Hydrographic data

1 File Name

xxyynn.E

where, xx: Hydrographic Code [listed in Table1]
yy: Year (last 2 digits)
nn: Consecutive number

2 Format of File

Hydrographic data consist of ASCII records of fixed lengths (141 bytes). Each record is separated by two characters like as in DOS, which characters are one "control M" (carriage return, ASCII code 0Dh) and one "control J" (line feed, ASCII code 0Ah). For a missing value, the character '-'(ASCII code 2Dh) is put in place of the measured value. The column of the element that was not observed is filled with blanks.

Hydrographic data consist of 4 types of records: HEADER-1, HEADER-2, HEADER-3 and DATA. HEADER-1 represents cruise information. HEADER-2 and HEADER-3 represent station information and remarks, respectively. DATA includes observation data at the station.

The data files are composed of HEADER-1 and station data groups. HEADER-1 is always located at the beginning of the file. The station data groups are composed of HEADER-2, HEADER-3 and DATA. The character '@' on the "REC_IND" of DATA represents the end record of the station data group.

The parenthetic 'OBS' on the "DEPTH", "TEMP" and "SAL" of DATA means that the data was measured by CTD while the sea water sampled. Similarly, the parenthetic 'STD' means that the data was measured at the standard depths during the downcast of CTD.

HEADER-1 (Cruise Information)

Element	Start Position	Field Type	Description of Field
FORMAT CODE	1	A4	Format code of the file: 'E3.x'
CRUISE NO	6	I4	Cruise number identified with the year and consecutive number.
PERIOD	11	2(2I2,1X)	Date of beginning and end of the CTD and XCTD observations.
AREA	21	A113	Observation area.
NO OF STN	134	I4	Number of stations.
SHIP CODE	139	A2	Hydrographic Code (listed in Table 1.)
REC_IND	141	A1	'@'

HEADER-2 (Station Information)

Element	Start Position	Field Type	Description of Field
STATION NO	1	A3,I4	Station number given by the hydrographic code suffixed with four digits consecutive numbers.

HEADER-2 (continued)

Element	Start Position	Field Type	Description of Field
LATITUDE	9	I2,1X,I2,I1,A1	Degrees, minutes and tenths of minutes (if given) of latitude, N or S.
LONGITUDE	17	I3,1X,I2,I1,A1	Degrees, minutes and tenths of minutes (if given) of longitude, E or W.
DATE/TIME	26	2(I2,1X,I2,1X,2I2,1X)	Month, day and time of beginning and end of a hydrographic cast in the Japan Standard Time (JST), which is nine hours ahead of the coordinated Universal Time (UTC).
W-DEPTH	48	I4,A1	Water depth to the bottom in meters.
SSF-NO	116	A3,I3	Corresponding station number of the subsurface temperature data.
ACM-NO	123	A3,I3	Corresponding station number of the subsurface current data.
SUB STN NO	130	A6	Sub station number.
CRUISE NO	137	I4	
REC_IND	141	A1	'='

HEADER-3 (Station Remarks)

Element	Start Position	Field Type	Description of Field
STATION NO	1	A3,I4	
REMARKS	9	A82	Remarks of the station.
PARAM INF	91	A50	Information about element and position of additional parameters in DATA. Refer to the explanation of "(ADD PARAM)" in DATA for the details of the described element.
REC_IND	141	A1	'='

DATA (Observation Data)

Element	Start Position	Field Type	Description of Field
STATION NO	1	A3,I4	
TIME	9	2I2	Sampling time in JST.
DEPTH(OBS)	17	I4	Depth of sampling in meters.
TEMP(OBS)	22	F6.3	CTD temperature in "the International Temperature Scale of 1990 (ITS-90)."
SAL(OBS)	29	F6.3	CTD salinity in "the practical salinity scale, 1978 (PSS-78)."
DO	36	F5.1	Concentration of dissolved oxygen in micromoles per kilogram as determined by the Winkler Method.
PO4-P	42	F5.3	Inorganic phosphate-phosphorus in micromoles per kilogram as determined by the reduction method using ascorbic acid (Strickland and Parsons, 1965).

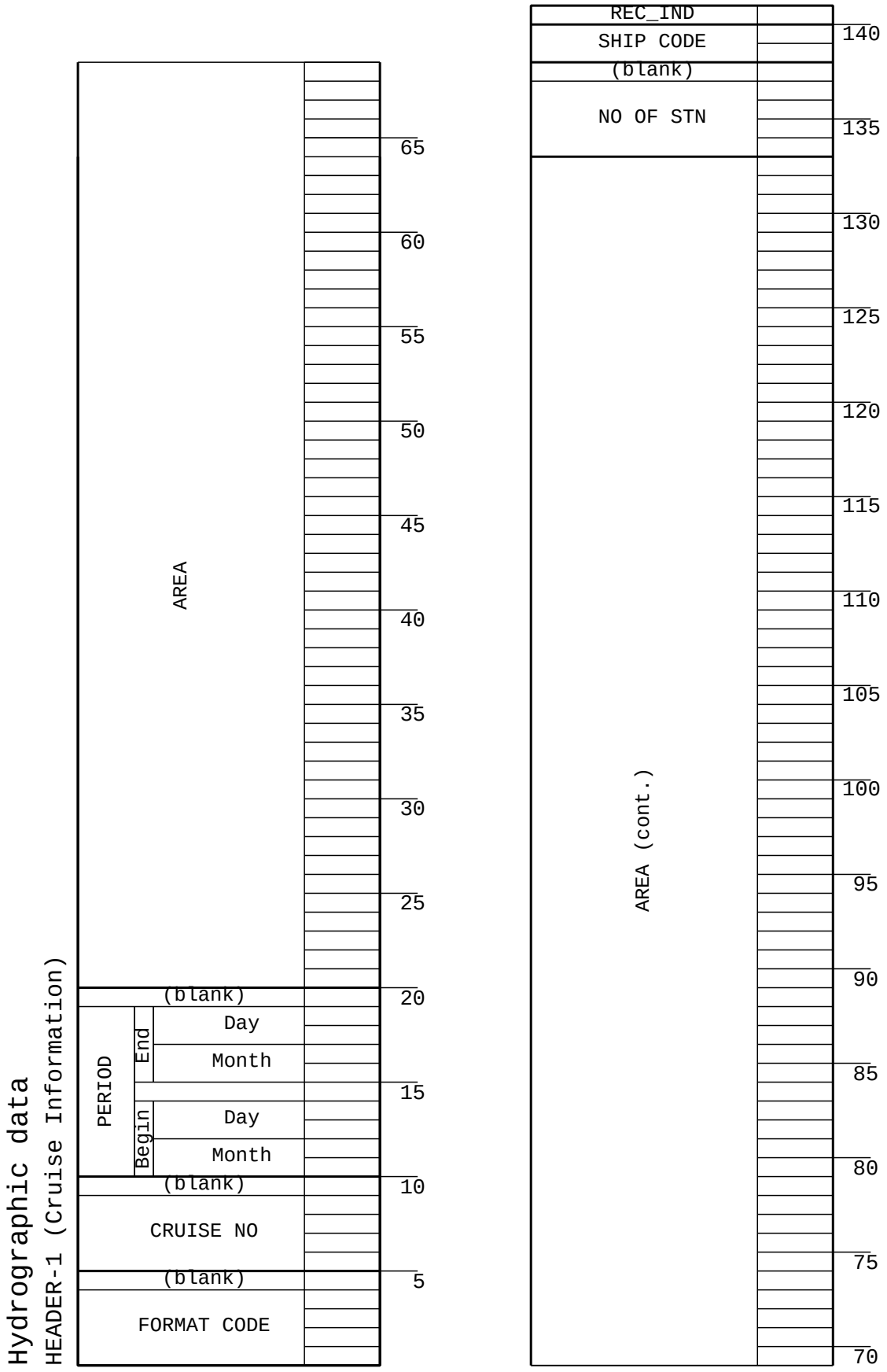
DATA (continued)

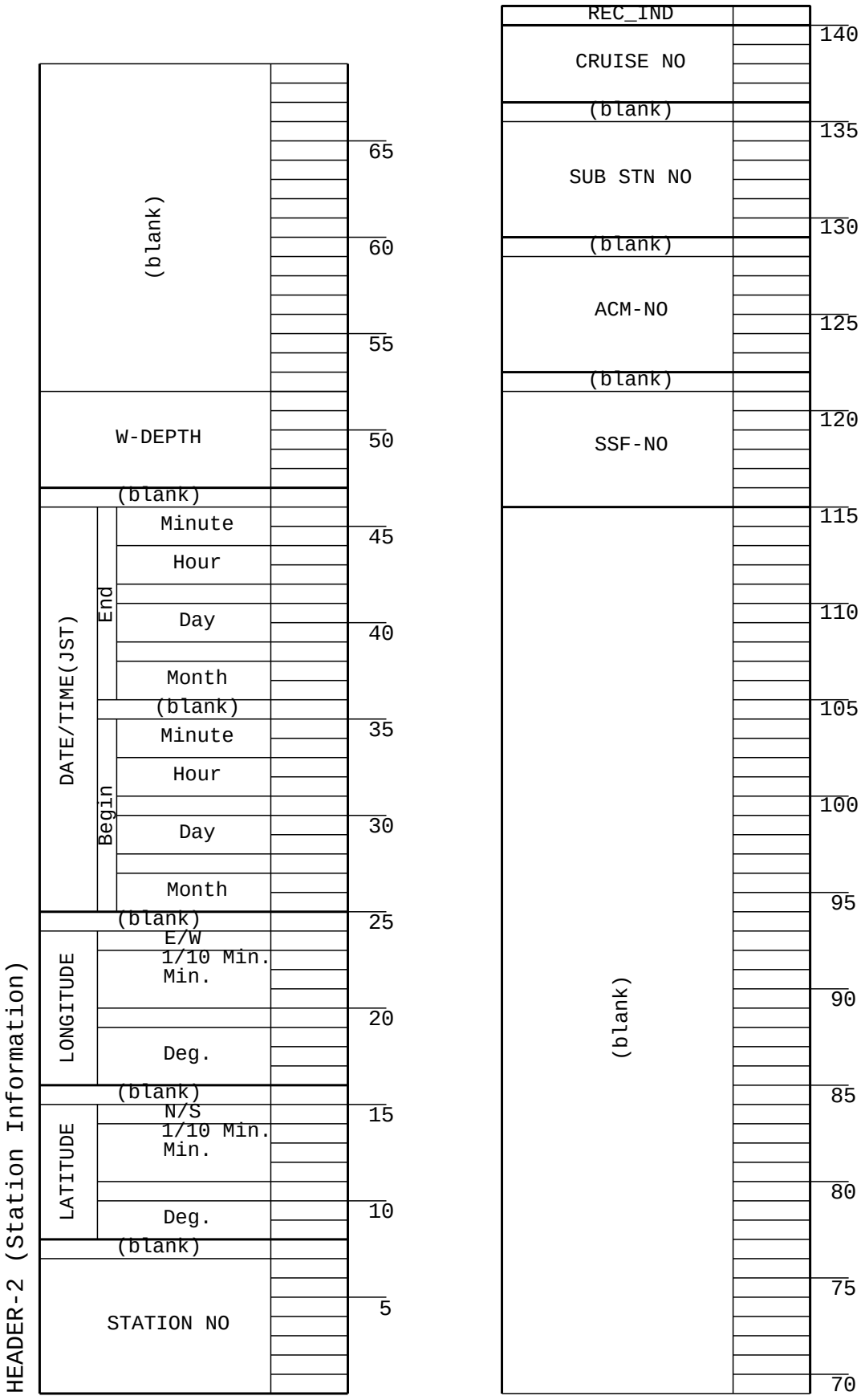
Element	Start Position	Field Type	Description of Field
NO3-N	48	F5.2	(Nitrate+nitrite)-nitrogen in micromoles per kilogram as determined by the Muellin-Riley method using copper-cadmium reduction column (WOOD, ARMSTRONG AND RICHARD, 1967).
NO2-N	54	F4.2	Nitrite-nitrogen in micromoles per kilogram as determined by the Bendschneider and Robinson method (STRICKLAND AND PARSONS, 1965).
SILCA	59	F5.1	Silicate-silicon in micromoles per kilogram as determined by the reduction method using ascorbic acid (GRASSHOFF ET AL, 1983).
PH	65	F5.3	Hydrogen-ion concentration exponent at 25 degrees centigrade as determined by the spectrophotometric technique using the indicator dye m-cresol purple (CLAYTON AND BYRNE, 1993).
CHL	71	F6.2	Chlorophyll a in micrograms per liter as determined by the fluorometric technique.
PHA	78	F6.2	Phaeopigments in micrograms per liter as determined by the fluorometric technique.
(ADD PARAM)	85		(ADDITIONAL PARAMETER) Total inorganic carbon "TCARBN" in micromoles per kilogram, total alkalinity "ALKALI" in micromoles per kilogram and "PRESSURE" in 10^4Pa
DEPTH(STD)	106	I4	Standard depths in meters.
TEMP(STD)	111	F6.3	CTD temperature in ITS-90.
SAL(STD)	118	F6.3	CTD salinity in PSS-78.
DO(STD)	125	F5.1	CTD oxygen in micromoles per kilogram.
D-ST	131	I4	Thermosteric anomaly in $10^{-8}m^3/kg$.
DELTA-D	136	F5.3	Geopotential anomaly in $10m^2/sec^2$.
REC_IND	141	A1	'@'(End Record of station) or '='

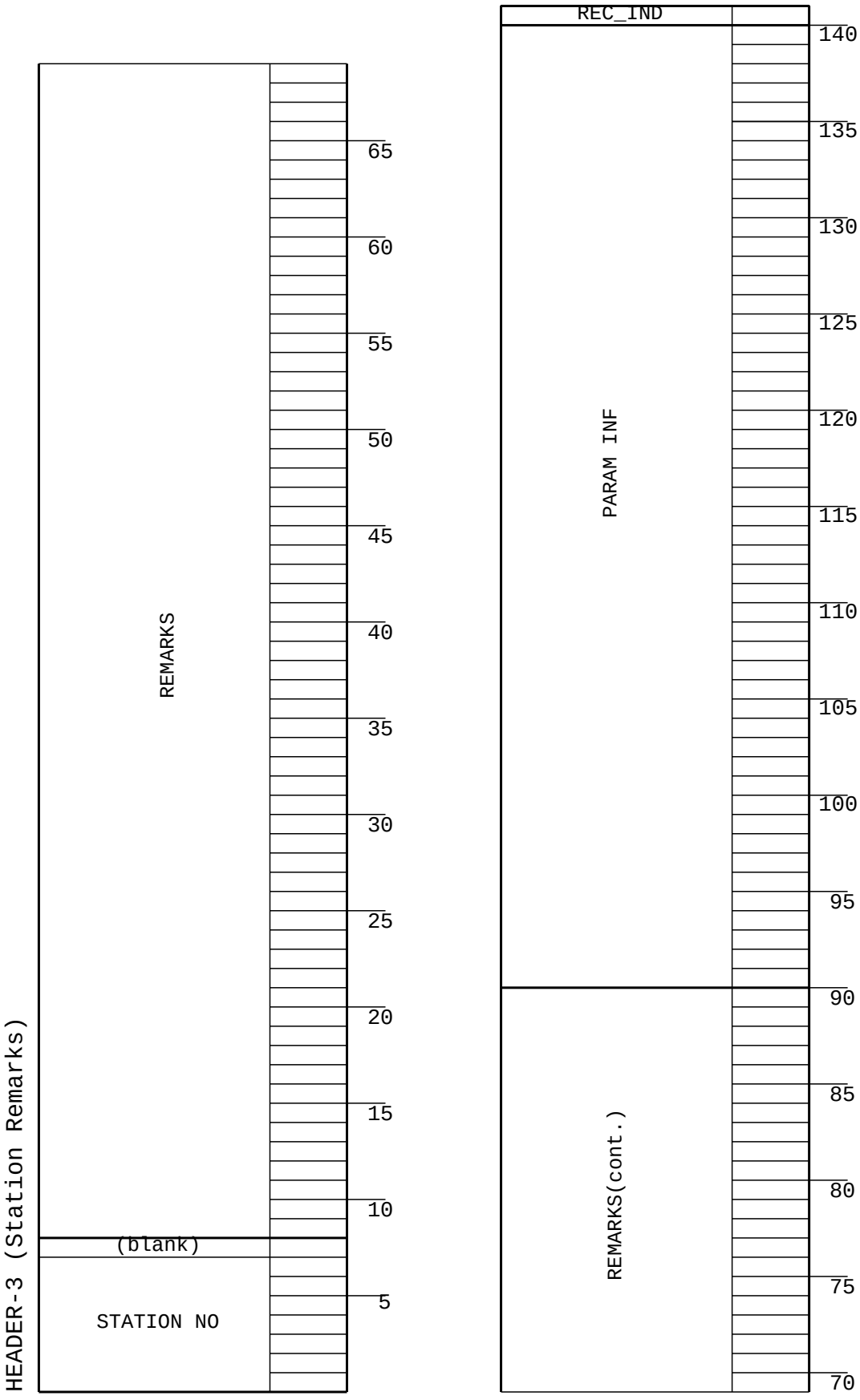
Table 1: Ship codes.

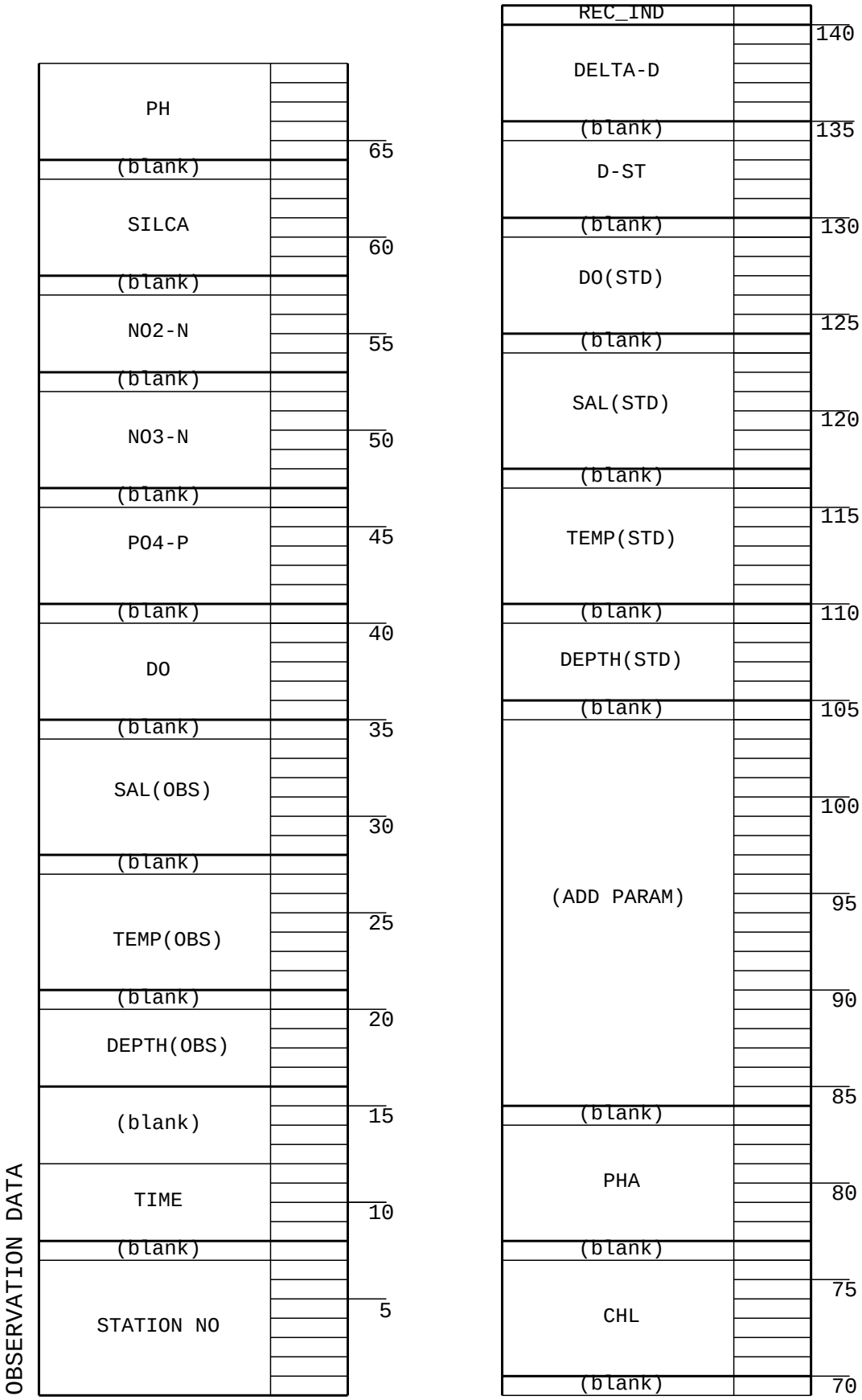
Ship Name	Hydrographic	BT	Subsurface current
Ryofu Maru	RF	TF	AF
Keifu Maru	KS	TS	AS

Data Record Layout




HEADER-2 (Station Information)
STATION NO
(blank)
LATITUDE
Deg.
N/S
1/10 Min.
Min.
(blank)
LONGITUDE
Deg.
E/W
1/10 Min.
Min.
(blank)
DATE/TIME(JST)
Begin
Month
Day
Hour
Minute
(blank)
End
Month
Day
Hour
Minute
(blank)
W-DEPTH
(blank)
(blank)
SSF-NO
(blank)
ACM-NO
(blank)
SUB STN NO
(blank)
CRUISE NO
REC_IND
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140


HEADER-3 (Station Remarks)
STATION NO
(blank)
REMARKS
REC_IND
PARAM INF
REMARKS(cont.)
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140


OBSERVATION DATA
STATION NO
TIME
(blank)
DEPTH(OBS)
(blank)
TEMP(OBS)
(blank)
SAL(OBS)
(blank)
DO
(blank)
PO4-P
(blank)
NO3-N
(blank)
NO2-N
(blank)
SILCA
(blank)
PH
5
10
15
20
25
30
35
40
45
50
55
60
65
CHL
(blank)
PHA
(blank)
(ADD PARAM)
(blank)
DEPTH(STD)
(blank)
TEMP(STD)
(blank)
SAL(STD)
(blank)
DO(STD)
(blank)
D-ST
(blank)
DELTA-D
REC_IND
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140