Hydrographic data

1 File Name

xxyymm.E

where, xx: Hydrographic Code [listed in Table1]
yy: Year (last 2 digits)
mm: Month

2 Format of File

Hydrographic data consist of ASCII records of fixed lengths (126 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: 'E2.x'
CRUISE NO	6	I4	Cruise number identified with the year and the month.
PERIOD	11	2(2I2,1X)	Date of beginning and end of the CTD and XCTD observations.
AREA	21	A98	Observation area.
NO OF STN	119	I4	Number of stations.
SHIP CODE	124	A2	Hydrographic Code (listed in Table 1.)
REC_IND	126	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	Water depth to the bottom in meters.
W-COLOR	54	I2	Color of sea in Forel-Ure scale.
TRANS	57	I2,1X,I2,1X	Transparency in meters and wire angle, as determined by Secchi Disk.
SSF-NO	102	A3,I3	Corresponding station number of the subsurface temperature data.
ACM-NO	109	A3,I3	Corresponding station number of the subsurface current data.
SUB STN NO	116	A6	Sub station number.
CRUISE NO	122	I4	
REC_IND	126	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	A35	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	126	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)	28	F6.3	CTD salinity in "the practical salinity scale, 1978 (PSS-78)."
DO	35	I3	Concentration of dissolved oxygen in micromoles per liter as determined by the Winkler Method.

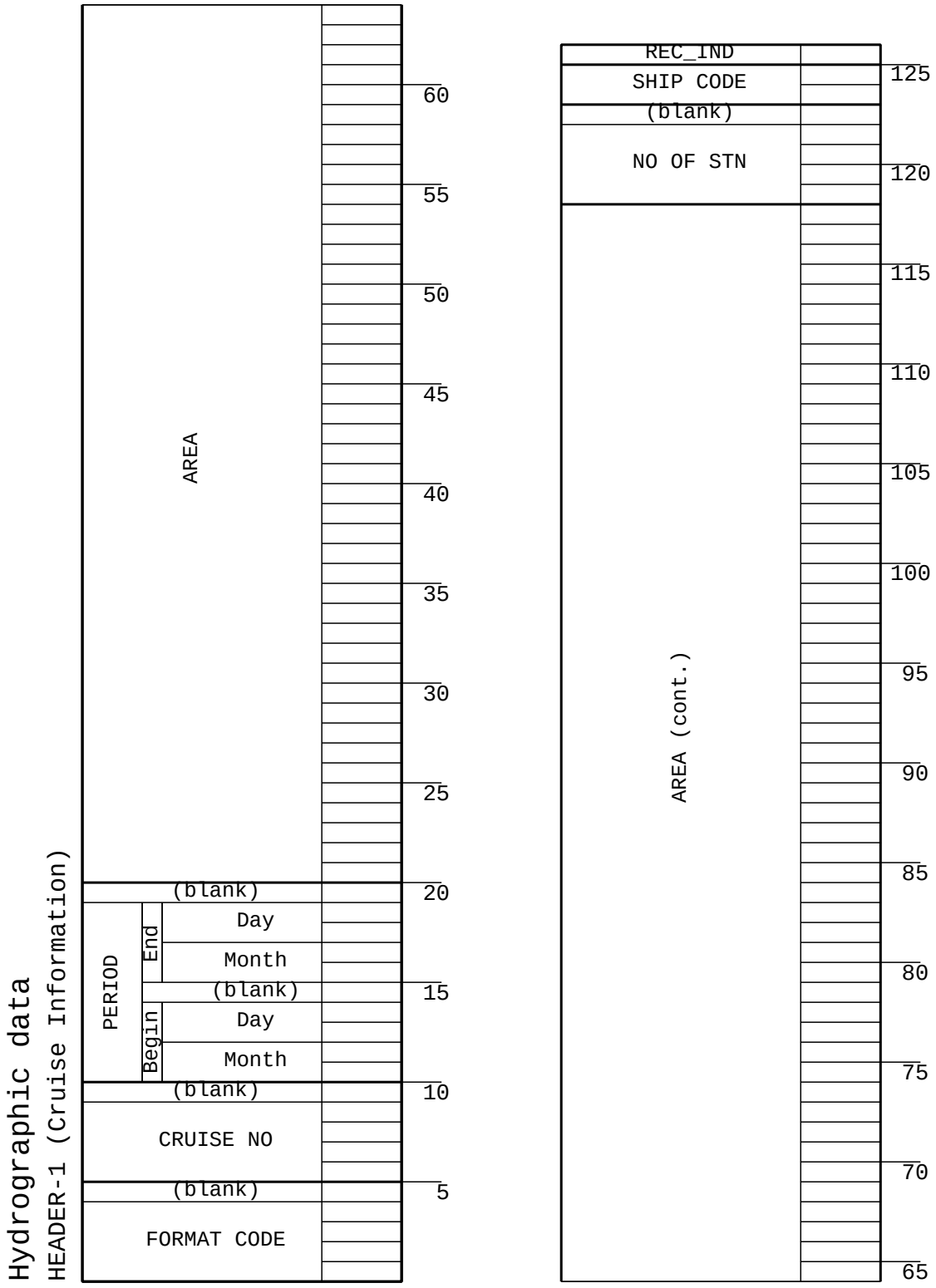
DATA (continued)

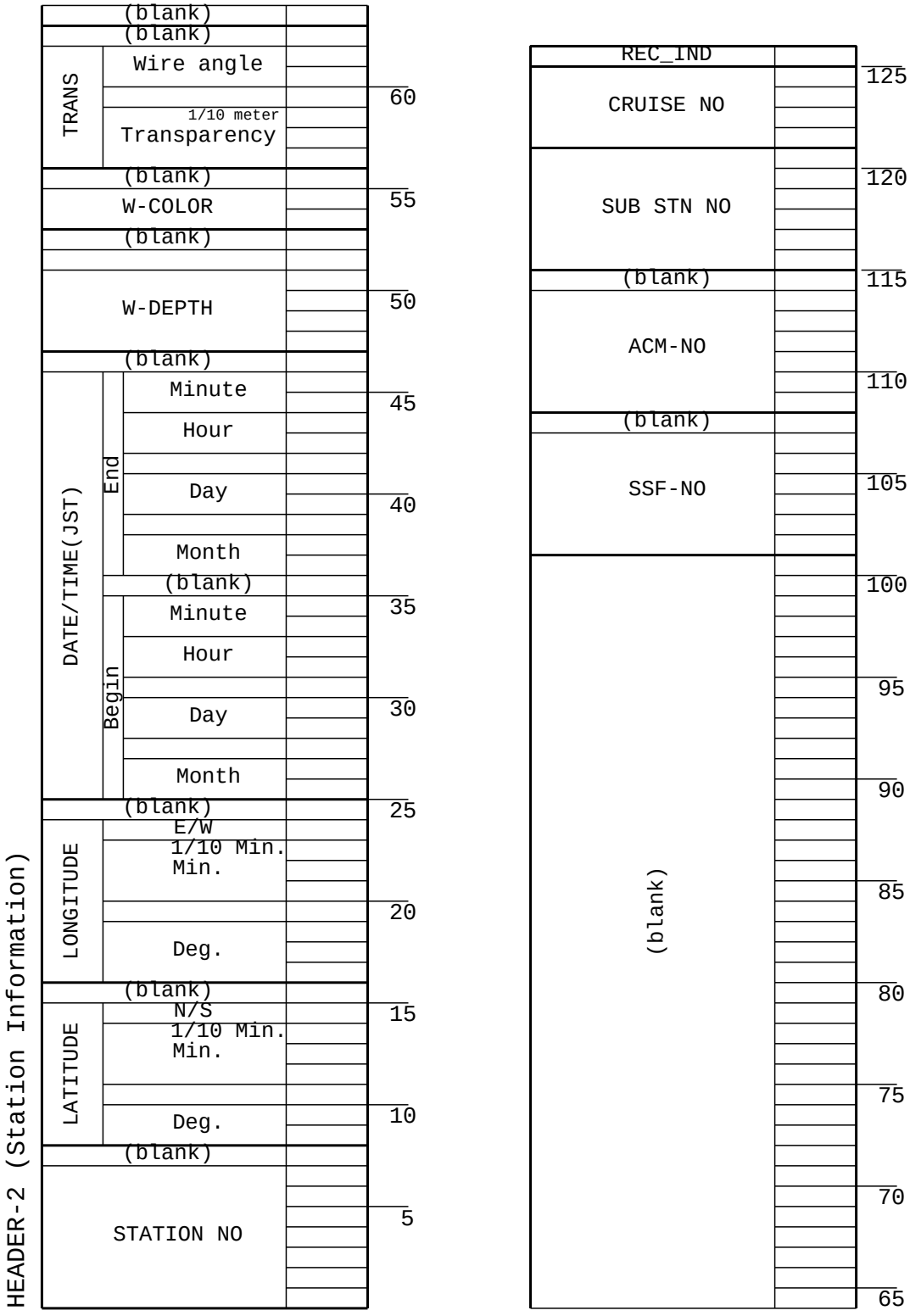
Element	Start Position	Field Type	Description of Field
PO4-P	39	F4.2	Inorganic phosphate-phosphorus in micromoles per liter as determined by the reduction method using ascorbic acid (Strickland and Parsons, 1965).
T-P	44	F4.2	Total phosphorus in micromoles per liter as determined using the potassium persulfate decomposition method.
NO3-N	49	F4.1	(Nitrate+nitrite)-nitrogen in micromoles per liter 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 liter as determined by the Bendschneider and Robinson method (Strickland and Parsons, 1965).
NH3-N	59	F4.2	Ammonia-nitrogen in micromoles per liter as determined by the modified indophenol method.
PH	64	F4.2	Hydrogen-ion concentration exponent at 25 degrees centigrade as determined by the pH meter (NBS scale).
CHL	69	F6.2	Chlorophyll a in micrograms per liter as determined by the fluorometric technique.
PHA	76	F6.2	Phaeopigments in micrograms per liter as determined by the fluorometric technique.
(ADD PARAM)	83		(ADDITIONAL PARAMETER) "PRESSURE" in 10^4Pa, Chemical oxygen demand "COD" in milligrams per liter, silicate-silicon "SILICATE" in micromoles per liter, total nitrogen "TOTAL-N" in micromoles per liter, "ALKALINITY" in milliequivalents per liter and total inorganic carbon "TIC" in millimoles per liter.
DEPTH(STD)	94	I4	Standard depths in meters.
TEMP(STD)	99	F6.3	CTD temperature in ITS-90.
SAL(STD)	105	F6.3	CTD salinity in PSS-78.
D-ST	116	I4	Thermosteric anomaly in $10^{-8}m^3/kg$.
DELTA-D	121	F5.3	Geopotential anomaly in $10m^2/sec^2$.
REC_IND	126	A1	'@'(End Record of station) or '='

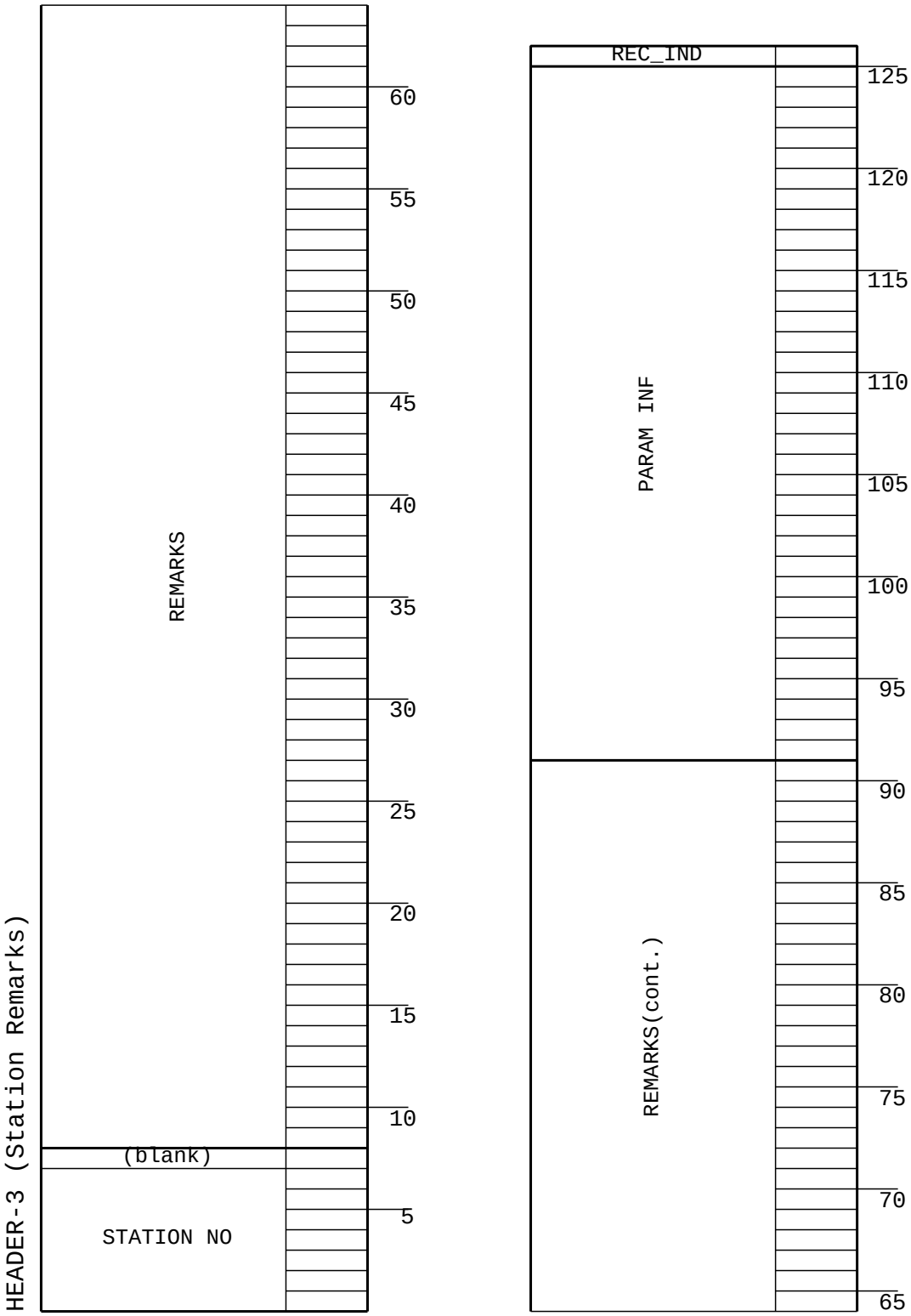
Table 1: Ship codes.

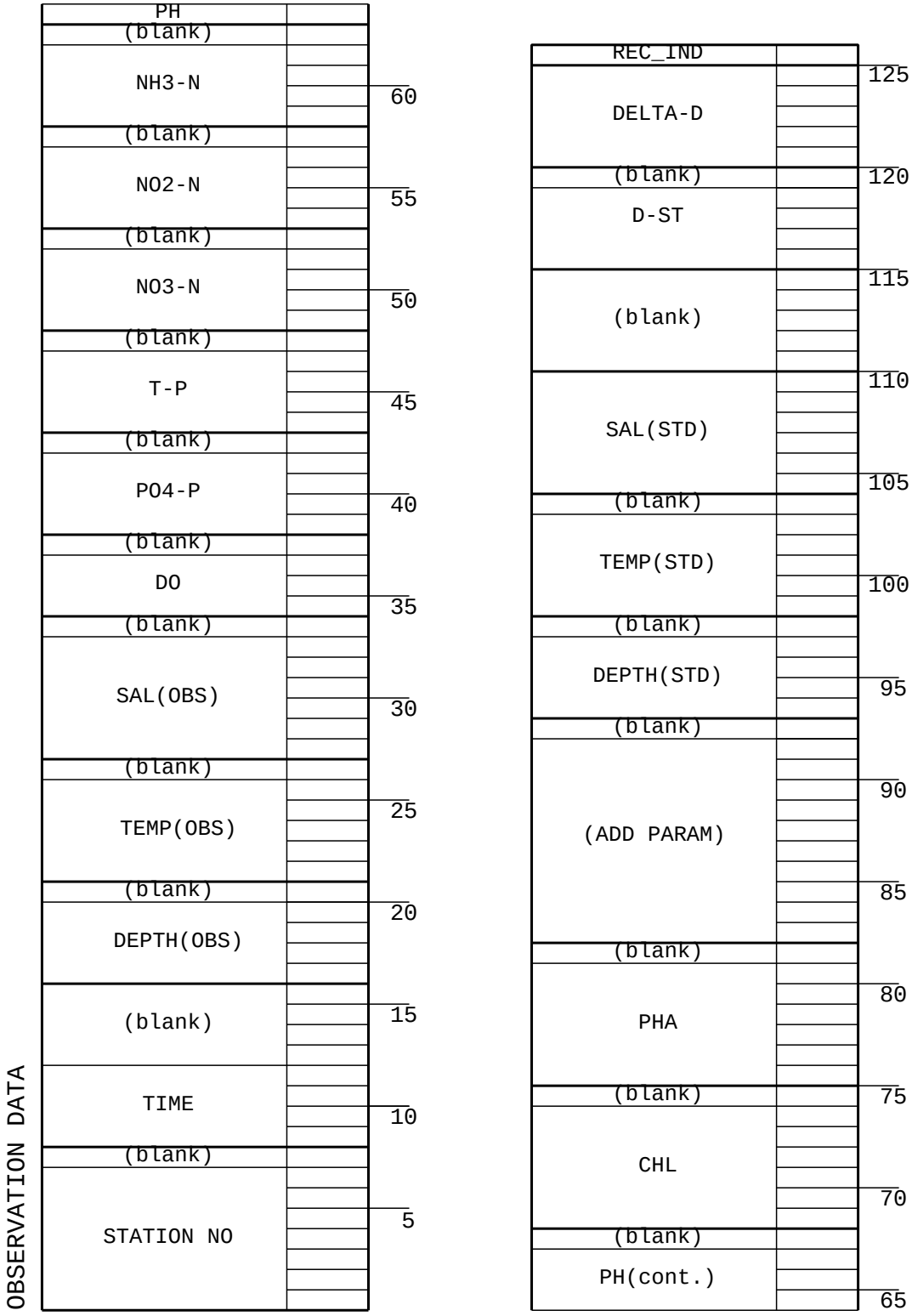
Ship Name	Hydrographic	Subsurface current	BT
Kofu Maru	KH/KO	AH/AO	TH/TO
Ryofu Maru	RF	AF	TF
Keifu Maru I	KE	AE	TE
Keifu Maru II	KS	AS	TS
Shumpu Maru	SH	AH	TH
Chofu Maru	NC	AC	TC
Seifu Maru	SM	AM	TM

Data Record Layout




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


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


OBSERVATION DATA
PH
(blank)
NH3-N
(blank)
NO2-N
(blank)
NO3-N
(blank)
T-P
(blank)
PO4-P
(blank)
DO
(blank)
SAL(OBS)
(blank)
TEMP(OBS)
(blank)
DEPTH(OBS)
(blank)
TIME
(blank)
STATION NO
60
55
50
45
40
35
30
25
20
15
10
5
REC_IND
DELTA-D
(blank)
D-ST
(blank)
SAL(STD)
(blank)
TEMP(STD)
(blank)
DEPTH(STD)
(blank)
(ADD PARAM)
(blank)
PHA
(blank)
CHL
(blank)
PH(cont.)
125
120
115
110
105
100
95
90
85
80
75
70
65