

Report

of the Sub-Committee for Mechanizing the Index
of Hydrographic Data held by the Council

Historical.

In 1957, a provisional Sub-Committee (chairman LUMBY) recommended that the index of hydrographical data of the ICES should be transferred to punched cards. A permanent Sub-Committee (chairman HELA) was appointed to work on the question. Later chairmen have been van DUIJNEN MONTIJN and SÆLEN. In 1958, the Sub-Committee proposed card forms based on the IBM system. They included Master-, Detail- and Surface cards for the conventional hydrographic stations, and Master- and Detail Cards for bathy-thermograph observations. During the following years, a number of changes and amendments were made and included in the manual "ICES Oceanographic Punch Cards", which was issued in 1962. The complete ICES system for Punch Cards is now as follows:

- 1) The observations are entered into special forms. The use of such forms will make the punching easier. Copies of these forms may be ordered from the "Service Hydrographique". However, the different institutions may, within certain limits, arrange these forms to suit their own needs.
- 2) From these forms, the data are punched into IBM-cards with special headings, in accordance with the instructions given in the manual. Preferably, the data should be supplied to the "Service Hydrographique" in the form of punch cards. If the facilities are lacking, however, the "Service Hydrographique" will arrange for the punching.
- 3) The data will be listed by IBM tabulators directly from the punched cards. The lists may also contain computed quantities, and will appear on standard forms designed by the "Service Hydrographique". The punched cards are also used to produce the "ICES Oceanographic Data Lists" (previously "Bulletin Hydrographique").

Work carried out during the past year.

Code for salinity determination method. In accordance with the decision of the Hydrographical Committee in 1963, the Sub-Committee has agreed on the use of column 77 (Hydro Surface Card and Hydro Depth Card) for the indication of the method of salinity determination, according to a code which appears as an annex to this report.

Hydro Chemistry Card. As early as in 1959, the Sub-Committee recommended that preparations should be made for the introduction of a chemistry card. As there was considerable difference of opinion among chemists concerning the units to be used for the different constituents, a special Sub-Committee (now disbanded) was appointed for considering this question. Agreement was

reached at the meeting in Madrid in 1963, and the Sub-Committee has prepared a lay-out for the Hydro Chemistry Card in accordance with the decisions adopted at that meeting. Instructions for use of the Chemistry Card will be published as an amendment to the manual "ICES Oceanographic Punch Cards". Corresponding observation forms will be worked out by the "Service Hydrographique".

The different amendments to the manual "ICES Oceanographic Punch Cards" are appended to the present report.

Odd H. Sælen
Chairman

ICES OCEANOGRAPHIC PUNCH CARDS

Appendix I

On page 6 the line "65-77". Not punched" is replaced by :-

65-76. Not punched.

77. Method used for determination of salinity, according to the following code:

- 1 - Titration by routine Mohr-Knudsen method
- 2 - Titration by special precision method
- 3 - Conductivity measurement by instrument designed to give the salinity permille with a standard deviation of 0.01 or less
- 4 - Conductivity measurement by instrument designed to give the salinity permille with a standard deviation greater than 0.01
- 5 - Refraction index measurement
- 6 - Direct density measurement

NB. This column will be used only when the card functions as a Hydro Surface Card, i.e. when there are no sub-surface observations.

ICES OCEANOGRAPHIC PUNCH CARDS

Appendix II

On page 7 the Remark should be cancelled. Furthermore, the line "65-77. Not punched" is replaced by:-

65-76. Not punched.

77. Method used for determination of salinity, according to the following code:

- 1 - Titration by routine Mohr-Knudsen method
- 2 - Titration by special precision method
- 3 - Conductivity measurement by instrument designed to give the salinity permille with a standard deviation of 0.01 or less
- 4 - Conductivity measurement by instrument designed to give the salinity permille with a standard deviation greater than 0.01
- 5 - Refraction index measurement
- 6 - Direct density measurement

ICES OCEANOGRAPHIC PUNCH CARDS

Appendix III

Page 10. Before "General Remarks to all Cards" should be inserted:-

V. Hydro Chemistry Card.

A Hydro Chemistry Card is punched for each depth, including zero depth, of a hydrographic station at which chemical observations are carried out. (The same cards will be used for punching interpolated values for standard depths).

The following scheme indicates the use of the columns of the Hydro Chemistry Card.

- 1-35. As for the Hydro Depth Card. Will be punched automatically.
- 36-39. Chlorosity, in grams per dm^3 at 20°C , to the 2nd decimal place.
- 40-42. Oxygen Content, given in micromols at NTP per dm^3 of water at 20°C .
- 43-46. Phosphate Content, given as microgram-atoms phosphate phosphorus per dm^3 of water at 20°C to the 3rd decimal place.
- 47-49. Total Phosphorus Content, given in microgram-atoms per dm^3 of water at 20°C to the 2nd decimal place.
- 50-53. Silicate Content, given as microgram-atoms silicate silicon per dm^3 of water at 20°C to the first decimal place.
- 54-57. Nitrate Content, given as microgram-atoms nitrate nitrogen per dm^3 of water at 20°C to the 2nd decimal place.
- 58-60. Nitrite Content, given as microgram-atoms nitrite nitrogen per dm^3 of water at 20°C to the 2nd decimal place.
- 61-63. Ammonium Content, given as microgram-atoms ammonium nitrogen per dm^3 of water at 20°C to the 1st decimal place.
- 64-66. Organic Nitrogen Content, given in microgram-atoms per dm^3 of water at 20°C to the first decimal place.
- 67-68. Indicator for spare columns.
- 69-78. Spare columns.
- 79-80. Code No. Each Chemical Card receives the Code No. 06 if it is based upon original data (and the Code No. 16 if it is based upon vertical interpolation).

Indicator for Spare Columns

Columns 67-68 punched 01:

- 69-71 indicate the hydrogen-ion concentration (pH) in situ to the 2nd decimal place.
- 72-75 indicate the alkalinity, given in microval per dm^3 of water at 20°C .

Note. If traces of an element have been found this is indicated by punching 0 in the columns allocated to the element with an additional overpunch 11 in the last of these columns.

General Remark to the columns 36-66 and 69-78. That a value is questionable is indicated by an overpunch 11 in the 2nd of the columns allocated to the element.

ICES OCEANOGRAPHIC PUNCH CARDS

Appendix IV

Page 10. At the bottom of the page the following section is added:-

Card Colours.

In the ICES collections the following colours have been chosen for the various categories of cards:-

Card	Code No.	Colour
Hydro Master Card	01	orange
Hydro Surface Card	02	yellow
Hydro Depth Card	03	off-white
BT Master Card	04	red
BT Detail Card	05	brown
Hydro Chemistry Card	06	blue

IBM DANMARK
D 2188

HYDRO CHEMISTRY CARD

COUNTRY	SHIP	STATION NO.	LAT.		LONG.		DATE	OBS. TIME	OBS. DEPTH	TEMP.	CHLOROSITY g/dm ³	O ₂ μmol/dm ³	PHOSPHORUS PO ₄ -P μg-at/dm ³	SILICON SiO ₄ -Si μg-at/dm ³	NITROGEN N-NO ₂ -NH ₄ -N-ORG-N μg-at/dm ³	INDICATOR FOR COLS. 69-78	CODE NO.
			'	°	'	°											
0000	0000	0000	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
1 2 3 4	5 6 7 8 9	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 1 1 1	1 1 1 1	1 1 1 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2 2 2 2	2 2 2 2	2 2 2 2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3 3 3 3	3 3 3 3	3 3 3 3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
4 4 4 4	4 4 4 4	4 4 4 4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
5 5 5 5	5 5 5 5	5 5 5 5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
6 6 6 6	6 6 6 6	6 6 6 6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
7 7 7 7	7 7 7 7	7 7 7 7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
8 8 8 8	8 8 8 8	8 8 8 8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
9 9 9 9	9 9 9 9	9 9 9 9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
0 0 0 0	0 0 0 0	0 0 0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1 2 3 4	5 6 7 8 9	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ICES

