14-16 RECORD NUMBER

Consecutive Record Number within a cast - 'ool' for this record.

POSITIONS/BYTES 17-18 OCEAN AREA

See appendix.

POSITIONS/BYTES 17-18 TEN DEGREE SQUARE CANADIAN

See appendix.

POSITIONS/BYTES 23-24 ONE DEGREE SQUARE CANADIAN

See appendix.

POSITION/BYTE 25 FIVE DEGREE SQUARE

See appendix.

POSITIONS/BYTES 26-27 TWO DEGREE SQUARE

See appendix.

POSITION/BYTE 28 LATITUDE HEMISPHERE

'N' or 'S' denotes hemisphere where observations were made.

POSITIONS/BYTES 29-30 LATITUDE DEGREES

Whole degrees of latitude at which observations were made.

POSITIONS/BYTES 31-32 LATITUDE MINUTES

Continuation of latitude location.

POSITION/BYTE 33 LATITUDE TENTHS OF MINUTES

Continuation of latitude location.

POSITION/BYTE 34 LONGITUDE HEMISPHERE

'E' or 'W' denotes hemisphere where observations were made.

POSITIONS/BYTES 35-37 LONGITUDE DEGREES

Whole degrees of longitude at which observations were made.

POSITIONS/BYTES 38-39 LONGITUDE MINUTES

Continuation of longitude location.

POSITION/BYTE 40 LONGITUDE TENTHS OF MINUTES

Continuation of longitude location.

POSITIONS/BYTES 41-42 YEAR

The last two digits of the year during which cast was taken.

POSITIONS/BYTES 43-44 MONTH

Continuation of date of observations. 01-12 represents the month.

POSITIONS/BYTES 45-46 DAY

Continuation of date. 01-31 appears in this field.

POSITIONS/BYTES 47-48 HOURS

Time of observation to the hour; 00-23 may be entered in this field.

POSITIONS/BYTES 49-50 MINUTES

Continuation of time. A number from 00-59 appears here.

POSITIONS/BYTES 51-56 NODC PLATFORM CODE

A 6-character alpha-numeric code, representing the platform from which the cast was taken.

POSITIONS/BYTES 57-61 DEPTH TO BOTTOM

The depth to the bottom of the ocean at the location where observations were made.

POSITIONS/BYTES 62-64 MINIMUM DEPTH

The first level with a valid depth temperature and salinity reported to the nearest whole meter.

POSITIONS/BYTES 65-69 MAXIMUM DEPTH

The deepest valid observed parameter reported to the nearest whole meter.

POSITIONS/BYTES 70-73 VERTICAL SAMPLE SPACING

The average spacing between depth intervals reported in centimeters.

POSITIONS/BYTES 74-81 ORIGINATOR'S CRUISE NUMBER

The cruise number assigned by the originator is retained in the NODC STD file.

POSITIONS/BYTES 82-86 ORIGINATOR'S STATION NUMBER

The originator's station (cast) number is retained in the NODC STD file.

POSITION/BYTE 87 DATA USE CODE

This is an NODC code indicator for data exchange. It is used for internal housekeeping purposes only.

POSITION/BYTE 88 SOURCE OF DATA CODE

A digit from 1-5 represents method by which data were obtained. Code is as follows: 1 - data logger, 2 - paper tape, 3 - digitized analog records, 4 - digitized analog signals, 5 - Nansen cast.

POSITION/BYTE 89 MODE OF DATA CODE

This code signifies type of data: 1 - serial data during descent, 2 - serial data during ascent, 3 - time series at fixed depth range, 4 - time series during descent.

POSITION/BYTE 90 TREATMENT OF DATA CODE

The relationship between data in this cast and the original data is given by this code: 0 - no compression, 1 - NODC compression, 2 - other.

POSITIONS/BYTES 91-92 NUMBER OF PARAMETERS

This is the number of parameters represented in the following STD data.

POSITIONS/BYTES 93-95 NUMBER OF COMMENTS

This field is computed and represents the number of bytes in the comment portion of the record.

POSITIONS/BYTES 96-98 RECORD COUNT

The total number of records for this STD cast. Record count = Header Record + the No. of Data Records.

POSITIONS/BYTES 99-100 BLANK

POSITIONS/BYTES 101-106 PARAMETER CODE

This is a numeric code representing the parameter of the first data value for the first depth level or time interval.

POSITIONS/BYTES 107-108 PARAMETER UNITS

This numeric code indicates the units of the first parameter.

POSITION/BYTE 109 PARAMETER SCALE

This single digit number (N) represents the scaling factor of the parameter units. It describes the location of the decimal point within the integer parameter value (i.e., Real Value = Integer X10-N).

POSITION/BYTE 110 PERCENT PRESENT

Enter 0-9 to indicate the percentage of the total that this parameter is present within the cast.

POSITIONS/BYTES 111-120 SECOND PARAMETER INFORMATION

Similarly as above these ten bytes are used to describe the second parameter.

POSITION/BYTE 91 = (N*10) to 100 = (N*10) Nth PARAMETER INFORMATION

This is the location of the description of the last parameter where N equals the number of parameters. (POSITIONS/BYTES 91-92).

POSITION/BYTE 101 + (10*N) to 100 + (10*N) COMMENTS

This is the location of the comments for this cast. Where N = the number of parameters and C = the number of bytes of comments. In this portion of the header record 800 bytes are available for recording and storing any pertinent information regarding the data. Desirable information would be references to publications and procedures concerning the obtaining and reduction of these data. Information describing precisions and occurrences of the measured variable and any other comments that will aid the NODC and future users of these data. At the end of the comments a dollar sign ($) must be entered.

The preferred order of the parameter descriptors and therefore the data value would be as follows:

Time, Depth Temperature Salinity Sigma-T, Sound Velocity

If any other parameter such as oxygen or ambient light is reported, it will be entered after sound velocity. If any of the above listed parameters are absent the ones to the right of the missing parameter will be shifted to the left. A blank parameter information field is not permitted.

DESCRIPTION OF THE NODC STD EXCHANGE FORMAT

Second and Subsequent Data Records

POSITIONS/BYTES 1-13 FIELD

These fields are the same as Record No. 1.

POSITIONS/BYTES 14=16 RECORD NUMBER

Consecutive record number within a STD cast. 2 is entered for the first data record, 3 for the second, etc., until the cast is completely described.

POSITIONS/BYTES 17-50 FIELDS

These fields are the same as Record No. 1

POSITIONS/BYTES 51-52 NUMBER OF DEPTH LEVELS

The number of depth levels reported in this record is entered here. The maximum number of levels is nine nine (99). It is conceivable that the last record of the cast may have less than 79 because there is not enough data remaining to fill the entire record.

POSITIONS/BYTES 53-60 PARAMETER NO. 1

This is the value of the first parameter. It is reported as character integer. The parameter name, and its units and scaling for this value is indicated by its corresponding parameter code, parameter units and parameters scale fields in the left to right scan of byte position 101-110 of the Header Record.

POSITIONS/Bytes 61-68 PARAMETER NO. 2

This is the character value of the second parameter whose name, units and scaling is indicated by the corresponding non-blank parameter code, parameter units, and parameter scale fields in a left to right scan of byte position 111-120 of the Header Record.

POSITIONS/BYTES 69-132 PARAMETER VALUES (3 thru 10)

There are a maximum of 10 parameter values of 8 bytes each for each depth level. Immediately following the parameter values of a given depth level are the parameter values of the next level. This arrangement continues for a maximum of 99 levels.

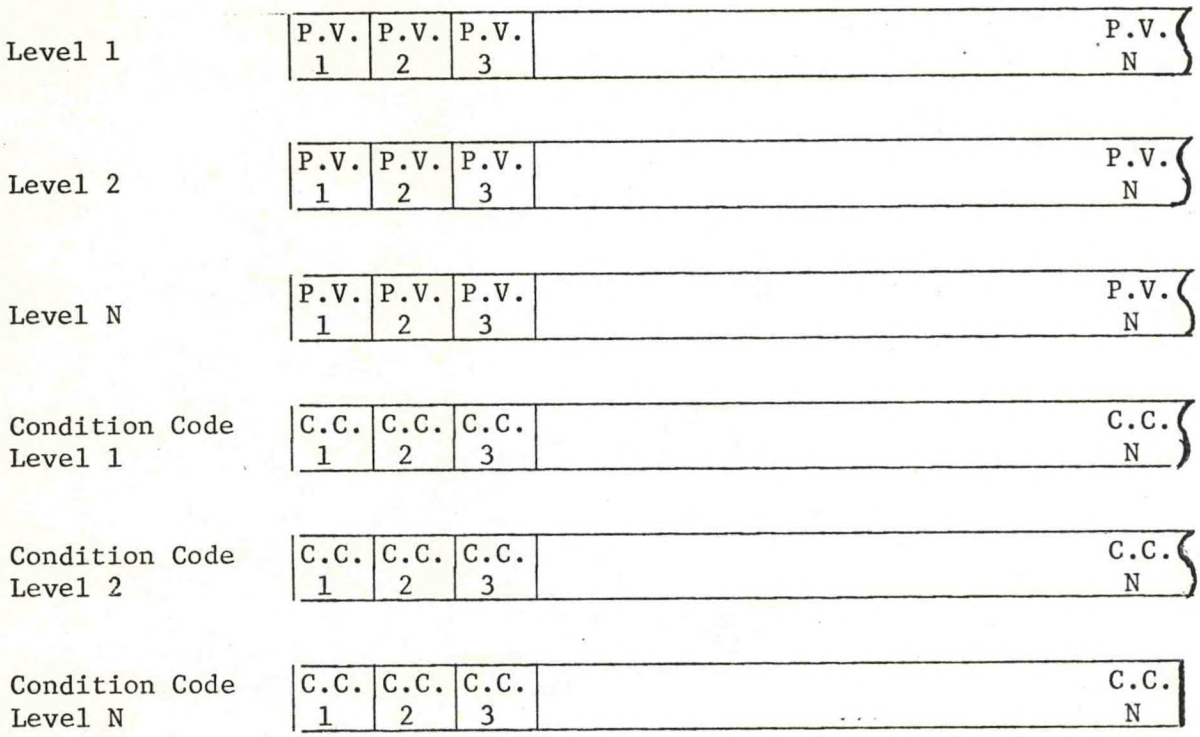
CONDITION CODES

Following the parameter values are the condition codes, one for each parameter, arranged in the same order as the corresponding parameter values. These one byte character fields are used to denote the parameters for such things as plausible data or interpolated value, etc.

The following codes and their meaning applies to all parameter condition codes:

Parameter Condition Codes - 1 Byte Character

Code	Meaning
1	Parameter value is absent at this level
2	Observed value
3	Interpolated from adjacent observed values
4	Interpolated from Nansen cast data
5	Plausible data
6	Doubtful data (exceeds range)
7	Instability (σt only)



The above arrangement of parameters values and condition codes exists as a logical record with a maximum data length of 7972 bytes (not including record descriptor bytes. The Data Record is repeated as often as necessary to fully describe the STD cast with the record number being increased by one for each record.

A P P E N D I X C

STD Printout Format

IBM

INTERNATIONAL BUSINESS MACHINES CORPORATION

PRINTER SPACING CHART

IBM 407, 408, 409, 1403, 1404, 1443, and 2203

Form X24-3113-2
Printed in U. S. A.

LINE DESCRIPTION | FIELD HEADINGS/WORD MARKS | 6 Lines Per Inch | Print span:

- IBM 1403 Models 1 & 4
- IBM 407, 408, 409, and 1403 Models 6 and 7
- IBM 1403 Models 2, 3, 5, N1 and 1404
- IBM 1443 Models 1, N1, and 2203 — IBM 1443 Model 2

GLUE

DECK	XX	YEAR	XXXX	LAT	XX XX•XN	VERT SPACE	XXXX	AREA	XX
REFID	XXX XXXXX	MONTH	XX	LONG	XXX XX•XW	DATA USE	X	TEN SQ	XXXX
CONSEC	XXX	DAY	XX	BOTDP	XXXXX	SOURCE	X	FIVE SQ	X
SHIP	XXXXXX	HOUR	XX	MINDP	XXX	DATA MODE	X	TWO SQ	XX
ORIG	XXXXXXXX XXX	MIN	XX	MAXDP	XXXXX	TREATMENT	X	ONE SQ	XX

X

X

COMMENT FIELD

(MAX. 10 CARD IMAGES

X

X

PARM1	PARM2	PARM3	PARM4	PARM5	PARM6	PARM7	PARM8	PARM9	PARM10	(Parameter Names)
p	q	*								(Parameter Values)

NOTE: This form is subject to inaccuracies from variations in humidity. Dimensions of form should be calculated from