CCESSION NO. 8700092 FILETYPE CTD TRACK NO. _____ PROJECT IDENTIFICATION _____

F022 TT81.92
C022 319719

NAVY PG 2411

TEP	DATE	INIT.	TAPE OR DISK DSN	NO. FILES	LRECL	BLK SIZE	NO RECS
RIG. TAPE	3/24/87	LL	A00430	6	74	2960	
UPLICATE TAPE	3/27/87	LL	* W12872	6	74	2960	
EFORMATTED TAPE							
EFORMATTED DISK		RS	DNODC * PAQ2OUT.	1	74	224	22,96
IRST MULCHEK							
INAL MULCHEK							
9075 OR F022							
ATA SET FINALIZED							

* DNODC*8700092-02

RRORS REPORTED TO PRINCIPAL INVESTIGATOR:

DDITIONAL ERRORS/CORRECTIONS (NOT REPORTED TO P.I.)

OMMENTS (TRACKS DELETED, FIELDS DELETED, ETC.)

INVENTORY Record found
Record 2543 on screen
170177 DATA ENTRY INFORMATION SYSTEM SJH
(DATASET INVENTORY)

DATE OF ENTRY: 11/13/87

REFERENCE NUMBER: 319719 ACCESSION NUMBER: 8700092
FORMER REFERENCE NUMBER: FORMER ACCESSION NUMBER: (RESUB ONLY)

INVENTORY
MEDIA-IN: 01 - Digital Magnetic Tape DINDB CODE 09
EXCHANGE (FORMAT): E001 - Low Resolution STD
PROCESSING (FORMAT): C022 - Low Resolution STD (SD2 Format)

* NOTE * If data is F022, create an additional record for C022.

INSTITUTE (COUNTRY AND INSTITUTE CODES): 31B7
PLATFORM (COUNTRY AND PLATFORM CODES): 31NW
PLATFORM TYPE: 9 - Ship DINDB CODE 09

ORIGINATORS FILE ID: ORIGINATORS CRUISE ID: TT8192
CRUISE START DATE: 08/22/84 CRUISE END DATE: 09/16/84 Press PgDn
PROJECT CODE: DATA USE CODE (DUC): 3 to continue
F2ENTER F3VIEW F4EXIT F5FORM CLR F6FLD CLR F7DELETE F8MODIFY F9REPORT F10MULTI

INVENTORY

VOLUME - NUMBER OF STATIONS: 331 NUMBER OF RECORDS: 72,467

If STA/REC counts are not appropriate then enter -

NUMBER: UNITS:

AVERAGE REC SIZE: 112 MBYTES: 8.116304

OCEAN AREA
CODE 1: MEANING:
CODE 2: MEANING:
CODE 3: MEANING:

DINDB TRACK TRANSACTION GENERATED: / /

F2ENTER F3VIEW F4EXIT F5FORM CLR F6FLD CLR F7DELETE F8MODIFY F9REPORT F10MULTI

570092 #0720/13-09-87

DEPARTMENT OF THE NAVY
NAVAL POSTGRADUATE SCHOOL
MONTEREY, CA 93943-5100

IN REPLY REFER TO:
NC4(68Pa)/jb
3 Mar 87

Chief, Data Acquisition and Management Branch
National Oceanographic Data Center
NOAA
Washington, DC 20235

Dear Sirs:

We are sending to you under separate cover four magnetic tape reels containing oceanographic data from Arctic regions. NDC801 contains data from the ice-covered Bering Sea in March 1980. NDC811, NDC841 and NDC851 contain data from the region of East Greenland between 74 degrees N and 81 degrees N in 1981, 1984 and 1985 respectively. Enclosed are descriptions of the data and formats (Enclosures 1 and 2) and samples of the data (Enclosures 3, 4 and 5). We should appreciate acknowledgement of receipt of the tapes when they arrive.

Please direct general correspondence regarding the tapes to Professor R.H. Bourke, Code 68Bf at the above address or by telephone to 408-646-3270/2552. For technical problems, my phone number is 646-3255/2552 on Monday-Wednesday mornings.

Sincerely,

Robert G. Paquette

ROBERT G. PAQUETTE
Emeritus Professor
Department of Oceanography

Enclosures
(1) 2 data descriptions
(2) 3 data samples

Copy to:
Prof. R.H. Bourke, w/encls.
Each tape package,
  with appropriate enclosures

Tape# A00430

Acc. No. 8700092

Tape-to-Card

IT MEDIUM PER CARD DISK (TAPE) KETTE OTHER(SPECIFY)	OUTPUT MEDIUM CARD DISK (PRINT) TAPE PLOT DISKETTE OTHER(SPECIFY)

/DISKETTE INFORMATION

(TAPE #/ DISKETTE)	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# F
A 00430		9	1600		NL		74	2960	

SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII (EBCDIC) BCD SDF OTHER(SPECIFY)	DATA SET NAME	PI DA

TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# FI

SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)	DATA SET NAME	PU DA

TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY TYPE	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# FI

SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)	DATA SET NAME	PU DA

AL INSTRUCTIONS

Please return tape A00430 to Bin 09

ESTIMATED EXECUTION TIME

JSE ONLY

DATE JOB COMPLETED	START TIME	END TIME	PRIORITY	DEVICES USED, NUMBER OF TAPE MOUNTS, LINES PRI DISKETTES USED, CARDS PUNCHED, CARDS KEYVERIFI
03/20/87	09:21	09:31	C	COMPLETED BY AMY

Copy to 'W' tape; scan 'W' tape—

Bus. 09

T ...DIUM
PER CARD DISK (TAPE)
KETTE OTHER(SPECIFY)

OUTPUT MEDIUM
CARD DISK (PRINT) (TAPE) PLOT
DISKETTE OTHER(SPECIFY)

/DISKETTE INFORMATION

6 files

(TAPE #/ DISKETTE)	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE
AF0430		9	1600		NL	F	74	2960

SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII (EBCDIC) BCD SDF. OTHER(SPECIFY)	DATA SET NAME

TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE

SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)	DATA SET NAME 6 files

(TAPE #/ DISKETTE)	SLOT #	TRK	DENSITY	PARITY TYPE	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE
W12872		9	1600	ODD	SL	FB	74	2960

SECTOR SIZE	EXCHANGE TYPE	CODE: (ASCII) EBCDIC BCD SDF OTHER(SPECIFY)	DATA SET NAME DNODC*870092-02.

AL INSTRUCTIONS

Please send 'W' tape to Asheville, N.C.

ESTIMATED EXECUTION TIME

ISE ONLY

DATE JOB COMPLETED	START TIME	END TIME	PRIORITY	DEVICES USED, NUMBER OF TAPE MOUNTS, LINES PRI DISKETTES USED, CARDS PUNCHED, CARDS KEYVERIF
3/26/87	1230	1546	C	COMPLETED BY ANDY

ϕ 72/93-94-17

DESCRIPTION OF NAVAL POSTGRADUATE SCHOOL MIZPAC OCEAN DATA TAPES OF 1980

MEASUREMENTS

The cruise area was essentially a circumnavigation of St. Lawrence I. in March, extending from deep water north of Unimak Pass, through the ice and returning to deep, ice-free water again several hundred kilometers to the west.

The data were taken with two instruments. The Neil Brown Instrument Systems (NBIS) CTD was used exclusively from the icebreaker POLAR SEA. Its data are in the first file in records 60 bytes long, blocked to a length of 2880 bytes. About one-fourth of the stations were taken from a hovering helicopter with the Applied Physics Laboratory, University of Washington (APL) CTD.* In a few cases the latter instrument was used simultaneously with the NBIS instrument from the ship for intercomparison. These data are in the second file.

The NBIS CTD was continually standardized by means of Nansen bottles tripped 6 m above the CTD at the bottom of its travel. Salinities from the bottles were run on a deck salinometer of the current-transformer type. Twenty-one comparisons showed the NBIS CTD to have an average temperature error of -0.0088degree.C with a standard deviation of 0.014degree.C. The salinity error was 0.0029 o/oo with a standard deviation of 0.018 o/oo. In view of the relatively large standard deviations and the fact that the instrument recently had been calibrated by the manufacturer, these corrections were not applied.

The APL CTD could not be standardized in the same way. It was calibrated before the cruise at the Northwest Regional Calibration Center and it was compared with the NBIS CTD 9 times by simultaneous lowerings made from different points on the ship. Only the near-bottom data were used for intercomparison as the near-surface data likely were contaminated by heat and effluent from the ship. These comparisons showed the APL CTD to read lower than the NBIS CTD by 0.008degree.C in temperature and higher by 0.012 o/oo in salinity. Salinity and temperature are reciprocally related

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* Becker,P.,Light Aircraft Deployable CTD System, Proc. Third S/T/D Conference and Workshop, Plessey Environmental Systems, San Diego, 1975.

Encl. 1

and the above result suggests that about 2/3 of the salinity error was due to the temperature error and only 1/3 to conductivity. The standard deviation of the differences was 0.011degree in temperature and 0.021 o/oo in salinity. For this reason again the corrections were not applied. In both CTD's, pressure corrections based on the zero-pressure observation were applied.

Most of the stations on the tape represent upward traverses of the CTD because the downward traverses sere found to have small temperature anomalies seemingly associated with stored warmth in the instrument body and occasionally to ice forming in the conductivity cell. Where two stations from the same instrument at the same time are presented, the first is a downward traverse and the second an upward traverse. Station 34, which was recovered from the source tape after all the others, is from the upward traverse and has not been reinverted.

The data were screened by computer for gross errors of any length and for moderate single-point spikes. Multiple-point anomalies, if not too large, were regarded as having a substantial likelihood of being real. Non-essential data,recorded when the CTD was stopped at the top or bottom of its travel were removed. Reversals in CTD direction of motion were removed by interpolating nearly constant values of pressure, temperature and conductivity between the last forward-going point and the next forward-going point. Because of the small temperature gradients, sensor response corrections were not required. No smoothing was applied.

After this editing, stations in which the water column was traversed from the bottom up were inverted. Salinity then was calculated, using the equations then in use at the Northwest Regional Calibration Center. Sound velocity was computed from Wilson's equation, and sigma-t from Knudsen's equations. Oxygen concentration and the oxygen membrane temperature are listed in the NBIS data but they are completely unreliable. Each record has a serial number, generated when the data were edited.

The data formats are attached.

DATA FORMATS

General

The data for other agencies are written in EBCDIC on 9-track unlabeled tapes at 1600 bpi in two files. The first

file, with NBIS data, has a 60-byte record length; the second, with the APL data, has a 48-byte record length. Both are blocked to 2880 bytes per block. Each station data set is headed by two header records, carrying station number, data record count and other ancillary observations made at the station. The coding is as follows. References to tables refer to NODC Publication M-2, August 1964.

Header Coding, First Record.

Columns	Explanation
1 - 2	Nation code per NODC Institute and Ship Codes, 1979.
3 - 4	Ship code from the same reference.
5 - 6	Latitude in degrees, always north.
7 - 8	Latitude, minutes.
9	Latitude, tenths of minutes.
10 - 12	Longitude, degrees, always west.
13 - 14	Longitude, minutes.
15	Longitude, tenths of minutes.
16 - 18	Marsden square.
19 - 20	Last two digits of year.
21 - 22	Month, numerical.
23 - 24	Day of the month, numerical.
25 - 26	Hour, GMT.
27	Tenths of the hour.
28 - 31	Cruise number, alphanumeric, lacking in 1980.
31 - 33	Station number, numeric.
34 - 37	Depth of water, meters.
38 - 39	Sampling depth in hundreds of meters.
40	An asterisk.

Second Header Record.

Columns	Explanation
1 - 4	Number of data records, not counting header.
5	Navigation code: 1=NAVSAT, Radar or piloting; 2=LORAN or OMEGA; 3=Dead reckoning (probably from a fairly close, better position).
6 - 7	Ice concentration in tenths. Negative number is exponent of 10 for very low concentrations.
8 - 9	Direction from which predominant wave/swell comes, in tens of degrees, true.
10	Wave height, Table 10.
11	Wave period, always blank in this cruise.
12 - 13	Direction from which wind comes, in tens of degrees, true.
14	Wind speed, Beaufort, from Table 17.
15 - 17	Barometric pressure in millibars, lacking. the first digit, if 1000 mb or greater.
18 - 20	Dry-bulb air temperature, with sign, in degrees C.
21	Dry-bulb temperature, tenths of degrees.
22 - 24	Wet-bulb air temperature, with sign, in degrees C.
25	Wet-bulb temperature, tenths of degrees.
26	Blank.
27	Present weather, from Table 21.
28	Cloud type, from Table 25.
29	Cloud amount, from Table 26.
30	Visibility, from Table 27.
31 - 32	A tag on the station number used for multiple lowerings at or near the same location (numerical) or designating a helicopter station (H) or a simultaneous observation by the APL CTD (W). The latter two usages are not always applied.
33 - 36	A check value of the station number.
37 - 42	Record serial number.

Data Coding

Columns	Explanation
1 - 6	Pressure in decibars and two decimals, form xxx.xx
7 - 12	Temperature, degrees C, form xx.xxx
13 - 18	Salinity, o/oo, form xx.xxx
19 - 25	Sound velocity, m/s, form xxxx.xx
26 - 32	Sigma-t, kg/m^3, form xx.xxxx
33 - 40	Serial number of record, form xxxxxxxx
42 - 48	Electrical conductivity ratio of UNESCO 1966, form 0.xxxxxx
49 - 60	Not present in APL data; useless in NBIS data.

Ø72/03-14-87

DESCRIPTION OF NAVAL POSTGRADUATE SCHOOL MIZPAC/MIZLANT OCEAN DATA TAPES OF 1981 - 1985

MEASUREMENTS

These data generally are from the region of the East Greenland Polar Front and over the continental shelf of East Greenland between about 74degree.N and 82degree.N. The 1981 data were in the October-November time frame; the others are in the August-September time frame.

The data were taken with a Neil Brown Instrument Systems Mark III CTD. The instrument was standardized with a combination of:

a) Nansen bottles tripped just above the CTD at the bottom of its travel.
b) Laboratory calibrations before and after the cruise.
c) Comparisons of salinities at depths greater than 1000 m at two points close in space but 20-30 days distant in time.

None of these standardization systems was precise enough to challenge the apparent inherent accuracy of the CTD and no corrections were applied to conductivity or temperature. However, pressure received an additive correction based on the zero-pressure observation.

The data were screened by computer for gross errors of any length and for moderate single-point spikes. Multiple-point anomalies, if not too large, were regarded as having a substantial likelihood of being real. Non-essential data recorded when the CTD was stopped at the top or bottom of its travel were removed. Reversals in CTD direction of motion were removed by interpolating nearly constant values of pressure, temperature and conductivity between the last forward-going point and the next deeper forward-going point. Despiking is not satisfactory in such places; fortunately, there are few in these data.

The electrical conductivity was then de-spiked by correcting both the apparent temperature and apparent conductivity for sensor lag, using a first-order response equation. After this the conductivity and computed salinity were smoothed by a 5-point centered running mean. The temperature was not so smoothed.

After despiking, stations in which the water column was traversed from the bottom up were inverted. There are very few, if any, such stations in the data prepared for

Encl. 2

distribution.

Sound velocity, sigma-t, delta and dynamic depth were then derived. In 1985 theta and sigma-theta were added. For these calculations the equations of Fofonoff and Millard (Algorithms for Oceanographic Computation, WHOI Preprint, 1983) were used. Each record has a serial number, generated when the data were edited and despiked. Data prepared for other agencies will not have these numbers in sequence because the data have been rearranged and the upward traverses removed without altering the original serial numbers.

The data formats are attached.

DATA FORMATS

General

The data for other agencies are written in 74-byte records in EBCDIC, on 9-track unlabeled tapes at 1600 bpi in one file. They are blocked 2960 bytes to a block, or 40 records. Each station data set is headed by a header carrying station number, data record count and other ancillary observations made at the station. The coding is as follows. References to tables refer to NODC Publication M-2, August 1964.

Header Coding.

Columns	Explanation
1 - 2	Nation code per NODC Institute and Ship Codes, 1979.
3 - 4	Ship code from the same reference.
5	Hemisphere, always "N" here.
6 - 7	Latitude in degrees.
8 - 9	Latitude, minutes.
10	Latitude, tenths of minutes.
11	Hemisphere, "E" or"W".
12 - 14	Longitude, degrees.
15 - 16	Longitude, minutes.
17	Longitude, tenths of minutes.
18 - 20	Marsden square.
21 - 22	Last two digits of year.
23 - 24	Month, numerical.
25 - 26	Day of the month, numerical.
27 - 28	Hour, GMT.
29	Tenths of the hour.
30 - 34	Cruise number, alphanumeric.

35 - 37	Station number, numeric.
38 - 39	Tag for station number, used for multiple samplings near the same location.
40	Direction of instrument motion, D: down, U: up.

Columns	Explanation
41 - 44	Depth of water, meters.
45 - 46	Sampling depth in hundreds of meters, usually blank.
47 - 50	Number of data records, not counting header.
51	Navigation code: 1=NAVSAT, Radar or piloting; 2=LORAN or OMEGA; 3=Dead reckoning (probably from a fairly close, better position).
52 - 53	Ice concentration in tenths. Negative number is exponent of 10 for very low concentrations.
54 - 55	Direction from which predominant wave/swell comes, in tens of degrees, true.
56	Wave height, Table 10.
57 - 58	Direction from which wind comes, in tens of degrees, true.
59	Wind speed, Beaufort, from Table 17.
60 - 62	Barometric pressure in millibars, lacking. the first digit, if 1000 mb or greater.
63 - 65	Dry-bulb air temperature, with sign, in degrees C.
66	Dry-bulb temperature, tenths of degrees.
67 - 69	Wet-bulb air temperature, with sign, in degrees C.
70	Wet-bulb temperature, tenths of degrees.
71	Present weather, from Table 21.
72	Cloud type, from Table 25.
73	Cloud amount, from Table 26.
74	Visibility, from Table 27.

Data Coding

Columns	Explanation
1 - 6	Pressure in decibars and tenths, form xxxx.x
7 - 12	Temperature, degrees C, form xx.xxx
13 - 18	Salinity, o/oo, form xx.xxx
19 - 25	Sound velocity, m/s, form xxxx.xx
26 - 32	Sigma-t, kg/m^3, form xx.xxxx
33 - 40	Serial number of record, form xxxxxxxx
41 - 48	Electrical conductivity in millimhos/cm, form xx.xxxxx
49 - 54	Theta in degrees C., form xx.xxx *
55 - 60	Sigma-theta, kg/m^3, form xx.xxx *
61 - 68	Anomaly of the specific volume, delta, in units of 10^{-8} kg/m^3, form xxxx.xxx
69 - 74	Dynamic depth, dynamic meters, form xx.xxx

* Columns 49-60 are blank or meaningless in 1981-1984. They provided for an oxygen measurement never successfully accomplished.

Ø72C/Ø3-Ø4-87

FILE: PAQTDMP4 OUTPUT A

```
1//PAQTDMP4 JOB (2752,0811),CLASS=E
 //  EXEC FORTVCLG
 //FORT.SYSIN DD *
 /*
 //GO.FT02F001 DD UNIT=3400-6,VOL=SER=NDC851,DISP=OLD,LABEL=(1,NL,,IN),
 //   DCB=(DEN=3,RECFM=FB,LRECL=74,BLKSIZE=2960)
 //GO.SYSIN DD *
 /*
 //
```

28 JAN 87. DUMP 50 RECORDS OF NDC851. Similar to NDC811, NDC841

```
31NWN76242W012396253850905227AE8 5 004   D 3676  17341 001401616159 016 0001676
   8.8 4.06334.5111466.4527.3907          3 32.20200 4.06227.391   67.831 0.006
   8.9 4.06434.5111466.4627.3904          4 32.20267 4.06427.390   67.863 0.006
   9.2 4.06434.5101466.4627.3898          5 32.20279 4.06327.390   67.916 0.006
   9.5 4.06434.5101466.4627.3899          6 32.20406 4.06327.390   67.912 0.007
   9.9 4.06734.5101466.4827.3894          7 32.20505 4.06627.389   67.970 0.007
  10.4 4.06934.5101466.5027.3891          8 32.20627 4.06827.389   68.000 0.007
  10.9 4.07134.5101466.5127.3890          9 32.20767 4.07027.389   68.013 0.007
  11.5 4.07034.5111466.5227.3896         10 32.20908 4.06927.390   67.963 0.008
  12.0 4.07034.5101466.5327.3895         11 32.20941 4.06927.390   67.980 0.008
  12.6 4.07034.5111466.5427.3897         12 32.20981 4.06927.390   67.959 0.009
  13.0 4.07034.5101466.5527.3895         13 32.20978 4.06927.390   67.981 0.009
  13.3 4.07034.5101466.5527.3895         14 32.20914 4.06927.390   67.990 0.009
  13.4 4.07034.5101466.5527.3893         15 32.20854 4.06927.389   68.005 0.009
  13.5 4.06634.5101466.5427.3896         16 32.20793 4.06527.390   67.976 0.009
  13.5 4.06734.5101466.5427.3895         17 32.20734 4.06627.390   67.996 0.009
  13.6 4.06734.5101466.5427.3896         18 32.20695 4.06627.390   67.985 0.009
  13.6 4.06734.5101466.5427.3894         19 32.20699 4.06627.390   68.000 0.009
  13.7 4.06734.5101466.5427.3892         20 32.20656 4.06627.389   68.021 0.009
  13.7 4.06734.5091466.5427.3889         21 32.20615 4.06627.389   68.049 0.009
  14.0 4.06634.5091466.5427.3886         22 32.20639 4.06527.389   68.075 0.010
  14.5 4.06634.5091466.5527.3885         23 32.20659 4.06527.389   68.094 0.010
  15.0 4.07034.5081466.5827.3879         24 32.20680 4.06927.388   68.155 0.010
  15.7 4.06834.5091466.5827.3885         25 32.20764 4.06727.389   68.101 0.011
  16.1 4.06834.5091466.5927.3889         26 32.20865 4.06727.389   68.074 0.011
  16.6 4.06734.5101466.5927.3897         27 32.20923 4.06627.390   68.000 0.011
  17.0 4.06834.5101466.6027.3897         28 32.20982 4.06727.390   68.006 0.012
  17.1 4.06834.5111466.6127.3900         29 32.21049 4.06727.390   67.976 0.012
  17.1 4.06934.5111466.6127.3897         30 32.21101 4.06827.390   68.000 0.012
  17.1 4.07034.5111466.6127.3897         31 32.21140 4.06827.390   68.002 0.012
  17.2 4.07034.5101466.6127.3894         32 32.21164 4.06927.390   68.030 0.012
  17.2 4.07034.5101466.6227.3894         33 32.21198 4.06927.390   68.036 0.012
  17.2 4.07134.5101466.6227.3893         34 32.21239 4.07027.389   68.047 0.012
  17.3 4.07134.5101466.6227.3892         35 32.21262 4.07027.389   68.057 0.012
  17.3 4.07234.5101466.6227.3891         36 32.21294 4.07027.389   68.068 0.012
  17.3 4.07234.5101466.6227.3889         37 32.21326 4.07127.389   68.078 0.012
  17.4 4.07234.5101466.6327.3889         38 32.21358 4.07127.389   68.088 0.012
  17.4 4.07334.5101466.6327.3887         39 32.21390 4.07227.389   68.098 0.012
  17.4 4.07334.5101466.6327.3887         40 32.21425 4.07227.389   68.105 0.012
  17.5 4.07434.5091466.6327.3883         41 32.21324 4.07327.388   68.145 0.012
  17.5 4.07434.5101466.6427.3884         42 32.21205 4.07327.388   68.136 0.012
  18.0 4.06934.5101466.6227.3889         43 32.21187 4.06727.389   68.085 0.012
  18.6 4.06534.5111466.6227.3902         44 32.21135 4.06327.390   67.974 0.013
  19.2 4.07134.5111466.6527.3896         45 32.21095 4.07027.390   68.039 0.013
  19.9 4.06534.5111466.6427.3905         46 32.21205 4.06327.391   67.953 0.014
  20.5 4.07034.5111466.6727.3902         47 32.21347 4.06927.390   67.986 0.014
  21.0 4.07234.5121466.6927.3903         48 32.21402 4.07027.390   67.982 0.014
  21.5 4.07034.5111466.6827.3900         49 32.21483 4.06827.390   68.014 0.015
  22.0 4.07134.5121466.7027.3903         50 32.21585 4.07027.390   67.996 0.015
  22.2 4.07134.5121466.7027.3907         51 32.21663 4.06927.391   67.961 0.015
```

Encl. 5

HANSEN REF. #

319719

MULDARS TRACK #

TT8192

MONITOR: CONTACT

J. Frank

LOCATION OF F022 SOURCE

Archives (TT8192)

RECORD ALL ERRORS FOUND

CONSEC(S)	ERRORS FOUND
44 ✓	✓ Changed Salinity at surface from 39.573 to 29.573
140 ✓	✓ Changed Temp. at surface from -00174 to -01743 Also, changed Salinity from 33.194 to 31.94
221 ✓	Delete Station
255 ✓	Changed Consec. No. from 265 to 255. Also, deleted Time (28.5).

9/20/88

Quality Indicators added to two stations

MILCH

SHIP=31NW DISKFILE=PAQOUT TT8191

START	END	# STA	# RECS
850905 ✓	850926 ✓	150	68557 ✓

SHIP=31NW DISKFILE=PAQ2OUT TT8192 ✓

840822 ✓	840916 ✓	331	72467

SHIP=31NW DISKFILE=PAQ3OUT TT8193 ✓

811017 ✓	811115 ✓	156	43376

SHIP=31PS DISKFILE=PAQ4OUT TT8194 ✓

800229	800402 ✓	67*	12146*

SHIP=31PS DISKFILE=PAQ5OUT TT8194

—	—	34*	671*

12146
12167
1217
121

*NOTE - PAQ5OUT MUST BE ADDED TO PAQ4OUT AFTER Deleting Duplicates & Sorted
MARY WILL HAVE TO SUPPLY CORRECT figures for Records & Stations for PAQ5OUT

Mary: These Naval Postgraduate School data may contain problems! I spoke with Professor Paquette and he said that the data in PAQ5OUT were duplicates (in some instances) of data in PAQ4OUT. Other data in PAQ5OUT should be sorted into the PAQ4OUT file. (You'll notice that PAQ5OUT is not in chronological order). After updating the PAQ4OUT, please inform Mitchell of new numbers i.e. stations + records.

I had one station that was submitted "bottoms-up" and sorted this on originator's file and it is OK to process now. However, if you should find more, please let me know & I'll go back to originator's file & do my thing! You have program to eliminate duplicate depths (pressures, in this case) that must be employed the PAQ4OUT & PAQ5OUT contained data to hundredths and after rounding results show many duplicates. I don't know about the other output files. I also noticed that a large number of stations contain negative pressures. If you want modification to your software to handle this problem, I'll be happy to oblige. (I don't think that would be a major modification)

Bob

CCESSION NO. 8700092 FILETYPE CTD TRACK NO. _____ PROJECT IDENTIFICATION _____

F022 TT8191
C022 319718

NAVY PG SCH

TEP	DATE	INIT.	TAPE OR DISK DSN	NO. FILES	LRECL	BLK SIZE	NO. RECORD
RIG. TAPE	3/24/87	K	A00429	1	74	2960	34,199
UPLICATE TAPE	3/27/87	K	* W12849	1	74	2960	34,199
EFORMATTED TAPE							
EFORMATTED DISK		RS	* DNODC*PAQOUT.	01	74	224	60,557
IRST MULCHEK							
INAL MULCHEK							
PD75 OR F022							
ATA SET FINALIZED							

* DNODC*8700092-01

RRORS REPORTED TO PRINCIPAL INVESTIGATOR:

DDITIONAL ERRORS/CORRECTIONS (NOT REPORTED TO P.I.)

OMMENTS (TRACKS DELETED, FIELDS DELETED, ETC.)

HANSEN REF. #

319718

MULDARS TRACK #

TT8191

MONITOR: CONTACT

J. Frank

LOCATION OF F022 SOURCE

Archives (TT8191)

RECORD ALL ERRORS FOUND

CONSEC(S)	ERRORS FOUND
138	Prefixed minus signs to Temp values from 4.9m to 15.8m. Also, changed Temp value from -02.635° to -01.635°.

1/20/88

Quality indicators were added to two stations

MITCH

SHIP=31NW DISKFILE=PAQOUT TT8191

START	END	# STA	# RECS
850905 ✓	850926 ✓	150	68552 ✓

SHIP=31NW DISKFILE=PAQ2OUT TT8192 ✓

840822 ✓	840916 ✓	331	72467

SHIP=31NW DISKFILE=PAQ3OUT TT8193 ✓

811017 ✓	811115 ✓	156	43376

SHIP=31PS DISKFILE=PAQ4OUT TT8194 ✓

800229	800402 ✓	67*	12146*

SHIP=31PS DISKFILE=PAQ5OUT TT8194

—	—	34*	671*

12146
12167
12817
121

* NOTE — PAQ5OUT MUST BE ADDED TO PAQ4OUT AFTER Deleting Duplicates & Sorted
MARY WILL HAVE TO SUPPLY CORRECT figures for Records & Stations for PAQ4OUT

Mary: These Naval Postgraduate School data may contain problems! I spoke with Professor Paquette and he said that the data in PAQ5OUT were duplicates (in some instances) of data in PAQ4OUT. Other data in PAQ5OUT should be sorted into the PAQ4OUT file. (You'll notice that PAQ5OUT is not in chronological order). After updating the PAQ4OUT, please inform Mitchell of new numbers i.e. stations + records.

I had one station that was submitted "bottoms-up" and sorted this on originator's file and it is OK to process now. However, if you should find more, please let me know & I'll go back to originator's file & do my thing! You have program to eliminate duplicate depths (pressures, in this case) that must be employed the PAQ4OUT & PAQ5OUT contained data to hundredths and after rounding results show many duplicates. I don't know about the other output files. I also noticed that a large number of stations contain negative pressures. If you want modification to your software to handle this problem, I'll be happy to oblige. (I don't think that would be a major modification)

Bob

INVENTORY Record found
Record 2548 on screen
170176 DATA ENTRY INFORMATION SYSTEM SJH
(DATASET INVENTORY)

DATE OF ENTRY: 11/13/87

REFERENCE NUMBER: 319718 ACCESSION NUMBER: 8700092
FORMER REFERENCE NUMBER: FORMER ACCESSION NUMBER: (RESUB ONLY)

INVENTORY
MEDIA-IN: 01 - Digital Magnetic Tape DINDB CODE 09
EXCHANGE (FORMAT): E001 - Low Resolution STD
PROCESSING (FORMAT): C022 - Low Resolution STD (SD2 Format)

* NOTE * If data is F022, create an additional record for C022.

INSTITUTE (COUNTRY AND INSTITUTE CODES): 31B7
PLATFORM (COUNTRY AND PLATFORM CODES): 31NW
PLATFORM TYPE: 3 - Ship DINDB CODE 03

ORIGINATORS FILE ID: ORIGINATORS CRUISE ID: TT8191
CRUISE START DATE: 09/05/85 CRUISE END DATE: 09/26/85 Press PgDn
PROJECT CODE: DATA USE CODE (DUC): 3 to continue

F2ENTER F3VIEW F4EXIT F5FORM CLR F6FLD CLR F7DELETE F8MODIFY F9REPORT F10MULTI

INVENTORY

VOLUME - NUMBER OF STATIONS: 150 NUMBER OF RECORDS: 68,557

If STA/REC counts are not appropriate then enter -

NUMBER: UNITS:

AVERAGE REC SIZE: 112 MBYTES: 7.678384

OCEAN AREA
CODE 1: MEANING:
CODE 2: MEANING:
CODE 3: MEANING:

DINDB TRACK TRANSACTION GENERATED: / /

F2ENTER F3VIEW F4EXIT F5FORM CLR F6FLD CLR F7DELETE F8MODIFY F9REPORT F10MULTI

#0720/03-09-87

DEPARTMENT OF THE NAVY
NAVAL POSTGRADUATE SCHOOL
MONTEREY, CA 93943-5100

IN REPLY REFER TO:
NC4(68Pa)/jb
3 Mar 87

Chief, Data Acquisition and Management Branch
National Oceanographic Data Center
NOAA
Washington, DC 20235

Dear Sirs:

We are sending to you under separate cover four magnetic tape reels containing oceanographic data from Arctic regions. NDC801 contains data from the ice-covered Bering Sea in March 1980. NDC811, NDC841 and NDC851 contain data from the region of East Greenland between 74 degrees N and 81 degrees N in 1981, 1984 and 1985 respectively. Enclosed are descriptions of the data and formats (Enclosures 1 and 2) and samples of the data (Enclosures 3, 4 and 5). We should appreciate acknowledgement of receipt of the tapes when they arrive.

Please direct general correspondence regarding the tapes to Professor R.H. Bourke, Code 68Bf at the above address or by telephone to 408-646-3270/2552. For technical problems, my phone number is 646-3255/2552 on Monday-Wednesday mornings.

Sincerely,

Robert G. Paquette

ROBERT G. PAQUETTE
Emeritus Professor
Department of Oceanography

Enclosures
(1) 2 data descriptions
(2) 3 data samples

Copy to:
Prof. R.H. Bourke, w/encls.
Each tape package,
with appropriate enclosures

Acc#
8700092

NDC801 - A00432
NDC811 - A00431
NDC841 - A00430
Tape # NDC851 - A00429

		03/24/87	1511

PRINTOUT REQUESTED FOR FUNCTION TO BE PERFORMED

Copy to 'W' tape, scan 'W' tape

Bill C

INPUT MEDIUM	OUTPUT MEDIUM
PER CARD DISK (TAPE)	CARD DISK (PRINT) (TAPE) PLOT
KETTE OTHER(SPECIFY)	DISKETTE OTHER(SPECIFY)

DISKETTE INFORMATION

1 file

(TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE
A00429		9	1600		NL	F	74	2960

SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII (EBCDIC) BCD SDF. OTHER(SPECIFY)	DATA SET NAME

TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE

SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)	DATA SET NAME

(TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY TYPE	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE
W12849		9	1600	ODD	SL	FB	74	2960

SECTOR SIZE	EXCHANGE TYPE	CODE: (ASCII) EBCDIC BCD SDF OTHER(SPECIFY)	DATA SET NAME DNCDC*870092-01

SPECIAL INSTRUCTIONS

Please send 'W' tape to Asheville, N.C.

ESTIMATED EXECUTION TIME

USE ONLY

DATE JOB COMPLETED	START TIME	END TIME	PRIORITY	DEVICES USED, NUMBER OF TAPE MOUNTS, LINES PR DISKETTES USED, CARDS PUNCHED, CARDS KEYVERI
03/26/87	18:38	09:52	0	COMPLETED BY MDX

Cliff Bailey	673-5636	EG12005N3B59	DATE SUBMITTED 03/19/84	DATE USE	BIN 09

IPMENT TO BE USED AND FUNCTION TO BE PERFORMED

Bin 09

(● Tape scan

UT MEDIUM
APER CARD DISK (TAPE)
SKETTE OTHER(SPECIFY)

OUTPUT MEDIUM
CARD DISK (PRINT) TAPE PLOT
DISKETTE OTHER(SPECIFY)

E/DISKETTE INFORMATION

	TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# FI
	A00429		9	1602		NL		74	2960	1
	SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII (EBCDIC) BCD SDF. OTHER(SPECIFY)				DATA SET NAME			PU DA
IT	TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# FI
	SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)				DATA SET NAME			PU DA
	TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY TYPE	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# FI
UT	SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)				DATA SET NAME			PU DA

IAL INSTRUCTIONS

Please return tape A00429 to Bin 09

ESTIMATED EXECUTION TIME

USE ONLY

	DATE JOB COMPLETED	START TIME	END TIME	PRIORITY	DEVICES USED, NUMBER OF TAPE MOUNTS, LINES PRIN DISKETTES USED, CARDS PUNCHED, CARDS KEYVERIFI
	03/19/84	0911	0929	C	COMPLETED BY HOST

Ø72C/Ø3-Ø9-87

DESCRIPTION OF NAVAL POSTGRADUATE SCHOOL MIZPAC OCEAN DATA TAPES OF 1980

MEASUREMENTS

The cruise area was essentially a circumnavigation of St. Lawrence I. in March, extending from deep water north of Unimak Pass, through the ice and returning to deep, ice-free water again several hundred kilometers to the west.

The data were taken with two instruments. The Neil Brown Instrument Systems (NBIS) CTD was used exclusively from the icebreaker POLAR SEA. Its data are in the first file in records 50 bytes long, blocked to a length of 2880 bytes. About one-fourth of the stations were taken from a hovering helicopter with the Applied Physics Laboratory, University of Washington (APL) CTD.* In a few cases the latter instrument was used simultaneously with the NBIS instrument from the ship for intercomparison. These data are in the second file.

The NBIS CTD was continually standardized by means of Nansen bottles tripped 6 m above the CTD at the bottom of its travel. Salinities from the bottles were run on a deck salinometer of the current-transformer type. Twenty-one comparisons showed the NBIS CTD to have an average temperature error of -0.0088degree.C with a standard deviation of 0.014degree.C. The salinity error was 0.0029 o/oo with a standard deviation of 0.018 o/oo. In view of the relatively large standard deviations and the fact that the instrument recently had been calibrated by the manufacturer, these corrections were not applied.

The APL CTD could not be standardized in the same way. It was calibrated before the cruise at the Northwest Regional Calibration Center and it was compared with the NBIS CTD 9 times by simultaneous lowerings made from different points on the ship. Only the near-bottom data were used for intercomparison as the near-surface data likely were contaminated by heat and effluent from the ship. These comparisons showed the APL CTD to read lower than the NBIS CTD by 0.008degree.C in temperature and higher by 0.012 o/oo in salinity. Salinity and temperature are reciprocally related

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* Becker,P.,Light Aircraft Deployable CTD System, Proc. Third S/T/D Conference and Workshop, Plessey Environmental Systems, San Diego, 1975.

Encl. 1

and the above result suggests that about 2/3 of the salinity error was due to the temperature error and only 1/3 to conductivity. The standard deviation of the differences was 0.011degree in temperature and 0.021 o/oo in salinity. For this reason again the corrections were not applied. In both CTD's, pressure corrections based on the zero-pressure observation were applied.

Most of the stations on the tape represent upward traverses of the CTD because the downward traverses sere found to have small temperature anomalies seemingly associated with stored warmth in the instrument body and occasionally to ice forming in the conductivity cell. Where two stations from the same instrument at the same time are presented, the first is a downward traverse and the second an upward traverse. Station 34, which was recovered from the source tape after all the others, is from the upward traverse and has not been reinverted.

The data were screened by computer for gross errors of any length and for moderate single-point spikes. Multiple-point anomalies, if not too large, were regarded as having a substantial likelihood of being real. Non-essential data, recorded when the CTD was stopped at the top or bottom of its travel were removed. Reversals in CTD direction of motion were removed by interpolating nearly constant values of pressure, temperature and conductivity between the last forward-going point and the next forward-going point. Because of the small temperature gradients, sensor response corrections were not required. No smoothing was applied.

After this editing, stations in which the water column was traversed from the bottom up were inverted. Salinity then was calculated, using the equations then in use at the Northwest Regional Calibration Center. Sound velocity was computed from Wilson's equation, and sigma-t from Knudsen's equations. Oxygen concentration and the oxygen membrane temperature are listed in the NBIS data but they are completely unreliable. Each record has a serial number, generated when the data were edited.

The data formats are attached.

DATA FORMATS

General

The data for other agencies are written in EBCDIC on 9-track unlabeled tapes at 1600 bpi in two files. The first

file, with NBIS data, has a 60-byte record length; the second, with the APL data, has a 48-byte record length. Both are blocked to 2880 bytes per block. Each station data set is headed by two header records, carrying station number, data record count and other ancillary observations made at the station. The coding is as follows. References to tables refer to NODC Publication M-2, August 1964.

Header Coding, First Record.

Columns	Explanation
1 - 2	Nation code per NODC Institute and Ship Codes, 1979.
3 - 4	Ship code from the same reference.
5 - 6	Latitude in degrees, always north.
7 - 8	Latitude, minutes.
9	Latitude, tenths of minutes.
10 - 12	Longitude, degrees, always west.
13 - 14	Longitude, minutes.
15	Longitude, tenths of minutes.
16 - 18	Marsden square.
19 - 20	Last two digits of year.
21 - 22	Month, numerical.
23 - 24	Day of the month, numerical.
25 - 26	Hour, GMT.
27	Tenths of the hour.
28 - 31	Cruise number, alphanumeric, lacking in 1980.
31 - 33	Station number, numeric.
34 - 37	Depth of water, meters.
38 - 39	Sampling depth in hundreds of meters.
40	An asterisk.

Second Header Record.

Columns	Explanation
1 - 4	Number of data records, not counting header.
5	Navigation code: 1=NAVSAT, Radar or piloting; 2=LORAN or OMEGA; 3=Dead reckoning (probably from a fairly close, better position).
6 - 7	Ice concentration in tenths. Negative number is exponent of 10 for very low concentrations.
8 - 9	Direction from which predominant wave/swell comes, in tens of degrees, true.
10	Wave height, Table 10.
11	Wave period, always blank in this cruise.
12 - 13	Direction from which wind comes, in tens of degrees, true.
14	Wind speed, Beaufort, from Table 17.
15 - 17	Barometric pressure in millibars, lacking. the first digit, if 1000 mb or greater.
18 - 20	Dry-bulb air temperature, with sign, in degrees C.
21	Dry-bulb temperature, tenths of degrees.
22 - 24	Wet-bulb air temperature, with sign, in degrees C.
25	Wet-bulb temperature, tenths of degrees.
25	Blank.
27	Present weather, from Table 21.
28	Cloud type, from Table 25.
29	Cloud amount, from Table 26.
30	Visibility, from Table 27.
31 - 32	A tag on the station number used for multiple lowerings at or near the same location (numerical) or designating a helicopter station (H) or a simultaneous observation by the APL CTD (W). The latter two usages are not always applied.
33 - 36	A check value of the station number.
37 - 42	Record serial number.

Data Coding

Columns	Explanation
1 - 6	Pressure in decibars and two decimals, form xxx.xx
7 - 12	Temperature, degrees C, form xx.xxx
13 - 18	Salinity, o/oo, form xx.xxx
19 - 25	Sound velocity, m/s, form xxxx.xx
26 - 32	Sigma-t, kg/m^3, form xx.xxxx
33 - 40	Serial number of record, form xxxxxxxx
42 - 48	Electrical conductivity ratio of UNESCO 1966, form 0.xxxxxx
49 - 60	Not present in APL data; useless in NBIS data.

Ø72C/Ø3-Ø9-87

DESCRIPTION OF NAVAL POSTGRADUATE SCHOOL MIZPAC/MIZLANT OCEAN DATA TAPES OF 1981 - 1985

MEASUREMENTS

These data generally are from the region of the East Greenland Polar Front and over the continental shelf of East Greenland between about 74degree.N and 82degree.N. The 1981 data were in the October-November time frame; the others are in the August-September time frame.

The data were taken with a Neil Brown Instrument Systems Mark III CTD. The instrument was standardized with a combination of:

a) Nansen bottles tripped just above the CTD at the bottom of its travel.
b) Laboratory calibrations before and after the cruise.
c) Comparisons of salinities at depths greater than 1000 m at two points close in space but 20-30 days distant in time.

None of these standardization systems was precise enough to challenge the apparent inherent accuracy of the CTD and no corrections were applied to conductivity or temperature. However, pressure received an additive correction based on the zero-pressure observation.

The data were screened by computer for gross errors of any length and for moderate single-point spikes. Multiple-point anomalies, if not too large, were regarded as having a substantial likelihood of being real. Non-essential data recorded when the CTD was stopped at the top or bottom of its travel were removed. Reversals in CTD direction of motion were removed by interpolating nearly constant values of pressure, temperature and conductivity between the last forward-going point and the next deeper forward-going point. Despiking is not satisfactory in such places; fortunately, there are few in these data.

The electrical conductivity was then de-spiked by correcting both the apparent temperature and apparent conductivity for sensor lag, using a first-order response equation. After this the conductivity and computed salinity were smoothed by a 5-point centered running mean. The temperature was not so smoothed.

After despiking, stations in which the water column was traversed from the bottom up were inverted. There are very few, if any, such stations in the data prepared for

Encl. 2

distribution.

Sound velocity, sigma-t, delta and dynamic depth were then derived. In 1985 theta and sigma-theta were added. For these calculations the equations of Fofonoff and Millard (Algorithms for Oceanographic Computation, WHOI Preprint, 1983) were used. Each record has a serial number, generated when the data were edited and despiked. Data prepared for other agencies will not have these numbers in sequence because the data have been rearranged and the upward traverses removed without altering the original serial numbers.

The data formats are attached.

DATA FORMATS

General

The data for other agencies are written in 74-byte records in EBCDIC, on 9-track unlabeled tapes at 1600 bpi in one file. They are blocked 2960 bytes to a block, or 40 records. Each station data set is headed by a header carrying station number, data record count and other ancillary observations made at the station. The coding is as follows. References to tables refer to NODC Publication M-2, August 1964.

Header Coding.

Columns	Explanation
1 - 2	Nation code per NODC Institute and Ship Codes, 1979.
3 - 4	Ship code from the same reference.
5	Hemisphere, always "N" here.
6 - 7	Latitude in degrees.
8 - 9	Latitude, minutes.
10	Latitude, tenths of minutes.
11	Hemisphere, "E" or"W".
12 - 14	Longitude, degrees.
15 - 16	Longitude, minutes.
17	Longitude, tenths of minutes.
18 - 20	Marsden square.
21 - 22	Last two digits of year.
23 - 24	Month, numerical.
25 - 26	Day of the month, numerical.
27 - 28	Hour, GMT.
29	Tenths of the hour.
30 - 34	Cruise number, alphanumeric.

35 - 37	Station number, numeric.
38 - 39	Tag for station number, used for multiple samplings near the same location.
40	Direction of instrument motion, D: down, U: up.

Columns	Explanation
41 - 44	Depth of water, meters.
45 - 46	Sampling depth in hundreds of meters, usually blank.
47 - 50	Number of data records, not counting header.
51	Navigation code: 1=NAVSAT, Radar or piloting; 2=LORAN or OMEGA; 3=Dead reckoning (probably from a fairly close, better position).
52 - 53	Ice concentration in tenths. Negative number is exponent of 10 for very low concentrations.
54 - 55	Direction from which predominant wave/swell comes, in tens of degrees, true.
56	Wave height, Table 10.
57 - 58	Direction from which wind comes, in tens of degrees, true.
59	Wind speed, Beaufort, from Table 17.
60 - 62	Barometric pressure in millibars, lacking. the first digit, if 1000 mb or greater.
63 - 65	Dry-bulb air temperature, with sign, in degrees C.
66	Dry-bulb temperature, tenths of degrees.
67 - 69	Wet-bulb air temperature, with sign, in degrees C.
70	Wet-bulb temperature, tenths of degrees.
71	Present weather, from Table 21.
72	Cloud type, from Table 25.
73	Cloud amount, from Table 26.
74	Visibility, from Table 27.

Data Coding

Columns	Explanation
1 - 6	Pressure in decibars and tenths, form xxxx.x
7 - 12	Temperature, degrees C, form xx.xxx
13 - 18	Salinity, o/oo, form xx.xxx
19 - 25	Sound velocity, m/s, form xxxx.xx
26 - 32	Sigma-t, kg/m^3, form xx.xxxx
33 - 40	Serial number of record, form xxxxxxxx
41 - 48	Electrical conductivity in millimhos/cm, form xx.xxxxx
49 - 54	Theta in degrees C., form xx.xxx *
55 - 60	Sigma-theta, kg/m^3, form xx.xxx *
61 - 68	Anomaly of the specific volume, delta, in units of 10^{-8} kg/m^3, form xxxx.xxx
69 - 74	Dynamic depth, dynamic meters, form xx.xxx

* Columns 49-60 are blank or meaningless in 1981-1984. They provided for an oxygen measurement never successfully accomplished.

Ø72C/Ø3-Ø9-87

FILE: PAQTDMP4 OUTPUT A

```
1//PAQTDMP4 JOB (2752,0811),CLASS=E
 //  EXEC FORTVCLG
 //FORT.SYSIN DD *
 /*
 //GO.FT02F001 DD UNIT=3400-6,VOL=SER=NDC851,DISP=OLD,LABEL=(1,NL,,IN),
 //   DCB=(DEN=3,RECFM=FB,LRECL=74,BLKSIZE=2960)
 //GO.SYSIN DD *
 /*
 //
```

28 JAN 87. DUMP 50 RECORDS OF NDC851. Similar to NDC811; NDC841

```
31NWN76242W0023952538509052 27AE8 5 004   D 3676  17341 00140916159 016 0001676
    8.8 4.06334.5111466.4527.3907          3 32.20200 4.06227.391  67.831 0.006
    8.9 4.06434.5111466.4627.3904          4 32.20267 4.06427.390  67.863 0.006
    9.2 4.06434.5101466.4627.3898          5 32.20279 4.06327.390  67.916 0.006
    9.6 4.06434.5101466.4627.3899          6 32.20406 4.06327.390  67.912 0.007
    9.9 4.06734.5101466.4827.3894          7 32.20505 4.06627.389  67.970 0.007
   10.4 4.06934.5101466.5027.3891          8 32.20627 4.06827.389  68.000 0.007
   10.9 4.07134.5101466.5127.3890          9 32.20767 4.07027.389  68.013 0.007
   11.5 4.07034.5111466.5227.3896         10 32.20908 4.06927.390  67.963 0.008
   12.0 4.07034.5101466.5327.3895         11 32.20941 4.06927.390  67.980 0.008
   12.6 4.07034.5111466.5427.3897         12 32.20981 4.06927.390  67.959 0.009
   13.0 4.07034.5101466.5527.3895         13 32.20978 4.06927.390  67.981 0.009
   13.3 4.07034.5101466.5527.3895         14 32.20914 4.06927.390  67.990 0.009
   13.4 4.07034.5101466.5527.3893         15 32.20854 4.06927.389  68.005 0.009
   13.5 4.06634.5101466.5427.3896         16 32.20793 4.06527.390  67.976 0.009
   13.5 4.06734.5101466.5427.3895         17 32.20734 4.06627.390  67.996 0.009
   13.6 4.06734.5101466.5427.3896         18 32.20695 4.06627.390  67.985 0.009
   13.6 4.06734.5101466.5427.3894         19 32.20699 4.06627.390  68.000 0.009
   13.7 4.06734.5101466.5427.3892         20 32.20656 4.06627.389  68.021 0.009
   13.7 4.06734.5091466.5427.3889         21 32.20615 4.06627.389  68.049 0.009
   14.0 4.06634.5091466.5427.3886         22 32.20639 4.06527.389  68.075 0.010
   14.5 4.06634.5091466.5527.3885         23 32.20659 4.06527.389  68.094 0.010
   15.0 4.07034.5081466.5827.3879         24 32.20680 4.06927.388  68.155 0.010
   15.7 4.06834.5091466.5827.3885         25 32.20764 4.06727.389  68.101 0.011
   16.1 4.06834.5091466.5927.3889         26 32.20865 4.06727.389  68.074 0.011
   16.6 4.06734.5101466.5927.3897         27 32.20923 4.06627.390  68.000 0.011
   17.0 4.06834.5101466.6027.3897         28 32.20982 4.06727.390  68.006 0.012
   17.1 4.06834.5111466.6127.3900         29 32.21049 4.06727.390  67.976 0.012
   17.1 4.06934.5111466.6127.3897         30 32.21101 4.06827.390  68.000 0.012
   17.1 4.07034.5111466.6127.3897         31 32.21140 4.06827.390  68.002 0.012
   17.2 4.07034.5101466.6127.3894         32 32.21164 4.06927.390  68.030 0.012
   17.2 4.07034.5101466.6227.3894         33 32.21198 4.06927.390  68.036 0.012
   17.2 4.07134.5101466.6227.3893         34 32.21230 4.07027.389  68.047 0.012
   17.3 4.07134.5101466.6227.3892         35 32.21262 4.07027.389  68.057 0.012
   17.3 4.07234.5101466.6227.3891         36 32.21294 4.07027.389  68.068 0.012
   17.3 4.07234.5101466.6227.3889         37 32.21326 4.07127.389  68.078 0.012
   17.4 4.07234.5101466.6327.3889         38 32.21358 4.07127.389  68.088 0.012
   17.4 4.07334.5101466.6327.3887         39 32.21390 4.07227.389  68.098 0.012
   17.4 4.07334.5101466.6327.3887         40 32.21425 4.07227.389  68.105 0.012
   17.5 4.07434.5091466.6327.3883         41 32.21324 4.07327.388  68.145 0.012
   17.5 4.07434.5101466.6427.3884         42 32.21205 4.07327.388  68.136 0.012
   18.0 4.06934.5101466.6227.3889         43 32.21187 4.06727.389  68.085 0.012
   18.6 4.06534.5111466.6227.3902         44 32.21135 4.06327.390  67.974 0.013
   19.2 4.07134.5111466.6527.3896         45 32.21095 4.07027.390  68.039 0.013
   19.9 4.06534.5111466.6427.3905         46 32.21205 4.06327.391  67.953 0.014
   20.5 4.07034.5111466.6727.3902         47 32.21347 4.06927.390  67.986 0.014
   21.0 4.07234.5121466.6927.3903         48 32.21402 4.07027.390  67.992 0.014
   21.5 4.07034.5111466.6827.3900         49 32.21483 4.06827.390  68.014 0.015
   22.0 4.07134.5121466.7027.3903         50 32.21585 4.07027.390  67.996 0.015
   22.2 4.07134.5121466.7027.3907         51 32.21663 4.06927.391  67.961 0.015
```

Encl. 5

8700092

MITCH

SHIP=31NW DISKFILE=PAQOUT TT8191

START	END	# STA	# RECS
850905 ✓	850926 ✓	150	68557 ✓

SHIP=31NW DISKFILE=PAQ2OUT TT8192 ✓

840822 ✓	840916 ✓	331	72467

SHIP=31NW DISKFILE=PAQ3OUT TT8193 ✓

811017 ✓	811115 ✓	156	43376

SHIP=31PS DISKFILE=PAQ4OUT TT8194 ✓

800229	800402 ✓	67*	12146*

SHIP=31PS DISKFILE=PAQ5OUT TT8194

—	—	34*	671*

12146
12167
1
81
121

*NOTE - PAQ5OUT MUST BE ADDED TO PAQ4OUT AFTER Deleting Duplicates & sorted

MARY WILL HAVE TO SUPPLY CORRECT figures for Records & Stations for PAQ4OUT

Mary: These Naval Postgraduate School data may contain problems! I spoke with Professor Paquette and he said that the data in PAQ5OUT were duplicates (in some instances) of data in PAQ4OUT. Other data in PAQ5OUT should be sorted into the PAQ4OUT file. (You'll notice that PAQ5OUT is not in chronological order). After updating the PAQ4OUT, please inform Mitchell of new numbers i.e. stations & records.

I had one station that was submitted "bottoms-up" and sorted this on originator's file and it is ok to process now. However if you should find more, please let me know & I'll go back to originator's file & do my thing! You have program to eliminate duplicate depths (pressures, in this case) that must be employed the PAQ4OUT & PAQ5OUT contained data to hundredths and after rounding results show many duplicates. I don't know about the other output files. I also noticed that a large number of stations contain negative pressures. If you want modification to your software to handle this problem, I'll be happy to oblige. (I don't think that would be a major modification)

Bob

CCESSION NO. 8700092 FILETYPE CTD F022 TRACK NO. TT8194 PROJECT IDENTIFICATION

C022 (REF 319721) NAVY PG SCH

TEP	DATE	INIT.	TAPE OR DISK DSN	NO. FILES	LRECL	BLK SIZE	NO. RECORI
RIG. TAPE	3/24/87	[illegible]	A00432	2	60	2880	63 + 72
UPLICATE TAPE	3/27/87	[illegible]	* W13019	2	60	2880	63 + 72
EFORMATTED TAPE							
EFORMATTED DISK		RS	DNODC * PAQ40UT	1	60	224	12,817
IRST MULCHEK	11/19/87	CBL	SEEDATA.F022TT8194	1	60		12146
INAL MULCHEK	11/20/87	CBL	"				
F075 OR F022	11/20/87						
ATA SET FINALIZED	11/20/87	CBL	F022, TT8194/F022	1	60		

* DNODC*8700092-04

RRORS REPORTED TO PRINCIPAL INVESTIGATOR:

DDITIONAL ERRORS/CORRECTIONS (NOT REPORTED TO P.I.)

DELETED NEGATIVE WATER PRESSURES

OMMENTS (TRACKS DELETED, FIELDS DELETED, ETC.)

INVENTORY Record found
Record 2546 on screen
170174 DATA ENTRY INFORMATION SYSTEM SJH
(DATASET INVENTORY)

DATE OF ENTRY: 11/13/87

REFERENCE NUMBER: TT8194 ACCESSION NUMBER: 8700092
FORMER REFERENCE NUMBER: FORMER ACCESSION NUMBER: (RESUB ONLY)

INVENTORY
MEDIA-IN: 01 - Digital Magnetic Tape DINDB CODE 09
EXCHANGE (FORMAT): E018 - STD/CTD (F022)
PROCESSING (FORMAT): F022 - CTD/STD

* NOTE * If data is F022, create an additional record for C022.

INSTITUTE (COUNTRY AND INSTITUTE CODES): 31B7
PLATFORM (COUNTRY AND PLATFORM CODES): 31NW
PLATFORM TYPE: 9 - Ship DINDB CODE 09

ORIGINATORS FILE ID: ORIGINATORS CRUISE ID:
CRUISE START DATE: 02/29/80 CRUISE END DATE: 04/02/80 Press PgDn
PROJECT CODE: DATA USE CODE (DUC): 3 to continue
F2ENTER F3VIEW F4EXIT F5FORM CLR F6FLD CLR F7DELETE F8MODIFY F9REPORT F10MULTI

INVENTORY

VOLUME - NUMBER OF STATIONS: 67 NUMBER OF RECORDS: 12,817

If STA/REC counts are not appropriate then enter -

NUMBER: UNITS:

AVERAGE REC SIZE: 120 MBYTES: 1.538040

OCEAN AREA
CODE 1: MEANING:
CODE 2: MEANING:
CODE 3: MEANING:

DINDB TRACK TRANSACTION GENERATED: / /

F2ENTER F3VIEW F4EXIT F5FORM CLR F6FLD CLR F7DELETE F8MODIFY F9REPORT F10MULTI

$72A/$3-09-87

DEPARTMENT OF THE NAVY
NAVAL POSTGRADUATE SCHOOL
MONTEREY, CA 93943-5100

IN REPLY REFER TO:
NC4(68Pa)/jb
3 Mar 87

Chief, Data Acquisition and Management Branch
National Oceanographic Data Center
NOAA
Washington, DC 20235

Dear Sirs:

We are sending to you under separate cover four magnetic tape reels containing oceanographic data from Arctic regions. NDC801 contains data from the ice-covered Bering Sea in March 1980. NDC811, NDC841 and NDC851 contain data from the region of East Greenland between 74 degrees N and 81 degrees N in 1981, 1984 and 1985 respectively. Enclosed are descriptions of the data and formats (Enclosures 1 and 2) and samples of the data (Enclosures 3, 4 and 5). We should appreciate acknowledgement of receipt of the tapes when they arrive.

Please direct general correspondence regarding the tapes to Professor R.H. Bourke, Code 68Bf at the above address or by telephone to 408-646-3270/2552. For technical problems, my phone number is 646-3255/2552 on Monday-Wednesday mornings.

Sincerely,

ROBERT G. PAQUETTE
Emeritus Professor
Department of Oceanography

Enclosures
(1) 2 data descriptions
(2) 3 data samples

Copy to:
Prof. R.H. Bourke, w/encls.
Each tape package,
with appropriate enclosures

Tape # A00432

Acc. No. 8700092

Cliff Hadley	673-5636	EG-12008N3059	DATE SUBMITTED 03/25/87	DATE DUE ASAP

INSTRUCTIONS TO BE USED AND FUNCTION TO BE PERFORMED

Copy to 'W' tape; scan 'W' tape

Bin :09

INPUT MEDIUM
PAPER CARD DISK (TAPE)
DISKETTE OTHER(SPECIFY)

OUTPUT MEDIUM
CARD DISK (PRINT) (TAPE) PLOT
DISKETTE OTHER(SPECIFY)

TAPE/DISKETTE INFORMATION

2 files

	TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE
	A00432		9	1600		NL	F	60	2880
	SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII (EBCDIC) BCD SDF. OTHER(SPECIFY)				DATA SET NAME		
INPUT	TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE
	SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)				DATA SET NAME 2 files		
	(TAPE #/ DISKETTE)	SLOT #	TRK	DENSITY	PARITY TYPE	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE
	W13019		9	1600		SL	FB	60	2880
OUTPUT	SECTOR SIZE	EXCHANGE TYPE	CODE: (ASCII) EBCDIC BCD SDF OTHER(SPECIFY)				DATA SET NAME DNODC*870092-04		

SPECIAL INSTRUCTIONS

Please send 'W' tape to Asheville, NC

ESTIMATED EXECUTION TIME

---

31 USE ONLY

B #	DATE JOB COMPLETED	START TIME	END TIME	PRIORITY	DEVICES USED, NUMBER OF TAPE MOUNTS, LINES PR DISKETTES USED, CARDS PUNCHED, CARDS KEYVERI
R703250	03/26/87	19:53	10:18	C	COMPLETED BY ANDY

Cliff Hartley | 673-5636 | 661200-10597 | SUBMITTED 03/19/87 | SSAV | 11

...ENT TO BE USED AND FUNCTION TO BE PERFORMED

Tapescan

Bin 09

...MEDIUM ...ER CARD DISK (TAPE) ...ETTE OTHER(SPECIFY)	OUTPUT MEDIUM CARD DISK (PRINT) TAPE PLOT DISKETTE OTHER(SPECIFY)

DISKETTE INFORMATION

2 files

TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# F...
AC0432		9	1600		NL				
SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII (EBCDIC) BCD SDF. OTHER(SPECIFY)				DATA SET NAME			PU... DA...
TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# FI...
SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)				DATA SET NAME			PU... DA...
TAPE #/ DISKETTE	SLOT #	TRK	DENSITY	PARITY TYPE	LABEL TYPE	RECORD TYPE	RECORD LENGTH	MAX. BLOCK SIZE	# O... FIL...
SECTOR SIZE	EXCHANGE TYPE	CODE: ASCII EBCDIC BCD SDF OTHER(SPECIFY)				DATA SET NAME			PUR... DAT...

...AL INSTRUCTIONS	ESTIMATED EXECUTION TIME
Please return tape A00432 to Bin 09	

...USE ONLY

	DATE JOB COMPLETED	START TIME	END TIME	PRIORITY	DEVICES USED, NUMBER OF TAPE MOUNTS, LINES PRINT... DISKETTES USED, CARDS PUNCHED, CARDS KEYVERIFIE...
033005	03/20/87	09:41	09:45	C	COMPLETED BY ANDY

Ø72A/Ø3-Ø9-87

DESCRIPTION OF NAVAL POSTGRADUATE SCHOOL MIZPAC/MIZLANT OCEAN DATA TAPES OF 1981 - 1985

MEASUREMENTS

These data generally are from the region of the East Greenland Polar Front and over the continental shelf of East Greenland between about 74degree.N and 82degree.N. The 1981 data were in the October-November time frame; the others are in the August-September time frame.

The data were taken with a Neil Brown Instrument Systems Mark III CTD. The instrument was standardized with a combination of:

a) Nansen bottles tripped just above the CTD at the bottom of its travel.
b) Laboratory calibrations before and after the cruise.
c) Comparisons of salinities at depths greater than 1000 m at two points close in space but 20-30 days distant in time.

None of these standardization systems was precise enough to challenge the apparent inherent accuracy of the CTD and no corrections were applied to conductivity or temperature. However, pressure received an additive correction based on the zero-pressure observation.

The data were screened by computer for gross errors of any length and for moderate single-point spikes. Multiple-point anomalies, if not too large, were regarded as having a substantial likelihood of being real. Non-essential data recorded when the CTD was stopped at the top or bottom of its travel were removed. Reversals in CTD direction of motion were removed by interpolating nearly constant values of pressure, temperature and conductivity between the last forward-going point and the next deeper forward-going point. Despiking is not satisfactory in such places; fortunately, there are few in these data.

The electrical conductivity was then de-spiked by correcting both the apparent temperature and apparent conductivity for sensor lag, using a first-order response equation. After this the conductivity and computed salinity were smoothed by a 5-point centered running mean. The temperature was not so smoothed.

After despiking, stations in which the water column was traversed from the bottom up were inverted. There are very few, if any, such stations in the data prepared for

Encl. 2

distribution.

Sound velocity, sigma-t, delta and dynamic depth were then derived. In 1985 theta and sigma-theta were added. For these calculations the equations of Fofonoff and Millard (Algorithms for Oceanographic Computation, WHOI Preprint, 1983) were used. Each record has a serial number, generated when the data were edited and despiked. Data prepared for other agencies will not have these numbers in sequence because the data have been rearranged and the upward traverses removed without altering the original serial numbers.

The data formats are attached.

DATA FORMATS

General

The data for other agencies are written in 74-byte records in EBCDIC, on 9-track unlabeled tapes at 1600 bpi in one file. They are blocked 2960 bytes to a block, or 40 records. Each station data set is headed by a header carrying station number, data record count and other ancillary observations made at the station. The coding is as follows. References to tables refer to NODC Publication M-2, August 1964.

Header Coding.

Columns	Explanation
1 - 2	Nation code per NODC Institute and Ship Codes, 1979.
3 - 4	Ship code from the same reference.
5	Hemisphere, always "N" here.
6 - 7	Latitude in degrees.
8 - 9	Latitude, minutes.
10	Latitude, tenths of minutes.
11	Hemisphere, "E" or"W".
12 - 14	Longitude, degrees.
15 - 16	Longitude, minutes.
17	Longitude, tenths of minutes.
18 - 20	Marsden square.
21 - 22	Last two digits of year.
23 - 24	Month, numerical.
25 - 26	Day of the month, numerical.
27 - 28	Hour, GMT.
29	Tenths of the hour.
30 - 34	Cruise number, alphanumeric.

35 - 37	Station number, numeric.
38 - 39	Tag for station number, used for multiple samplings near the same location.
40	Direction of instrument motion, D: down, U: up.

Columns	Explanation
41 - 44	Depth of water, meters.
45 - 46	Sampling depth in hundreds of meters, usually blank.
47 - 50	Number of data records, not counting header.
51	Navigation code: 1=NAVSAT, Radar or piloting; 2=LORAN or OMEGA; 3=Dead reckoning (probably from a fairly close, better position).
52 - 53	Ice concentration in tenths. Negative number is exponent of 10 for very low concentrations.
54 - 55	Direction from which predominant wave/swell comes, in tens of degrees, true.
56	Wave height, Table 10.
57 - 58	Direction from which wind comes, in tens of degrees, true.
59	Wind speed, Beaufort, from Table 17.
60 - 62	Barometric pressure in millibars, lacking. the first digit, if 1000 mb or greater.
63 - 65	Dry-bulb air temperature, with sign, in degrees C.
66	Dry-bulb temperature, tenths of degrees.
67 - 69	Wet-bulb air temperature, with sign, in degrees C.
70	Wet-bulb temperature, tenths of degrees.
71	Present weather, from Table 21.
72	Cloud type, from Table 25.
73	Cloud amount, from Table 26.
74	Visibility, from Table 27.

Data Coding

Columns	Explanation
1 - 6	Pressure in decibars and tenths, form xxxx.x
7 - 12	Temperature, degrees C, form xx.xxx
13 - 18	Salinity, o/oo, form xx.xxx
19 - 25	Sound velocity, m/s, form xxxx.xx
26 - 32	Sigma-t, kg/m^3, form xx.xxxx
33 - 40	Serial number of record, form xxxxxxxx
41 - 48	Electrical conductivity in millimhos/cm, form xx.xxxxx
49 - 54	Theta in degrees C., form xx.xxx *
55 - 60	Sigma-theta, kg/m^3, form xx.xxx *
61 - 68	Anomaly of the specific volume, delta, in units of 10^{-8} kg/m^3, form xxxx.xxx
69 - 74	Dynamic depth, dynamic meters, form xx.xxx

* Columns 49-60 are blank or meaningless in 1981-1984. They provided for an oxygen measurement never successfully accomplished.

0724/03-09-87

DESCRIPTION OF NAVAL POSTGRADUATE SCHOOL MIZPAC OCEAN DATA TAPES OF 1980

MEASUREMENTS

The cruise area was essentially a circumnavigation of St. Lawrence I. in March, extending from deep water north of Unimak Pass, through the ice and returning to deep, ice-free water again several hundred kilometers to the west.

The data were taken with two instruments. The Neil Brown Instrument Systems (NBIS) CTD was used exclusively from the icebreaker POLAR SEA. Its data are in the first file in records 60 bytes long, blocked to a length of 2880 bytes. About one-fourth of the stations were taken from a hovering helicopter with the Applied Physics Laboratory, University of Washington (APL) CTD.* In a few cases the latter instrument was used simultaneously with the NBIS instrument from the ship for intercomparison. These data are in the second file.

The NBIS CTD was continually standardized by means of Nansen bottles tripped 6 m above the CTD at the bottom of its travel. Salinities from the bottles were run on a deck salinometer of the current-transformer type. Twenty-one comparisons showed the NBIS CTD to have an average temperature error of -0.0088degree.C with a standard deviation of 0.014degree.C. The salinity error was 0.0029 o/oo with a standard deviation of 0.018 o/oo. In view of the relatively large standard deviations and the fact that the instrument recently had been calibrated by the manufacturer, these corrections were not applied.

The APL CTD could not be standardized in the same way. It was calibrated before the cruise at the Northwest Regional Calibration Center and it was compared with the NBIS CTD 9 times by simultaneous lowerings made from different points on the ship. Only the near-bottom data were used for intercomparison as the near-surface data likely were contaminated by heat and effluent from the ship. These comparisons showed the APL CTD to read lower than the NBIS CTD by 0.008degree.C in temperature and higher by 0.012 o/oo in salinity. Salinity and temperature are reciprocally related

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* Becker,P.,Light Aircraft Deployable CTD System, Proc. Third S/T/D Conference and Workshop, Plessey Environmental Systems, San Diego, 1975.

Encl. 1

and the above result suggests that about 2/3 of the salinity error was due to the temperature error and only 1/3 to conductivity. The standard deviation of the differences was 0.011degree in temperature and 0.021 o/oo in salinity. For this reason again the corrections were not applied. In both CTD's, pressure corrections based on the zero-pressure observation were applied.

Most of the stations on the tape represent upward traverses of the CTD because the downward traverses sere found to have small temperature anomalies seemingly associated with stored warmth in the instrument body and occasionally to ice forming in the conductivity cell. Where two stations from the same instrument at the same time are presented, the first is a downward traverse and the second an upward traverse. Station 34, which was recovered from the source tape after all the others, is from the upward traverse and has not been reinverted.

The data were screened by computer for gross errors of any length and for moderate single-point spikes. Multiple-point anomalies, if not too large, were regarded as having a substantial likelihood of being real. Non-essential data,recorded when the CTD was stopped at the top or bottom of its travel were removed. Reversals in CTD direction of motion were removed by interpolating nearly constant values of pressure, temperature and conductivity between the last forward-going point and the next forward-going point. Because of the small temperature gradients, sensor response corrections were not required. No smoothing was applied.

After this editing, stations in which the water column was traversed from the bottom up were inverted. Salinity then was calculated, using the equations then in use at the Northwest Regional Calibration Center. Sound velocity was computed from Wilson's equation, and sigma-t from Knudsen's equations. Oxygen concentration and the oxygen membrane temperature are listed in the NBIS data but they are completely unreliable. Each record has a serial number, generated when the data were edited.

The data formats are attached.

DATA FORMATS

General

The data for other agencies are written in EBCDIC on 9-track unlabeled tapes at 1600 bpi in two files. The first

file, with NBIS data, has a 60-byte record length; the second, with the APL data, has a 48-byte record length. Both are blocked to 2880 bytes per block. Each station data set is headed by two header records, carrying station number, data record count and other ancillary observations made at the station. The coding is as follows. References to tables refer to NODC Publication M-2, August 1964.

Header Coding, First Record.

Columns	Explanation
1 - 2	Nation code per NODC Institute and Ship Codes, 1979.
3 - 4	Ship code from the same reference.
5 - 6	Latitude in degrees, always north.
7 - 8	Latitude, minutes.
9	Latitude, tenths of minutes.
10 - 12	Longitude, degrees, always west.
13 - 14	Longitude, minutes.
15	Longitude, tenths of minutes.
16 - 18	Marsden square.
19 - 20	Last two digits of year.
21 - 22	Month, numerical.
23 - 24	Day of the month, numerical.
25 - 26	Hour, GMT.
27	Tenths of the hour.
28 - 31	Cruise number, alphanumeric, lacking in 1980.
31 - 33	Station number, numeric.
34 - 37	Depth of water, meters.
38 - 39	Sampling depth in hundreds of meters.
40	An asterisk.

Second Header Record.

Columns	Explanation
1 - 4	Number of data records, not counting header.
5	Navigation code: 1=NAVSAT, Radar or piloting; 2=LORAN or OMEGA; 3=Dead reckoning (probably from a fairly close, better position).
6 - 7	Ice concentration in tenths. Negative number is exponent of 10 for very low concentrations.
8 - 9	Direction from which predominant wave/swell comes, in tens of degrees, true.
10	Wave height, Table 10.
11	Wave period, always blank in this cruise.
12 - 13	Direction from which wind comes, in tens of degrees, true.
14	Wind speed, Beaufort, from Table 17.
15 - 17	Barometric pressure in millibars, lacking. the first digit, if 1000 mb or greater.
18 - 20	Dry-bulb air temperature, with sign, in degrees C.
21	Dry-bulb temperature, tenths of degrees.
22 - 24	Wet-bulb air temperature, with sign, in degrees C.
25	Wet-bulb temperature, tenths of degrees.
26	Blank.
27	Present weather, from Table 21.
28	Cloud type, from Table 25.
29	Cloud amount, from Table 26.
30	Visibility, from Table 27.
31 - 32	A tag on the station number used for multiple lowerings at or near the same location (numerical) or designating a helicopter station (H) or a simultaneous observation by the APL CTD (W). The latter two usages are not always applied.
33 - 36	A check value of the station number.
37 - 42	Record serial number.

Data Coding

Columns	Explanation
1 - 6	Pressure in decibars and two decimals, form xxx.xx
7 - 12	Temperature, degrees C, form xx.xxx
13 - 18	Salinity, o/oo, form xx.xxx
19 - 25	Sound velocity, m/s, form xxxx.xx
26 - 32	Sigma-t, kg/m^3, form xx.xxxx
33 - 40	Serial number of record, form xxxxxxxx
42 - 48	Electrical conductivity ratio of UNESCO 1966, form 0.xxxxxx
49 - 60	Not present in APL data; useless in NBIS data.

```
1//PAQTD546 JOB (2752,0811),CLASS=E
 // EXEC FORTVCLG
 //FORT.SYSIN DD *
 /*
 //GO.FT02F001 DD UNIT=3400-4,VOL=SER=NPS546,DISP=OLD,
 //   LABEL=(1,SL,,IN),DCB=(DEN=2,RECFM=FB,LRECL=60,BLKSIZE=7260),
 //   DSN=E2752.MIZ800.NB
 //GO.SYSIN DD *
 /*
 //

 3 FEB 87.  DUMPS 51 RECORDS FROM NPS546,FILE1: 1980 NBIS DATA.
SOURCE TAPE FOR APC801, NOD801 AND NDC801.

 31PS54200165170197800229003    001 774 7*
 34271 0132 136999  30  29 1787         1     2
   0.56 2.84332.2371458.0225.7190          3 0.68193 0.403  6.90
   0.58 2.84432.2361458.0325.7181          4 0.68193 0.403  6.90
   0.60 2.84432.2361458.0325.7181          5 0.68193 0.403  6.90
   0.63 2.84332.2371458.0225.7189          6 0.68193 0.403  6.90
   0.69 2.84332.2361458.0225.7180          7 0.68190 0.403  6.90
   0.77 2.84332.2361458.0225.7179          8 0.68190 0.403  6.90
   0.87 2.84332.2361458.0225.7183          9 0.68190 0.403  6.90
   0.96 2.84232.2371458.0225.7187         10 0.68190 0.403  6.90
   1.07 2.84232.2371458.0325.7187         11 0.68190 0.403  6.90
   1.18 2.84232.2371458.0325.7186         12 0.68190 0.401  6.90
   1.29 2.84232.2371458.0325.7190         13 0.68190 0.401  6.90
   1.41 2.84232.2371458.0325.7185         14 0.68190 0.401  6.90
   1.52 2.84432.2351458.0425.7171         15 0.68190 0.401  6.90
   1.64 2.84232.2371458.0325.7188         16 0.68190 0.401  6.90
   1.75 2.84432.2381458.0525.7190         17 0.68197 0.401  6.90
   1.84 2.84532.2391458.0525.7195         18 0.68200 0.401  6.90
   1.96 2.84532.2381458.0525.7190         19 0.68200 0.401  6.90
   2.06 2.84532.2381458.0625.7198         20 0.68200 0.401  6.90
   2.15 2.84532.2391458.0625.7203         21 0.68202 0.401  6.90
   2.22 2.84632.2391458.0625.7199         22 0.68202 0.399  6.77
   2.32 2.84532.2391458.0625.7203         23 0.68202 0.399  6.77
   2.39 2.84532.2391458.0625.7202         24 0.68202 0.399  6.77
   2.46 2.84532.2401458.0725.7212         25 0.68204 0.399  6.77
   2.54 2.84532.2401458.0725.7211         26 0.68204 0.399  6.77
   2.61 2.84632.2391458.0725.7202         27 0.68204 0.399  6.77
   2.69 2.84632.2401458.0725.7211         28 0.68207 0.399  6.77
   2.77 2.84632.2411458.0725.7215         29 0.68207 0.399  6.77
   2.85 2.84632.2401458.0825.7211         30 0.68207 0.399  6.77
   2.93 2.84632.2401458.0825.7210         31 0.68207 0.399  6.77
   3.01 2.84632.2401458.0825.7209         32 0.68207 0.399  6.77
   3.09 2.84632.2401458.0825.7209         33 0.68207 0.400  6.77
   3.17 2.84532.2411458.0825.7218         34 0.68209 0.400  6.77
   3.25 2.84632.2411458.0825.7218         35 0.68209 0.400  6.77
   3.34 2.84632.2411458.0925.7217         36 0.68209 0.400  6.77
   3.44 2.84632.2411458.0925.7221         37 0.68209 0.400  6.77
   3.53 2.84632.2411458.0925.7216         38 0.68209 0.400  6.77
   3.65 2.84632.2411458.0925.7220         39 0.68209 0.400  6.77
   3.76 2.84632.2411458.0925.7215         40 0.68209 0.400  6.77
   3.87 2.84632.2401458.0925.7209         41 0.68207 0.400  6.77
   3.99 2.84532.2401458.0925.7208         42 0.68204 0.400  6.77
   4.11 2.84432.2401458.0925.7212         43 0.68204 0.400  6.77
   4.25 2.84532.2411458.0925.7216         44 0.68207 0.399  6.77
   4.37 2.84532.2411458.1025.7216         45 0.68207 0.399  6.77
   4.52 2.84532.2411458.1025.7215         46 0.68207 0.399  6.77
   4.65 2.84532.2411458.1025.7220         47 0.68209 0.399  6.77
   4.77 2.84632.2421458.1125.7224         48 0.68211 0.399  6.77
   4.91 2.84632.2411458.1125.7219         49 0.68211 0.399  6.77
   5.05 2.84732.2451458.1225.7249         50 0.68221 0.399  6.77
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Encl. 3

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Password:
 accNo   fleA refNo  proj inst ship    startDate  cruise   catId
 ------- ---- ------ ---- ---- ------- ---------- -------- ---------
 8700092 C022 319718 9999 31B7 31NW    1985/09/05 TT8191       168502
 8700092 C022 319719 9999 31B7 31NW    1984/08/22 TT8192       168503
 8700092 C022 319720 9999 31B7 31NW    1981/10/17 TT8193       168504
 8700092 F022 TT8191 9999 31B7 31NW    1985/09/05 NULL         168505
 8700092 F022 TT8192 9999 31B7 31NW    1984/08/22 NULL         168506
 8700092 F022 TT8193 9999 31B7 31NW    1981/10/17 NULL         168507
 8700092 C022 319721 9999 31B7 31NW    1980/02/29 TT8194       168508
 8700092 F022 TT8194 9999 31B7 31NW    1980/02/29 NULL         168509

(8 rows affected)
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Password:
 accNo   fleA refNo  ship staCnt recCnt startDate  endDate
 ------- ---- ------ ---- ------ ------ ---------- ----------
 8700092 C022 319718 31NW 150    273    85/09/05   85/09/26
 8700092 C022 319719 31NW 331    425    84/08/22   84/09/16
 8700092 C022 319720 31NW 156    234    81/10/17   81/11/15
 8700092 F022 TT8191 31NW 150    68030  85/09/05   85/09/26
 8700092 F022 TT8192 31NW 331    71498  84/08/22   84/09/16
 8700092 F022 TT8193 31NW 156    41615  81/10/17   81/11/15
 8700092 C022 319721 31NW 67     67     80/02/29   80/04/02
 8700092 F022 TT8194 31NW 67     12124  80/02/29   80/04/02

(8 rows affected)
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