

NORSK INSTITUTT FOR VANNFORSKNING

Blindern

O-71160

UNDERSØKELSE AV HYDROGRAFISKE OG  
BIOLOGISKE FORHOLD I INDRE OSLOFJORD

DATARAPPORT 1978

Blindern, april 1979

Saksbehandler: *Fil.kand. Jan Magnusson*  
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# NIVA - RAPPORT

Norsk institutt for vannforskning  NIVA

Norges Teknisk-Naturvitenskapelige Forskningsråd

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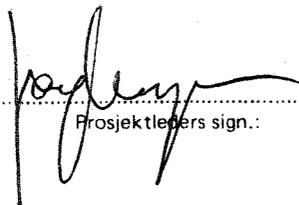
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1. Overvåking
2. Hydrografi
3. Datarapport
4. Indre Oslofjord

4 emneord, engelske:
1. Monitoring
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F O R O R D.

Foreliggende rapport presenterer måleresultater fra OSLOFJORDEN 1978, innsamlet av Norsk institutt for vannforskning (NIVA) etter oppdrag fra OSLOFJORDKONTORET (kontor for interkommunalt kloakksamarbeid i Indre Oslofjord).

Ved instituttet har siv.ing. Birger Bjerkeng utviklet EDB-system for de innsamlede data. Cand.mag. Norman Green har arbeidet med tilrettelegging og utlisting av data.

Brekke, april 1979.



Jan Magnusson  
Fyl. kanfl.

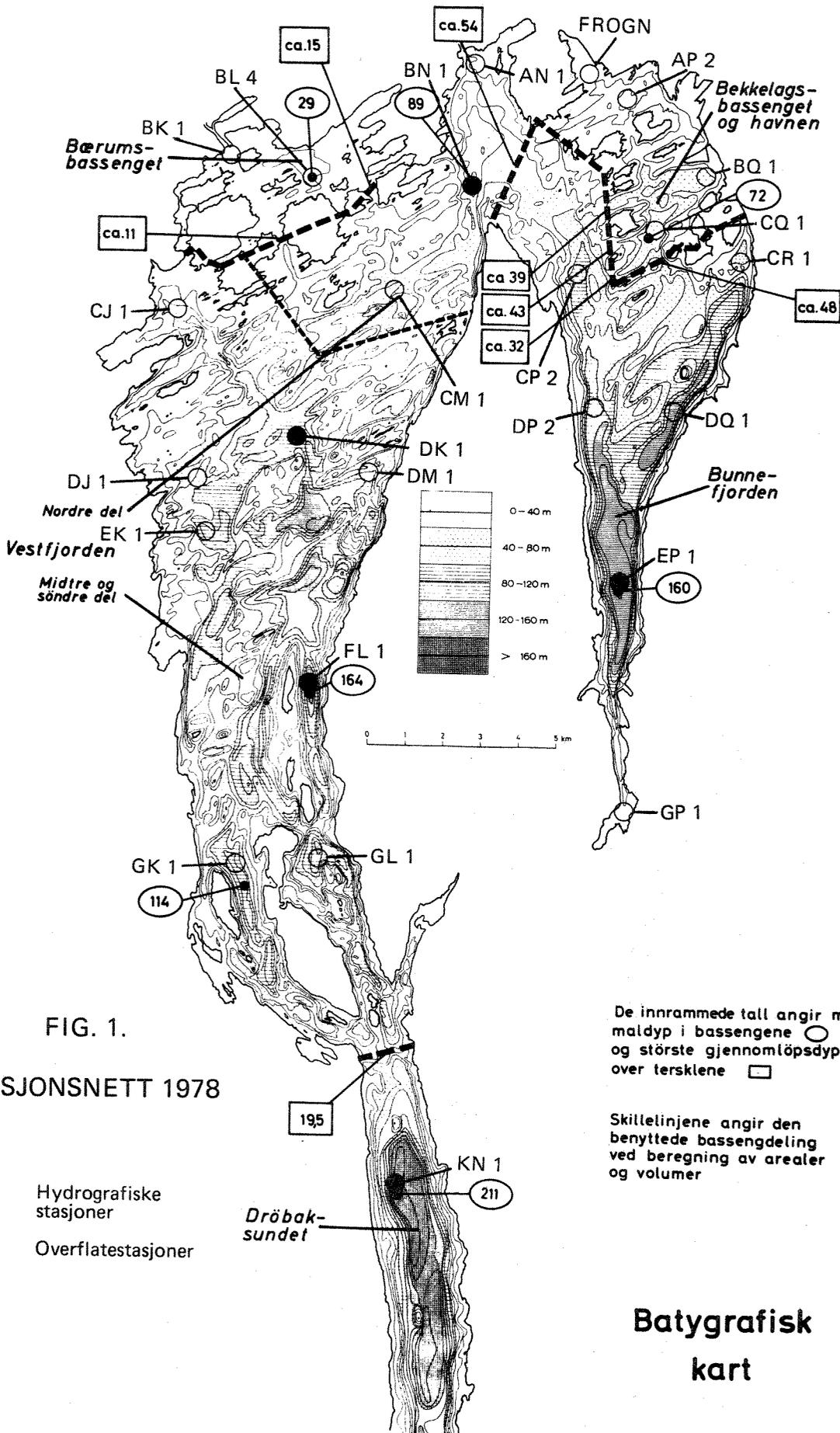


FIG. 1.

STASJONSNETT 1978

- Hydrografiske stasjoner
- Overflatestasjoner

De innrammede tall angir maksimaldyp i bassengene ○ og største gjennomløpsdyp over tersklene □

Skillelinjene angir den benyttede bassengdeling ved beregning av arealer og volumer

Batygrafisk kart

## 1. INNLEDNING

I 1978 ble det utført 8 hydrografiske tokt i Oslofjorden av NIVA. Toktene fordeler seg over året ifølge tabell 1. Stasjonsnett fremgår av figur 1. Oversikt over parametre, samt analysemetoder, presisjon og deteksjonsgrenser fremgår av tabell 2. Det utlistede materialet beskrives nedenfor og i tabell 3, som gir en oversikt over forkortelser og tegn som er brukt. Tabell 4 viser prøvetakingsfrekvensen i overflatelaget (0-2 m) fra et utvalg stasjoner.

## 2. BESKRIVELSE AV DET UTLISTEDE MATERIALET

En hydrografisk stasjons posisjoner er bestemt dels av dens geografiske koordinater (longitud og latitud) og dels av et internt (NIVA) koordinat-system, som er brukt ved beskrivelse av stasjonene på figur 1.

Dypet (DEPTH) angis i meter og er vanligvis en ekkoregistrering. Tiden (TIME) er middeleuropeisk tid (European Mean Time), og angir omtrentlig tidspunkt for hydrografien. Vindens hastighet angis i meter pr. sekund, og dens retning i tiendedels grader.

Lufttemperaturen (AIR.TEMP) angis i grader Celsius.

Tabell 1. HYDROGRAFISKE TOKT I INDRE OSLOFJORD 1978

Dato:	Stasjoner (se fig. 1)
17.1.	EP1
28.2.-1.3.	EP1, BN1, DK1, FL1, KN1
8.4.	EP1
18.-19.5.	EP1, BN1, DK1, FL1, KN1
16.-17.8.	EP1, BN1, DK1, FL1, KN1
12.9.	EP1, DK1
17.-18.10.	EP1, BN1, DK1, FL1, KN1, BL4, CQ1, AP2
14.12.	EP1, DK1

Siktedyp (SECCHI-DISC) måles med en hvit skive (25 cm i diameter) i skyggen av båten. Angitt dyp viser på hvilket nivå skiven ikke lenger kan ses. Fargen (COLOUR) avleses når skiven befinner seg på halve siktedypet.

Parametrene salinitet (SAL  $^{\circ}/\text{oo}$ ), tetthet (DENS, SIGMA-T) og oksygenmetning (O2-SAT %) har blitt beregnende etter International Oceanographic tables, National Institute of Oceanography of Great Britain and UNESCO Vol 1 (1966) og Vol 2 (1973). Tettheten (DENS.SIGMA-T) er angitt i størrelsen  $\sigma_t$  (sigma-t) som er definert som  $(\rho-1)\cdot 1000$ , hvor  $\rho$  = egenvekten.

Alle kjemiske analyser er utført på ufiltrert vann. Fosforprøvene er konservert i felten med svovelsyre og nitrogenprøvene (unntatt ammonium), samt total organisk karbonprøvene, er konservert med kvikksølvklorid.

Beregnende hjelpeparameter er organisk fosfor (ORG P) og organisk nitrogen (ORG N), hvor ORG P er forskjellen mellom totalfosfor og ortofosfat. ORG N er forskjellen mellom totalnitrogen og øvrige analyserte nitrogenforbindelser ( $\text{NO}_3 + \text{NO}_2 + \text{NH}_4 - \text{N}$ ). I tillegg er det listet en del forholdstall.

### 3. OVERFLATEPRØVER

Tabell 4 viser dato og prøvetakingsstasjoner for overflateprøver (blandprøver 0 - 2 m). Stasjonsnett fremgår av fig. 1. En del kjemianalyser er utført på filtrert vann (glassfiberfilter, GS/type C).

Klorofyllinnholdet ble bestemt fluorimetrisk etter ekstraksjon i 90% aceton.

Vekstpotensialmålingene ble utført etter NIVA's standardmetode med *Phaeodactylum tricorutum* som testorganisme. Vekstpotensialet (AGT) angir utbyttet av testalge i vannprøvene som antall celler/l.

Vekstbegrensende næringsstoff ble bestemt parallelt med vekstpotensialmålingene ved tilsetting av næringsstoffer til vannprøvene. Med begrensende næringsstoff menes i denne sammenheng det eller de stoffer som, ved tilsetting til vannprøven, gir øket vekstpotensial.

Tabell 2 OVERSIKT OVER PARAMETRE OG ANALYSEMETODER, SAMT DETEKJONGRENSER OG ANTATT PREKISJON VED ANALYSE AV SJØVANNSPRØVER x

Parameter	Analysemetode	PRESISJON	Deteksjons- grense	Litt.nr.
Temperatur (TEMP)	Vendertermometer avlest med lupe.	± 0,01°C	-	
Saltholdighet (SAL)	Konduktivitetmålinger ved laboratorieresalinometer (Industrial Man).	± 0.003°/oo	-	2,8
Oksygen/hydrogensulfid (O <sub>2</sub> /H <sub>2</sub> S)	Jodometrisk titrering. Modifisert Winkler-metode.	± 2-4%	-	1
Ortofosfat (PO <sub>4</sub> -P)	Autoanalytator. Molybdenblåttmetoden.	± 2 µg/l	2 µg/l	3,4,6
Totalfosfor (TOT-P)	UV-oksydasjon. Bestemmelse som ortofosfat.	± 2 "	2 "	3,4,6
Nitrat+nitritt (NO <sub>3</sub> -N)	Autoanalytator. Red. (Cd/Cu) til og best. som nitritt.	± 10 "	10 "	3,4
Ammonium (NH <sub>4</sub> -N)	Autoanalytator. Indofenolblåttmetoden.	± 5 "	10 "	7
Totalnitrogen (TOT-N)	UV-oksydasjon. Bestemmelse som nitrat/nitritt.	± 10 "	10 "	3,4
Total organisk karbon (TOC)	Persulfatoksydasjon. IR-bestemmelse som CO <sub>2</sub> .	± 0.1 mg/l	0.2 mg/l	5

x Presisjonen anslått for de konsentrasjonsnivåer som er representative for prøver fra Oslofjorden.

Tabell 3. Symbols and abbreviation used in data processing.  
Symboler og forkortelser brukt i databearbeiding.

	General Comments	Generelle kommentarer
CHL	Chlorophyll	Klorofyll
COD	Chemical oxygen Demand	Kjemisk oksygenforbruk (dikromattall)
CTD	Conductivity - Temperature - Depth recorder	Konduktivitet - temperatur - dyp sonde
GP	Growth Potential	Vekstpotensial
MCL	MiCroLayer, surface film sample	Mikrolag, overflatefilmprøve
NH4N	Ammonium NH <sub>4</sub> N	Ammonium NO <sub>4</sub> N
NS	Surface Plankton haul	Plankton tatt ved over- flatehåvtrekk
NTR	NuTRients	Næringssalter
OS	Oxygen Sond	Oksygen sonde
PEN	PENdulum current measurement taken	Pendelstrømmåler brukt
QP	Quantitative Plankton	Kvantitativ planktonprøve
SLN	SaLiNoterm	Salinoterm
STA	STAtion	Stasjon
VH	Water sampler	VannHenter
VT	Reversing thermometer	VendeTermometer
	Parameter Headings	Parameter overskrifter
DENS	DENSity Sigma-t ( $\sigma_t$ )	tetthet, sigma-t ( $\sigma_t$ )
H2S	Hydrogen Sulphide (H <sub>2</sub> S)	hydrogensulfid (H <sub>2</sub> S)
M	Meter	meter
MG/L	MilliGram/Liter, mg/l	mg/l
MICROGR/L	MICROGRam/Liter, $\mu$ g/l	$\mu$ g/l
ML	MilliLiter	milliliter
ML/L	MilliLiter/Liter (ml/l)	ml/l
MYG/L	Microgram/Liter ( $\mu$ g/l)	$\mu$ g/l
NO3N	Nitrate NO <sub>3</sub> N	nitrat NO <sub>3</sub> N

	Parameter Headings	Parameter overskrifter
O2	molecular oxygen O <sub>2</sub>	molekylær oksygen-O <sub>2</sub>
O2-SAT%	Oxygen-SATuration %	oksygenmetning %
ORG N	ORGanic Nitrogen	organisk nitrogen
ORG P	ORGanic Phosphate	organisk fosfat
PO4P	ortophosphate PO <sub>4</sub> P	ortofosfat PO <sub>4</sub> P
SAL	SALinity	saltinnhold
SI	SILicate	silikat
TEMP	TEMPerature	temperatur
TOC	Total Organic Carbon	total organisk karbon
TOT N	TOTAL Nitrogen	total nitrogen
TOT P	TOTAL Phosphate	total fosfat
	Data flags	Dataflagg
<	less than	mindre enn
>	greather than	større enn
(*)	uncertain value	usikker verdi
ca.	approximate value	cirka verdi
L	value planned but lacking for unknown reason	verdi planlagt, men mangler av ukjent grunn
NA	value NonAcclimated, usually refers to temperature which hasn't been given enough time to adequately adjust to ambient conditions	verdi ikke justert til omgivelsenes forhold, vanligvis gjelder dette tempera-tur
OT	Over-Titrated value	over-titrent verdi
R	Repeated analysis	reanalysert prøve
S	Spoiled or damaged sample	ødelagt prøve

Tabell 4. SIKTEDYPOBSERVASJONER OG OVERFLATEPRØVER 1978

Dato:	STASJONER
17.1.	EP1, AP2, BN1, DK1
7.2.	EP1, AP2, BN1, DK1
28.2.-1.3.	EP1, CP2, CQ1, AP2, BN1, DK1, FL1, GL1, KN1
14.3.	EP1, AP2, BN1, DK1
29.3.	EP1, AP2, BN1, DK1
8.4.	EP1
11.4.	EP1, AP2, BN1, DK1
26.4.	EP1, AP2, BN1, DK1
3.5.	AP2, BN1, BL4, *
9.5.	EP1, AP2, BN1, DK1
19.5.	EP1, CP2, CQ1, AP2, BN1, BL4, DK1, FL1, GL1, KN1
6.6.	EP1, AP2, BN1, DK1
20.6.	EP1, AP2, BN1, DK1
21.6.	GP1, EP1, DQ1, DP2, CR1, CP2, CQ1, BQ1, AP2, FROGN, BN1, AN1, BL4, BK1, CJ1, CM1, DK1, DM1, DJ1, EK1, FL1, GL1, GK1, KN1
4.7.	EP1, AP1, BN1, DK1
18.7.	EP1, AP2, BN1, DK1
1.8.	GP1, EP1, DQ1, DP2, CR1, CP2, CQ1, BQ1, AP2, ROGN, BN1, AN1, BL4, BK1, CJ1, CM1, DK1, DM1, DJ1, EK1, FL1, GL1, GK1, KN1
16.-17.8.	EP1, AP2, BN1, DK1, GL1, CQ1, BL4
29.8.	EP1, AP2, BN1, DK1
31.8.	EP1
12.9.	EP1, AP2, BN1, DK1

\* Pluss diverse stasjoner i Bunnefjorden, Bekkelagsbassenget og Lysakerfjorden.

Tabell 4 forts.

Dato	STASJONER
26.9.	EP1, AP2, BN1, DK1
17.-18.10.78	EP1, CP2, AP2, CQ1, BN1, BL4, DK1, FL1, GL1, KN1
30.11.	EP1, AP2, BN1, DK1
14.12.	EP1, AP2, BN1, DK1

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SIKTEDYP, KOLORFYLL a, VEKSTPOTENSIAL,  
BEGRENSENDE NÆRINGSSALTER SAMT KJEMISKE  
ANALYSER AV OVERFLATEVANN (BLANDPRØVER  
0 - 2 M) I INDRE OSLOFJORD 1978.

SIKTEDYP, KLOROFYLL a, VEKSTPOTENSIAL (AGP), BEGRENSENDE NÆRINGSSALT SAMT KJEMISKE ANA-  
 SYLER AV OVERFLATEVANN (BLANDPRØVER 0-2 M I INDRE OSLOFJORD 1978, Asterisk (\*) markerer at  
 analyser er utført på filtrert vann, (P) markerer fosfor, (N) markerer nitrogen som begrensende nærings salt.

Toktdato og stasjon 1978	Siktedyb (m)	Klorofyll a µg/l	AGPx10 <sup>6</sup> celler/l (begrensede nærings-salt)	Total orga-nisk karbon mg/l	Temp. °C	Salinitet ‰	Tot-P µg/l	PO <sub>4</sub> -P µg/l	Tot-N µg/l	NO <sub>3</sub> +NO <sub>2</sub> -N µg/l	NH <sub>4</sub> -N µg/l	Silikat-Si mg/l
<b>TOKT 17.1.78</b>												
Bunnefjorden EP1	12.5	0.8			0.6	27.7						
Havnebass. AP2	4.0	0.5			1.7	27.0						
Lysakerfjord. BN1	11.0	0.7			0.0	27.5						
Vestfjorden DK1	10.5	0.7	937	2.1	0.1	27.5	35		385			
" DK1*				1.9			36	15		180	15	
<b>TOKT 7.2.78</b>												
Bunnefjorden EP1	10.0	0.5		2.1	0.1	27.2	45	34	440	340	150	
Havnebass. AP2	3.5	0.5		2.2	2.4	28.0	65	41	1400	270	380	
Lysakerfjord. BN1	10.5	1.7		1.9	1.4	28.0	51	30	360	210	35	
Vestfjorden DK1	9.0	0.7		2.0	1.0	27.8	40	28	(190)	190	185	
" DK1*				2.0								
<b>TOKT 28.2.-1.3.78</b>												
Bunnefjorden EP1	4.5	12.5		2.1	2.9	30.4	49		640			2.6
" EP1*				2.0			43	37	600	300	15	
" CP2	4.7											
Bekkelagsbass. CQ1	4.0											
Havnebass. AP2	4.0											
Lysakerfjord. BN1	4.5	15.1		2.4								
" BN1*				2.2	2.2	28.5	44		700			
Vestfjorden DK1	5.5	19.3	637 (P)	2.2	1.2	29.8	37	34	600	290	100	
" DK1*				2.1			38	29	445	280	35	1.4
" FL1	7.5			2.0	1.2	28.6	35	28	350	195	35	
" GL1	7.5			-								
Drøbakssundet KN1	9.0			1.4	-0.3	27.3	32	25	470	190	10	

Toktdato og stasjon 1978	Siktedyp (m)	Klorofyll a $\mu\text{g/l}$	ACP $\times 10^6$ celler/l (Begrensede nærings-salt)	Total organisk karbon mg/l	Temp. $^{\circ}\text{C}$	Salinitet ‰	Tot-P $\mu\text{g/l}$	PO $_4$ -P $\mu\text{g/l}$	Tot-N $\mu\text{g/l}$	NO $_3$ +NO $_2$ -N $\mu\text{g/l}$	NH $_4$ -N $\mu\text{g/l}$	Silikat-Si mg/l
<u>TOKT 14.3.78</u>												
Bunnefjorden EP1	2.7	42.1		3.2	2.0	27.6	30		485			
" EP1*				2.1			8.5	<2	325	70	60	
Havnebass. AP2	1.7	42.8		3.5	3.0	27.4	41		720			
" AP2*				2.5			9	<2	355	150	70	
Lysakerfjord BN1	2.5	25.2		2.5	2.2	27.5	26		460			
" BN1*				1.8			16	<2	355	100	45	
Vestfjorden DK1	4.5	15.7	170 (P)	2.2	2.2	27.2	18		460			
" DK1*				2.2			12	<2	320	170	25	
<u>TOKT 29.3.78</u>												
Bunnefjorden EP1				2.2	1.9	25.3	25		400			
" EP1*		1.31		2.2			12	4	375	125	25	
Havnebass. AP2	2.0			2.9	3.4	24.0	66		676			
" AP2*		2.64		2.4			40	19	(536)	220	470	
Lysakerfjorden BN1	5.5			2.8	3.3	25.0	40		456			
" BN1*		3.51		2.4			31	12	450	145	105	
Vestfjorden DK1	6.0			2.2	1.8	28.7	17		265			
" DK1*		4.92	102 (P)	1.9			10	<2	250	40	<10	
<u>TOKT 8.4.78</u>												
Bunnefjorden EP1	4.0	0.46		2.45	4.5	26.0	36	14	375	220	185	
<u>TOKT 11.4.78</u>												
Bunnefjorden EP1	5.0	1.58		2.7	5.3	25.6	23		450			
" EP1*				2.4			12	25	495	180	90	
Havnebass. AP2	2.7	2.27		3.6	5.7	21.6	36		1460			
" AP2*				2.8			37	27	1160	435	405	
Lysakerfjorden BN1	3.5	1.76		3.1	5.6	24.1	21		960			
" BN1*				2.8			20	12	740	300	165	
Vestfjorden DK1	5.0	1.87	34 (P)	2.8	4.3	23.8	14		335			
" DK1*				2.6			-	5	305	145	30	

Toktdato og stasjon 1978	Siktedyp (m)	Klorofyll a $\mu\text{g/l}$	$\text{AC}^2 \times 10^6$ (Begrensede nærings-salt)	Total organisk karbon $\text{mg/l}$	Temp. $^{\circ}\text{C}$	Salinitet $\text{o}/\text{oo}$	Tot-P $\mu\text{g/l}$	PO <sub>4</sub> -P $\mu\text{g/l}$	Tot-N $\mu\text{g/l}$	NO <sub>3</sub> +NO <sub>2</sub> -N $\mu\text{g/l}^2$	NH <sub>4</sub> -N $\mu\text{g/l}$	Silikat-Si $\text{mg/l}$
<u>TOKT 26.4.78</u>												
Bunnefjorden	EP1 (4.5)	18.9		4.0			30		1140			
"	EP1*			3.0			9	2	740	310	35	
Havnebass.	AP2 (3.0)	5.98		3.1			43		900			
"	AP2*			2.6			30	15	880	260	120	
Lysakerfjorden	BN1 (3.8)	8.52		3.6			26		760			
"	BN1*			3.2			13	6	460	300	20	
Vestfjorden	DK1 (4.5)	11.44	100 (P)	3.5			22		880			
"	DK1*			2.7				<2	405	235	30	
<u>TOKT 3.5.78</u>												
Bekkelagsbassenget												
Bekkelaget Renseanlegg over diffusor	0.7	43.1			8.4	21.7						
Bunnefjorden												
Hvervenbuktra	1.75	15.7			8.4	21.5						
Skjaerholmlua	1.25	21.7			8.8	21.9						
Havnebassenget	AP2	25.9			8.9	21.9						
Grasholmen	0.50	36.5			8.9	21.9						
Lysakerfjorden	BN1	19.5			8.4	18.3						
Lysaker diffusoren	1.25	19.1			8.5	21.2						
Snaarøykilen	1.0	27.4			9.2	17.9						
Berumbassenget	BL4	24.6			8.8	23.6						
Vestfjorden												
Ø. Gåsungene	1.5	15.1										
<u>TOKT 9.5.78</u>												
Bunnefjorden	EP1	19.5		5.13	11.8	22.6	71		700			
Havnebassenget	AP2	18.4		8.6	8.8	23.0	47		560			
Lysakerfjorden	BN1	26.2		5.20	9.2	22.9	61		440			
Vestfjorden	DK1	2.7		5.13	10.8	22.5	39		490			
"	DK1*	14.5	20 (-)	3.68			38	21	285	10		30

Toktdato og stasjon 1978	Sikredvyp (m)	Klorofyll a $\mu\text{g/l}$	AGPx10 <sup>6</sup> celler/l (Begrænsede nærings-salt)	Total orga-nisk karbon mg/l	Temp. °C	Salinitet ‰	Tot-P $\mu\text{g/l}$	PO <sub>4</sub> -P $\mu\text{g/l}$	Tot-N $\mu\text{g/l}$	NO <sub>3</sub> +NO <sub>2</sub> <sup>-</sup> $\mu\text{g/l}$	NH <sub>4</sub> -N $\mu\text{g/l}$	Siilikat-Si mg/l
<b>TOKT 19.5.78</b>												
Bunnefjorden	4.5	4.6		3.63	11.0	22.5	21	7	385	20	<10	0.5
"	3.5											
Bekkelagsbasseng. CQ1	4.0											
Havnebassenget AP2	4.0	1.8		3.43			70		640			
Lysakerfjorden BN1	4.0	3.3	349	3.43	9.8	23.0	14	6	305	50	<10	
"				4.08			24	3	300	45	55	
Bærumsbassenget BL4	2.8											
Vestfjorden DK1	5.5	2.5		3.35	9.3	22.9	50	21	275	25	150	0.4
"												
"												
Drøbakssund KN1	6.0											
<b>TOKT 6.6.78</b>												
Bunnefjorden EP1	2.5	-		5.1	18.8	18.5	8		235	<10	<10	
"				3.90			3	<2	185			
Havnebass. AP2	2.0	-		4.83	18.6	17.5	13		250	<10	<10	
"				4.05			7	<2	180	<10	<10	
Lysakerfjorden BN1	2.0	-		4.8	18.0	16.5	13		260	<10	<10	
"				3.85			17	<2	190	<10	<10	
Vestfjorden DK1	2.0	-	24 (P)	5.-	16.8	16.5	17		270	10	<10	
"				3.83			16	11	190			
<b>TOKT 20.6.78</b>												
Bunnefjorden EP1	4.5	3.2		4.18			47		355	<10	<10	
"				3.53			16	<2	225	<10	<10	
Havnebassenget AP2	3.3	10.7		3.83			63		325	<10	<10	
"				3.50			16	<2	205	<10	<10	
Lysakerfjorden BN1	3.8	4.3		3.80			29		305	<10	<10	
"				3.20			20	<2	220	<10	<10	
Vestfjorden DK1	4.5	3.1	13 (P)	3.43			25		235	<10	<10	
"				3.23			10	<2	210	<10	<10	

Toktdato og stasjon 1978	Siktedyb (m)	Klorofyll a $\mu\text{g/l}$	AGPx10 <sup>6</sup> celler/l a Begrensen- de nærings- salt	Total orga- nisk karbon mg/l	Temp. °C	Salinitet ‰	Tot-P $\mu\text{g/l}$	PO <sub>4</sub> -P $\mu\text{g/l}$	Tot-N $\mu\text{g/l}$	NO <sub>3</sub> +NO <sub>2</sub> -N $\mu\text{g/l}$	NH <sub>4</sub> -N $\mu\text{g/l}$	Silikat-Si mg/l
<u>TOKT 21.6.78</u>												
Bunnefjorden	GP1	4.5			18.4	19.2						
"	EP1	5.0	5.5		18.3	18.5						
"	DQ1	4.5	5.2		19.0	17.6						
"	DP2	5.5	3.8		18.8	18.0						
"	CR1	4.5	5.4		19.2	17.4						
"	CP2	4.5	6.4		18.9	17.6						
Bekkelagsbassenget	CQ1	4.0	7.6		19.2	17.5						
"	BQ1	3.5	15.1		19.8	17.5						
Havnebassenget	AP2	3.5	16.4		19.5	17.2						
"	FROGN	2.5	22.7		19.7	17.4						
Lysakerfjorden	BN1	3.5	9.6		19.1	17.5						
"	AN1	2.6	11.1		19.6	16.5						
Bærumsbassenget	BL4	2.75	9.7		19.7	17.5						
"	BK1	0.7	40.3		20.2	16.0						
Vestfjorden	CJ1	4.0	6.3		18.9	17.7						
"	CM1	4.0	4.6		18.2	18.0						
"	DK1	3.5	6.3		16.6	19.2						
"	DM1	3.5	6.5	13 (P)	16.5	19.2						
"	DJ1	4.5	4.7		17.7	18.4						
"	EK1	4.5	4.8		17.3	18.9						
"	FL1	3.25	5.8		15.7	19.2						
"	GL1	3.0	5.5		15.9	19.0						
"	GK1	3.5	7.5		15.5	19.5						
Drøbakssundet	KN1	3.5	6.5		16.6	18.5						

Toktdato og stasjon 1978	Sikredyp (m)	Klorofyll a $\mu\text{g/l}$	APx10 <sup>6</sup> (Begrænsede nærings-salt)	Total organisk karbon mg/l	Temp. °C	Salinitet ‰	Tot-P $\mu\text{g/l}$	PO <sub>4</sub> -P $\mu\text{g/l}$	Tot-N $\mu\text{g/l}$	NO <sub>3</sub> +NO <sub>2</sub> -N $\mu\text{g/l}^2$	NH <sub>4</sub> -N $\mu\text{g/l}$	Silikat-Si mg/l
<u>TOKT 4.7.78</u>												
Bunnefjorden	3.2	18.9		3.98	18.9	17.0	25		380			
"				3.0			11	8.5	250	100	30	
Havnebassenget	2.0	22.1		4.95	17.0	18.6	43		465			
"				3.38			18	17	310	<10	55	
Lysakerfjorden	2.1	29.6		4.90	17.2	18.1	41		640			
"				3.40			20	<2	255	25	40	
Vestfjorden	3.5	12.6	20 (P)	3.75	17.0	18.2	32.5		385			
"				3.15			18	8.5	260	<10	20	
<u>TOKT 18.7.78</u>												
Bunnefjorden	4.1			3.55	17.6	18.8	32		305			
"				4.28			19	22.5	250	<10	<10	
Havnebassenget	3.0	4.6		4.68	17.4	18.7	50		450			
"				3.28			27	<2	295	10	10	
Lysakerfjorden	4.0	10.5		4.30	17.6	18.8	47		315			
"				5.4			21	<2	245	<10	40	
Vestfjorden	4.5	7.9		3.80	17.4	18.3	27		265			
"				3.28			16	<2	220	<10	15	
<u>TOKT 1.8.78</u>												
Bunnefjorden	3.5	9.5			20.5	21.1						
"	6.3	1.9			20.2	21.4						
"	4.9	10.3			20.2	21.8						
"	4.8	2.9			20.1	22.5						
"	4.0	9.2			20.0	21.4						
"	3.8	10.4			19.8	21.3						
Bekkelagsbasseng	3.2	16.3			19.5	21.0						
"	3.0	13.4			19.5	21.1						
Havnebassenget	2.9	23.9			18.9	22.0						
"	2.2	17.6			18.0	21.4						



Tokdato og stasjon 1978	Sikredyp (m)	Klorofyll a $\mu\text{g/l}$	AGF $\times 10^6$ celler/l Begrænsede nærings-salt	Total orga-nisk karbon mg/l	Temp. $^{\circ}\text{C}$	Salinitet /oo	Tot-P $\mu\text{g/l}$	PO $_4$ -P $\mu\text{g/l}$	Tot-N $\mu\text{g/l}$	NO $_3$ +NO $_2$ -N $\mu\text{g/l}$	NH $_4$ -N $\mu\text{g/l}$	Silikat-Si mg/l
<u>TOKT 12.9.78</u>												
Bunnefjorden EP1	3.5	8.4		2.40	11.4	26.2	22	<2	315	<10	-	
Havnebassenget AP2	3.0	9.1			10.3	28.0						
Lysakerfjorden BN1	3.2	16.1			11.4	27.6						
Vestfjorden DK1	3.2	11.9	12 (P)	2.90	12.0	27.2	8		300			
" DK1*				1.78			2	<2	190	30	<10	
<u>TOKT 26.9.78</u>												
Bunnefjorden EP1	3.0	5.4			9.9	28.7						
Havnebassenget AP2	2.5	6.9			10.8	25.6						
Lysakerfjorden BN1	2.5	5.9			10.3	28.0						
Vestfjorden DK1	3.5	4.6	47 (P)	2.18	10.4	28.9	5		260			
" DK1*				1.78			<2	<2	235	15	25	
<u>TOKT 17.-18.10.78</u>												
Bunnefjorden EP1	3.5	23.1			8.8	28.4	31	6	375	<10	105	
" CP2	2.0											
Havnebassenget AP2	2.5	20.8		2.58	8.7	27.3	10	10	440	80	150	
Bekkelagsbassenget, CQ1	5.0	27.6		2.65	8.8	28.4	25	7	300	<10	60	
Lysakerfjorden BN1	3.5	37.3			8.9	28.2	19	7	390	20	120	
Bærumbassenget, BL4	2.6	30.9		3.13	7.9	24.7	130	6	395	<10	100	
Vestfjorden DK1*							12	<2	200	45	<10	
" DK1	9.0	1.7	96 (P)		9.4	28.5	13	2	210	50	60	
" FL1	12.0	1.5		1.73	9.3	27.8	12	5	290	80	50	
" GL1	7.0											
Drøbakssundet KN1	6.5	2.4		2.0	10.0	25.8	11	8	265	50	80	
<u>TOKT 30.11.78</u>												
Bunnefjord EP1	8.0	1.2		2.43			25		445			
Havnebassenget AP2		0.7		2.93			44		560			
Lysakerfjorden BN1		1.0		3.5			31		500			
Vestfjorden DK1	9.0	0.7		2.0			22		310			
" DK1*				2.6			20	14	315	130	50	

Toktdato og stasjon 1978	Siktedyp (m)	Klorofyll a $\mu\text{g/l}$	AGPx10 <sup>6</sup> celler/l Begrensede nærings-salt	Total orga-nisk karbon $\text{mg/l}$	Temp. $^{\circ}\text{C}$	Salinitet / $\infty$	Tot-P $\mu\text{g/l}$	PO <sub>4</sub> -P $\mu\text{g/l}$	Tot-N $\mu\text{g/l}$	NO <sub>3</sub> +NO <sub>2</sub> -N $\mu\text{g/l}$	NH <sub>4</sub> -N $\mu\text{g/l}$	Silikat-Si $\text{mg/l}$
<u>TOKT 14.12.78</u>												
Bunnefjorden EP1	7.0				0.6	28.2	36	24	400	120	140	
Havnebassenget AP2	2.5						78	66	924	200	250	
Lysakerfjorden BNI	6.5						56	44	375	150	180	
Vestfjorden DK1	8.5		450 (P)		1.5	28.4	36	23	345	115	165	

**Hydrografiske observasjoner  
i indre Oslofjord 1978**

**Tokt den 17/1 1978.**

\*\*\*\*\*  
 COUNTRY \* INSTITUTE \* SHIP \* PROJECT \* LOCATION \* STATION \* POSITION \* DEPTH \* DATE \* TIME \*  
 \* \* \* \* \*  
 NORWAY \* NIVA \* HHGRAN \* 71160-30 \* OSLOFJORD \* FP-1 \* NORTH \* EAST \* M \* \* \* \* \*  
 \* \* \* \* \*  
 WIND \* AIR TEMP. \* SECCHI-DISC \* WEATHER \* CLOUDS \*  
 \* \* \* \* \*  
 SPEED \* DIRECTION \* DEG.CELS. \* DEPTH \* PARTLY CLOUDY \*  
 M/S \* (0-36) \* DRY \* WET \* M \* \* \* \* \*  
 \* \* \* \* \*  
 SEA \* IN VICINITY, TYPE/AMOUNT UNKNOWN \* \* \* \* \*  
 \* \* \* \* \*  
 CALM; WAVES 0.0M \* \* \* \* \*  
 \* \* \* \* \*  
 COMMENTS \* \* \* \* \*  
 CHL 0-2M, CTD-TEMP 0-150, -SAL 0-120M \* \* \* \* \*

DEPTH		TEMP.	SAL.	SIGMA-T	DENS.	02	H2S	02-SAT	TOTP	P04P	ORGP	TOTN	N03N	NH4N	ORGN	MG/L	TOC	FE
M	* DEG.C	* ‰	* ‰	* ‰	* ‰	ML/L	ML/L	‰	‰	‰	‰	‰	‰	‰	‰	‰	‰	‰
0	6.60	27.700	22.237	7.42	89.2													
4	2.00	28.100	22.491	6.70	83.7													
8	4.16	29.110	23.135	5.80	77.1													
16	8.07	31.420	24.500	2.88	42.7													
25	8.34	32.410	25.235	1.26	18.9													
40	7.64	32.730	25.587	1.51	22.3													
60	6.50	33.220	26.126	.83	12.0													
80	6.58	33.500	26.336	1.51	21.9													
100	6.56	33.560	26.385	1.30	18.9													
110	6.55	33.580	26.403	1.37	19.9													
120	6.54	33.590	26.412	1.37	19.9													
130	6.54	33.593	26.414	1.30	18.8													
140	6.54	33.597	26.417	1.30	18.8													
145	6.54	33.597	26.417	1.26	18.3													
150	6.52	33.601	26.423	.86	12.5													

**Tokt den 28/2-1/3 1978.**



79.4.5-16:29:6 PAGE:

CONTROLLED DATA

MARINE HYDROGRAPHIC DEPTH STATION

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*****
* COUNTRY * NORWAY
* INSTITUTION * NIVA
* SHIP * H.H.GRAN
* PROJECT * 0-160/71
* LOCATION * OSLOFJORD
* STATION * BN-1
* POSITION * NORTH 59.52.8 EAST 10.39.1
* DATE * 780301
* DEPTH * 82
* TIME * 045
* WEATHER * CLOUDS
* WIND *
* AIR TEMP. *
* DEG.CELS *
* DRY WFT *
* WIND DIRECTION *
* (0-36) *
* SPEED *
* M/S *
* O.O *
* WAVES O.O.M *
* CALM *
* WAVES O.O.M *
* ICE *
* NO *
* COMMENT1 *
* COMMENT2 *
* CHLNTR 0-2M, OP 0-2.4,8,12M, CTD-SAL 0-30M, 02-SONDE DATA AVAILABLE.
*****

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DEPTH	TEMP.	SAL.	DENS.	02	H2S	02-SAT	070	TOTP	NUTRIENTS	TOTN	NO3N	NH4N	ORGN	TOC	FE
0	2.19	28.480	22.783	5.56	70.0	60	43	6.80	295	110	275	1.65			
4	2.30	29.920	23.924	6.02	76.8	51	37	485	285	35	165	1.55			
8	5.14	31.020	24.550	3.15	43.4	69	56	450	290	50	110	1.33			
12	8.08	32.560	25.391	1.49	22.2	70	63	390	280	<10	>100	1.23			
16	7.97	32.690	25.508	1.45	21.6	70	63	325	280	<10	>35	.98			
20	8.01	32.800	25.659	1.45	21.7	72	64	310	235	<10	>65	1.08			
30	7.73	33.140	25.896	1.73	20.7	76	66	265	215	<10	>40	1.03			
40	7.02	33.156	26.007	3.04	44.4	59	52	250	195	<10	>45	.85			
50	6.10	33.374	26.298	4.67	66.9	45	37	210	160	10	40	.88			
60	6.03	33.433	26.353	4.88	69.8	55	42	215	160	10	45	.95			
70	5.99	33.456	26.376	4.95	70.8	57	48	245	155	90	0	1.00			
80	5.98	33.468	26.386	4.60	65.8	57	48	245	155	90	0	1.00			

DEPTH	NO3/P04	TOC/TOTN	TOC/TOTP	HG	PR	CU	ZN	CD	NI	CR	F
0	15	3	71								
4	17	4	78								
8	11	3	50								
12	10	4	45								
16	10	4	36								
20	8	4	39								
30	7	5	35								
40	8	4	37								
50	10	5	50								
60	8	5	45								
70	7	5	45								
80	7	5	45								

< \*\*\*\*\* :LESS THAN VALUE \*\*\*\*\* >  
 \*\*\*\*\* :GREATER THAN VALUE \*\*\*\*\* >



79.4.5-16:29:13 PAGE:

CONTROLLED DATA

MARINE HYDROGRAPHIC DEPTH STATION

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*****
COUNTRY + INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
*****
NORWAY * NIVA * H.H.GRAN * 0-160/71 * OSLOFJORD * FL-1 * NORTH * EAST * M * * * *
*****
SPEED * WIND * DIRECTION * (0-36) * DRY * WET * * * * *
*****
M/S * (0-36) * * * * *
*****
0.0 * * * * *
*****
SFA * * * * *
*****
CALM: WAVES 0.0M * * * * *
*****
COMMENT1
*****
OP 0-2,4,8,12M, NS, NTR 0-2M, CTD-SAL 0-30M, 02-SONDE DATA AVAILABLE.
*****

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DEPTH	TEMP.	SAL.	DENS.	SIGMA-T	ML/L	O2	H2S	O2-SAT	PO4P	ORGP	TOTN	NO3N	NH4N	ORGN	TOC	FF
0	1.21	29.610	22.940	7.02	86.3	35	28	28	7	350	195	35	120	5		
4	1.78	29.430	23.566	6.48	81.3	38	28	28	10	375	215	35	125	1.85		
8	4.07	29.610	23.539	4.62	61.5	50	42	48	8	430	280	40	110	1.18		
12	7.74	32.440	25.345	2.76	40.8	53	48	51	5	350	260	<10	>80	1.43		
16	8.39	32.730	25.478	2.79	42.0	56	51	4	4	300	220	<10	>70	.88		
20	8.29	33.060	25.751	2.61	39.3	59	51	8	8	265	210	<10	>45	1.15		
30	7.10	33.170	26.007	3.01	44.1	55	49	5	5	280	210	10	60	1.23		
40	6.36	33.257	26.173	5.16	73.7	37	34	4	4	325	185	<10	>130	.80		
50	5.92	33.538	26.449	5.08	73.2	37	31	5	5	250	170	<10	>70	.88		
60	6.24	33.761	26.585	5.17	74.7	38	34	4	4	260	165	10	85	1.00		
80	6.29	33.921	26.705	5.24	75.7	27	30	-3	7	220	160	<10	>50	.53		
100	6.27	33.937	26.720	5.17	74.6	36	29	7	7	240	160	<10	>70	1.48		
125	6.24	33.964	26.745	5.31	76.6	35	30	5	5	235	155	10	70	.93		
150	6.23	33.980	26.759	5.31	76.6	35	30	5	5	240	150	<10	>80	.75		

DEPTH	RATIOS	MO3/	PO4	TOC/	TOCN/	HG	PB	CU	ZN	CD	MN	NI	CR	F
0	15	15	6	126	22									
4	17	15	3	61	19									
8	15	12	5	69	14									
12	12	9	3	41	12									
16	9	9	5	50	10									
20	9	9	5	58	11									
30	12	3	3	53	18									
40	12	4	4	61	15									
50	12	4	4	70	16									
60	10	3	3	36	13									
80	12	7	7	141	20									
100	12	5	6	67	14									
125	11	4	5	55	15									
150	11	4	5	55	15									

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*****
< * LESS THAN VALUE
*****
> * GREATER THAN VALUE
*****
S * SPOILED OR DAMAGED SAMPLE
*****

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * NIVA * H.H.GRAN * 0-160/71 * OSLOFJORD * KN-1 * 59.38.0 * 10.37.8 * 107 * 780228 * 11 *
* WIND * DIRECTION * (0-36) * DRY * WFT * M * * * * * WEATHER * CLOUDS *
* SPEED * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* M/S * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 0.0 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* SFA * WAVFS 0.0M * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* CALM * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* COMMENT1 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* OP 0-2,4,8,12M NS, NTR 0-2M, CTD-SAL 0-30M, 02-SONDE DATA AVAILABLE. * * * * * * * * * * * * * * * * *
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DEPTH	TEMP	SAL	DENS	02	H2S	02-SAT	0/0	TOTP	P04P	ORGP	TOTN	NO3N	NH4N	ORGN	TOC	FF	
0	-29	27.310	21.951	7.84	91.7	32	25	7	470	190	10	270	10	1.43			
4	-22	27.460	22.070	7.88	92.5	24	18	6	275	165	10	100	10				
8	.21	28.310	22.741	7.52	89.8	27	18	8	285	160	10	115	10				
12	.90	28.700	23.027	7.16	87.3	26	20	6	260	170	10	80	10				
16	1.10	29.270	23.474			28	22	6	285	160	10	115	10				
20	1.41	29.770	23.859	6.98	86.9	31	21	10	300	180	10	110	10				
30	2.90	32.090	25.610	6.12	80.4	34	28	6	285	190	25	70	10				
40	5.09	34.460	27.276	5.76	81.1	33	27	6	235	160	10	65	10				
50	6.77	34.595	27.172	5.44	79.8	30	24	6	240	130	<10	>100	10				
60	6.74	34.701	27.260	5.55	81.4	30	26	4	185	125	<10	>50	10				
80	6.63	34.768	27.327	5.48	80.2	30	26	3	205	130	<10	>65	10				
100	6.57	34.784	27.348	5.51	80.6	30	25	5	200	135	<10	>55	10				
125	6.54	34.800	27.365	5.55	81.1												
150	6.54	34.819	27.380	5.51	80.5	30	25	5	195	135	<10	>50	10				
195	6.49	34.831	27.396	5.44	79.4	39	35	4	215	130	<10	>75	10				

DEPTH	RATIOS		MOL/MOL		HEAVY METALS		NUTRIENTS		MICROGR./L		TOC	
	NO3/PO4	TOTN/TOTP	TOC/TOTN	TOTM/TOTP	HG	PB	CU	ZN	MN	NI	CR	F
0	17	32	4	115								
4	20	25										
8	19	23										
12	19	22										
16	16	23										
20	19	21										
30	15	19										
40	13	16										
50	12	17										
60	11	14										
80	11	15										
100	12	15										
125												
150	12	14										
195	8	12										

< \* LESS THAN VALUE

> \* GREATER THAN VALUE

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**Tokt den 8/4 1978.**

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DATE * TIME *
* NORWAY * NIVA * HHGRAN * 71160-30 * OSLOFJORD * EP-1 * 59.46.8 10.43.6 * 154 * 780408 * 1015 *
* WIND * DIRECTION * DEG.CELS * AIR TEMP. * WEATHER * CLOUDS *
* M/S * (0-36) * DRY * WET * DEPTH * M * SECCHI-DISC * COLOUR *
* 0.0 * 0 * * * 4.0 * LIGHT-GREEN * CLEAR * NO *
* SEA *
* CALM: WAVES 0.0M * IN VICINITY, TYPE/AMOUNT UNKNOWN *
* COMMENTS *
* CHL: NTR 0-2M, CTD-SAL 0-40M *
*****

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DEPTH	TEMP	SAL	DENS	SIGMA-T	H2S	O2	ML/L	02-SAT	O/O	TOTP	P04P	NUTRIENTS	ORGP	TOTN	NO3N	NHAN	ORGN	TOC	
0	4.50	25.950	20.604	7.48	98.2	31	14	17	185	(375)	220	185	17	220	185	185	(-30)	2.45	
4	4.00	27.310	21.722	7.59	99.3	25	10	15	205	(285)	150	205	15	150	205	100	(-70)	2.43	
8	2.54	28.270	22.593	7.09	90.0	34	10	23	135	205	135	100	23	205	135	100	60	1.90	
16	7.00	31.970	25.077	1.06	15.4	67	56	11	395	275	335	100	24	395	335	10	50	1.38	
25	7.61	32.950	25.764	1.13	16.7	89	65	24	235	275	235	100	26	235	200	10	25	1.25	
40	6.53	33.280	26.169	2.69	38.9	85	59	26	225	225	190	10	0	225	190	10	25	1.15	
60	6.39	33.410	26.289	2.91	42.0	57	57	-4	280	280	210	10	1	280	210	10	60	1.08	
80	6.50	33.460	26.315	1.52	18.0	79	78	1	280	275	225	10	1	280	225	10	45	1.05	
100	6.54	33.562	26.390	1.24	13.9	82	84	-2	275	275	230	10	8	275	230	10	35	1.08	
110	6.54	33.570	26.396	.96	12.3	94	86	8	280	280	230	10	8	280	245	10	25	1.13	
120	6.55	33.577	26.400	.85	12.9	98	86	12	285	285	245	10	9	285	245	10	25	1.15	
130	6.54	33.577	26.401	.89	14.4	94	85	9	290	290	245	10	5	290	245	10	35	1.05	
140	6.54	33.581	26.405	.99	15.4	93	88	5	315	315	260	10	5	315	260	10	45	1.35	
145	6.54	33.585	26.408	1.06	12.3	120	85	35											
150	6.54	33.593	26.414	.85															

DEPTH	NO3/	P04	TOC/	TOTN	TOCP	HG	PB	CU	ZN	CD	MN	NI	CR	F
0	35	33	(8)	204	(25)									
4	33	(10)	251	(27)										
8	28	8	144	19										
16	13	4	53	13										
25	8	5	36	7										
40	7	6	36	6										
60	7	6	52	9										
80	6	4	39	9										
100	6	4	34	8										
110	6	5	34	7										
120	6	5	31	6										
130	6	5	30	6										
140	6	5	32	7										
145	6	4	29	7										
150	7	5	29	6										

( ) \* UNCERTAIN VALUE

**Tokt den 18-19/5 1978.**

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * NIVA * H.H.GRAN * 0-160/71 * OSLOFJORD * NORTH * EAST * 10,43.6 * 154 * 780519 * 1135 *
* WIND * DIRECTION * DEG.CELS * AIR TEMP. * SFCCHI-DISC * WEATHER * CLOUDS *
* M/S * 1.0 * 36 * DRY * WFT * M * 4.5 * YELLOW-GREEN * PARTLY CLOUDY * 7/8 *
* SEA * CALM; NAVES 0.0M * NO *
* COMMENT1 * COMMENT2 *
* OP 0-2,4,8,12M, NS, NTR+CHL 0-2M, CID-SAL 0-20M, S102 IN MG/L
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DEPTH	TEMP	SAL	DENS	SIGMA-T	H2S	O2	02-SAT	TOTP	P04P	ORGP	TOTN	NO3N	NH4N	ORGN	TOC	SI
0	11.05	22.500	17.117	7.61	113.9	21	113.9	21	7	14	385	20	<10	>355	3.63	.5
4	6.50	24.300	19.114	6.96	94.9	12	94.9	12	4	8	370	130	150	90	2.30	.3
8	4.40	27.850	22.116	5.35	70.9	7	70.9	7	2	5	520	190	105	225	2.13	1.2
12	4.88	31.000	24.562	2.58	35.3	13	35.3	13	10	3	460	285	135	40	1.80	1.6
16	7.04	32.400	25.410	.47	6.8	67	6.8	67	60	7	500	370	115	15	1.53	1.5
20	7.45	32.800	25.668	.72	10.6	71	10.6	71	66	5	360	320	<10	>30	1.35	2.0
30	6.73	33.129	26.024	1.76	25.6	68	25.6	68	64	4	325	275	<10	>40	1.30	1.4
40	6.48	33.328	26.213	2.15	31.1	62	31.1	62	59	3	320	230	<10	>80	1.15	1.4
50	6.41	33.386	26.268	2.69	38.8	61	38.8	61	59	2	290	225	<10	>55	1.23	2.3
60	6.38	33.417	26.296	2.73	39.4	60	39.4	60	57	3	280	220	<10	>50	1.20	1.5
80	6.48	33.495	26.345	1.44	20.8	72	20.8	72	69	3	310	240	<10	>60	1.33	1.7
100	6.54	33.546	26.377	.83	12.0	85	12.0	85	83	2	320	255	<10	>55	1.13	2.3
125	6.55	33.573	26.397	.72	10.4	98	10.4	98	97	1	330	260	<10	>60	1.25	2.2
150	6.55	33.581	26.403	.61	8.8	101	8.8	101	100	1	345	280	<10	>55	1.35	2.1

DEPTH	M	RATIO5	NO3	P04	TOC/TOTN	TOC/TOTP	HG	PR	CU	ZN	CD	HEAVY METALS				
												MG/L	MG/L	MG/L	MG/L	
0	6	11	446	41												
4	72	7	494	68												
8	210	5	785	164												
12	63	5	357	78												
16	14	4	59	17												
20	11	4	49	11												
30	10	5	49	11												
40	9	4	48	11												
50	8	5	52	11												
60	9	5	52	10												
80	8	5	48	10												
100	7	4	34	8												
125	6	4	33	7												
150	6	5	34	8												

< :LESS THAN VALUE > :GREATER THAN VALUE

79.4.3-9:31:55 PAGE12

CONTROLLED DATA

MARINE HYDROGRAPHIC DEPTH STATION

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * NIVA * H.H.GRAN * 0-16071 * OSLOFJORD * 11 * 59.52.8 * 10.39.1 * 84 * 780519 * 035 *
* WIND DIRECTION * AIR TEMP. * SECCHI-DISC * WEATHER * CLOUDS *
* M/S * (0-36) * DRY * WFT * * * * *
* * * * * 36 * * * * * PARTLY CLOUDY * * 5/8 *
* * * * * 13.0 * * * * * * * * *
* * * * * * * * * * *
* SFA * CALM; WAVES 0.0M * * ICE * * * *
* * * * * * * * * * *
* COMMENT1 * * * * * * * * * * *
* * * * * * * * * * *
* OP 0-2,4,8,12M, NS, NTR+CHL 0-2M, CTD-SAL 0-30M * * *
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DEPTH	TEMP.	SAL.	DENS.	SIGMA-T	H2S	O2	ML/L	02-SAT	TOTP	NUTRIFNIS	PO4P	ORGP	TOTN	N03N	NH4N	ORGN	TOC
0	9.76	22.980	17.680	18.919	7.65	7.65	111.6	14	6	8	305	<10	>245	50	<10	>245	3.43
4	8.12	24.290	22.158	24.162	4.31	7.57	107.2	13	9	4	340	55	145	55	140	145	2.95
8	4.80	27.950	25.203	26.021	2.30	4.31	57.8	10	8	2	465	195	170	195	100	170	2.10
12	5.08	30.520	25.582	26.021	1.08	2.30	31.6	22	19	3	620	270	200	270	150	200	1.90
16	6.82	32.100	26.021	26.320	0.90	1.08	15.6	80	73	7	600	320	155	320	155	200	1.53
20	6.99	32.610	26.021	26.320	2.19	2.19	13.1	74	68	6	420	335	95	-10	1.35	>50	1.35
30	6.88	33.150	26.021	26.320	2.76	2.76	31.9	64	58	6	350	255	15	80	1.10	>50	1.10
40	6.61	33.312	26.021	26.320	2.69	2.69	40.0	58	54	4	300	235	<10	>55	1.18	>55	1.23
50	6.45	33.421	26.021	26.320	2.66	2.66	38.4	69	64	3	290	225	<10	>45	1.73	>45	1.73
60	6.39	33.449	26.021	26.320	2.37	2.37	34.2	78	73	5	280	225	<10	>50	1.23	>50	1.23
80	6.37	33.456	26.021	26.320	2.37	2.37	34.2	78	73	5	285	225	<10	>50	1.23	>50	1.23

DEPTH	NO3	PO4	TOC/ TOTN	TOC/ TOTP	HG	PB	CU	ZN	CD	MN	NI	CR	F
0	18	13	632	48									
4	14	10	585	58									
8	54	5	542	103									
12	31	4	223	62									
16	10	3	49	17									
20	11	4	47	13									
30	10	4	44	12									
40	10	5	52	11									
50	8	8	50	9									
60	8	7	65	9									
80	7	5	41	8									

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*****
* < * :LESS THAN VALUE
* > * :GREATER THAN VALUE
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79.4.3-9:31:57 PAGE:4

CONTROLLED DATA

MARINE HYDROGRAPHIC DEPTH STATION

COUNTRY	INSTITUTION	SHIP	PROJECT	LOCATION	STATION	POSITION	DEPTH	DATE	TIME
	*	H.H. GRAN	* O-160/71	* OSLOEJORD	* NORTH	* EAST	* M	* 780518	* 1630
NORWAY	NIVA					FLI	59.45.2	10.34.8	163
		AIR TEMP.	SECCHI-DISC	SECCHI-COLOUR	WEATHER	CLLOUDS			
SPEED	DIRECTION	WFT	DEPTH	COLOUR					
M/S	(0-36)	DRY	M	7.5	GREEN				
O.0									
SEA	WAVES	0.0M	ICF				8/8		
CALM			NO						
COMMENT1									
COMMENT2									
CP	0-2,4,6,12M, NS, NTR	0-2M, CTD-SAL	0-30M						

DEPTH	TEMP.	SAL.	DENS.	SIGMA-T	02	H2S	02-SAT	0/0	TOTP	P04P	ORGP	TOTN	N03N	NH4N	ORGN	TOC
M	DEG.C	O/O	O/O	ML/L	ML/L	ML/L	O/O	O/O	MG/L							
0	9.56	22.930	17.659	7.90	8.22	114.7	117.9	13	2	11	3	250	<10	140	>100	3.18
4	8.62	23.740	18.400	8.22	6.35	117.9	87.2	21	3	18	3	300	<10	85	>205	3.03
8	5.97	27.280	21.512	3.70	3.70	51.5	40.7	13	<2	>11	7	265	205	90	125	2.35
12	5.61	30.630	24.191	2.87	2.87	54.6	58.9	17	10	7	7	325	260	70	50	2.35
16	6.15	31.640	24.925	3.81	4.09	70.7	72.3	14	7	7	3	500	<10	15	225	1.48
20	6.35	32.430	25.523	4.09	5.03	72.3	72.3	25	22	3	3	410	<10	>180	>110	1.15
30	6.38	33.110	26.054	4.92	5.03	72.3	72.3	39	41	-2	29	320	<10	>115	>110	1.10
40	6.21	33.328	26.248	5.03	5.03	72.3	72.3	30	33	-3	3	295	<10	>115	>110	1.10
50	6.20	33.417	26.319	5.03	5.03	72.3	72.3	31	28	3	3	255	<10	>115	>110	1.68
60	6.21	33.507	26.389	5.03	5.03	72.3	72.3	32	29	3	3	265	<10	>115	>110	1.40
80	6.19	33.589	26.456	4.50	4.50	64.7	61.7	38	36	2	2	285	<10	>115	>110	1.03
100	6.17	33.624	26.486	4.29	4.29	61.1	61.1	52	41	11	11	275	<10	>115	>110	1.23
125	6.19	33.656	26.509	4.25	4.25	62.7	62.7	46	39	7	7	295	<10	>115	>110	1.03
150	6.17	33.675	26.526	4.36	4.36	62.7	62.7	43	40	3	3	290	<10	>115	>110	1.10

DEPTH	HEAVY METALS									
	M	NI	CR	MN	MG/L	MG/L	MG/L	MG/L	MG/L	MG/L
0	<11	631	43							
4	12	372	32							
8	10	466	45							
12	8	356	42							
16	3	273	79							
20	22	119	36							
30	11	4	76							
40	11	4	95							
50	13	8	140							
60	12	6	113							
80	11	4	70							
100	11	5	61							
125	10	4	58							
150	11	4	66							

< :LESS THAN VALUE  
> :GREATER THAN VALUE

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DATE * TIME *
* NORWAY * NIVA * H.H.GRAN * 0-160/71 * OSLOFJORD * KN1 * 59.38.0 10.37.8 * 780518 * 1310 *
* WIND * AIR TEMP. * SECCHI-DISC * WEATHER * CLOUDS *
* SPEED DIRECTION * DEG.CELS * DEPTH * M * CONTINUOUS LAYER OF CLOUDS * 8/8 *
* W/S (0-36) * DRY WET * 4.5 GREEN * * *
* SEA * ICF * NO * * *
* RIPPLED; WAVES 0.0-0.1M * NO * * *
* COMMENT1 *
* JP 0-2.4,8,12M, NS, NTR 0-2M, CTD-SAL 0-30M *
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*****
* DEPTH * TEMP. * SAL. * DENS. * 02 * H2S * 02-SAT * TOTP * NUTRIENTS * MICROGR./L. * TOC *
* M * DEG.C * O/100 * O/1000 * ML/L * ML/L * O/10 * * * * * * * * * * * * * * * * * * *
* 0 * 8.85 * 24.090 * 18.669 * 7.86 * 113.1 * 113.1 * 13 * <2 * >11 * 235 * 35 * 85 * 115 * 2.93 *
* 4 * 5.69 * 28.380 * 22.409 * 7.54 * 103.5 * 103.5 * 11 * <2 * >9 * 235 * 40 * 45 * 150 * *
* 8 * 6.06 * 32.780 * 25.834 * 5.28 * 75.3 * 75.3 * 20 * 18 * 2 * 210 * 160 * 20 * 30 * *
* 12 * 5.77 * 33.470 * 26.414 * 5.10 * 72.5 * 72.5 * 21 * 18 * 3 * 235 * 175 * <10 * >50 * *
* 16 * 5.96 * 34.180 * 26.951 * 5.28 * 75.8 * 75.8 * 30 * 28 * 2 * 230 * 165 * <10 * >55 * *
* 20 * 6.22 * 34.480 * 27.154 * 5.17 * 74.8 * 74.8 * 28 * 28 * 0 * 215 * 160 * 35 * 20 * *
* 30 * 6.54 * 34.680 * 27.270 * 5.39 * 78.7 * 78.7 * 29 * 28 * 1 * 180 * 145 * 20 * 15 * *
* 40 * 6.54 * 34.752 * 27.327 * 5.28 * 77.1 * 77.1 * 33 * 31 * 2 * 190 * 150 * <10 * >30 * *
* 50 * 6.52 * 34.784 * 27.355 * 5.31 * 77.5 * 77.5 * 30 * 28 * 2 * 180 * 150 * <10 * >20 * *
* 60 * 6.44 * 34.803 * 27.360 * 5.24 * 76.4 * 76.4 * 45 * 30 * 15 * 190 * 150 * <10 * >30 * *
* 80 * 6.37 * 34.811 * 27.396 * 5.39 * 78.5 * 78.5 * 28 * 33 * -5 * 180 * 150 * <10 * >20 * *
* 100 * 6.33 * 34.811 * 27.401 * 5.49 * 79.8 * 79.8 * 31 * 29 * 2 * 300 * 150 * <10 * >140 * *
* 125 * 6.32 * 34.835 * 27.421 * 5.46 * 79.4 * 79.4 * 29 * 28 * 1 * 225 * 150 * <10 * >65 * 1.58 *
* 150 * 6.32 * 34.835 * 27.421 * 5.46 * 79.4 * 79.4 * 29 * 30 * -1 * 225 * 150 * 10 * 65 * 1.00 *
* 195 * 6.33 * 34.855 * 27.436 * 5.42 * 78.6 * 78.6 * 29 * 30 * * * * * * * * * * * * *
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*****
* DEPTH * RATIOS * MOL/MOL * HEAVY METALS * * * * *
* M * P04 * TOC/ * TOC/ * TOTN/ * HG * PB * CU * ZN * CD * NI * CR * F *
* * * TOTN * TOTP * TOTP * * * * * * * * * * * * * * * * * * *
* 0 * 15 * 581 * 40 * 47 * * * * * * * * * * * * * * * * * * *
* 4 * 20 * 23 * * * * * * * * * * * * * * * * * * *
* 8 * 21 * 25 * * * * * * * * * * * * * * * * * * *
* 12 * 13 * 17 * * * * * * * * * * * * * * * * * * *
* 16 * 13 * 17 * * * * * * * * * * * * * * * * * * *
* 20 * 11 * 14 * * * * * * * * * * * * * * * * * * *
* 30 * 11 * 13 * * * * * * * * * * * * * * * * * * *
* 40 * 11 * 13 * * * * * * * * * * * * * * * * * * *
* 50 * 11 * 9 * * * * * * * * * * * * * * * * * * *
* 60 * 10 * 14 * * * * * * * * * * * * * * * * * * *
* 80 * 10 * 21 * * * * * * * * * * * * * * * * * * *
* 100 * 12 * 17 * * * * * * * * * * * * * * * * * * *
* 125 * 11 * 17 * * * * * * * * * * * * * * * * * * *
* 150 * 11 * 17 * * * * * * * * * * * * * * * * * * *
* 195 * * * * * * * * * * * * * * * * * * *
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< * LESS THAN VALUE *
> * GREATER THAN VALUE *
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**Tokt den 16-17/8 1978.**

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* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * NIVA * H.H.GRAN * 71160-30 * OSLOFJORD * EP-1 * NORTH * FAST * 154 * 780816 * 1010 *
* SPEED * DIRECTION * DRG.CELS * WFT * M * PARTLY CLOUDY * 4/8 *
* 5.0 * 18 * 17.8 * * * *
* SFA * WAVES 0.0-0.1M * ICE * * * *
* RIPPLED *
* COMMENT1 *
* COMMENT2 *
* CHLNTR 0-2M, NS, QP 0-2, 4, 8, 12M, CTD-TEMP 0-12, -SAL 0-20M, S102 IN MG/L *
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*****
* : DEPTH * TEMP * SAL * DENS * SIGMA-T * ML/L * H2S * ML/L * O2 * 02-SAT * O/O * TOTP * P04P * NUTRIENTS * MICROGP./L * TOC * MG/L * SI * *
* : M * DEG.C * O/00 *
* 0 * 16.00 * 22.500 * 16.214 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 4 * 15.10 * 22.800 * 16.627 * 3.54 * 57.9 * 16 * <2 * 19 * 260 * 70 * 180 * 3.38 * .2 *
* 8 * 12.30 * 22.640 * 17.021 * 1.15 * 17.7 * 10 * <2 * >8 * 225 * 45 * >170 * 3.03 * .1 *
* 12 * 8.80 * 27.820 * 21.583 * .56 * 8.2 * 11 * <2 * >0 * 280 * 55 * >110 * 2.20 * .2 *
* 16 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 20 * 7.23 * 31.060 * 24.333 * .63 * 9.1 * 49 * 45 * 4 * 465 * 40 * 75 * 1.40 * .7 *
* 30 * 6.93 * 32.728 * 25.682 * .42 * 6.1 * 76 * 74 * 2 * 405 * 335 * <10 * >60 * 1.45 * 1.3 *
* 40 * 6.64 * 33.183 * 26.078 * 1.43 * 20.7 * 74 * 42 * 32 * 290 * 275 * <10 * >5 * 1.18 * 1.3 *
* 50 * 6.55 * 33.320 * 26.198 * 2.05 * 29.7 * 69 * 63 * 6 * 250 * 245 * <10 * >5 * 1.08 * 1.3 *
* 60 * 6.45 * 33.390 * 26.266 * 1.95 * 28.2 * 74 * 68 * 6 * 270 * 240 * <10 * >20 * 1.08 * 1.3 *
* 80 * 6.45 * 33.464 * 26.324 * 1.39 * 20.1 * 78 * 78 * 0 * 280 * 240 * <10 * >30 * 1.28 * 1.5 *
* 100 * 6.52 * 33.519 * 26.358 * .56 * 8.1 * 95 * 90 * 5 * 245 * 245 * <10 * >10 * 1.15 * 2.1 *
* 125 * 6.53 * 33.550 * 26.392 * .28 * 4.1 * 95 * 90 * 5 * 240 * 240 * <10 * >40 * 1.05 * 2.1 *
* 150 * 6.55 * 33.566 * 26.392 * .10 * 1.4 * 175 * 130 * 45 * 175 * 40 * >70 * 1.15 * 2.7 *
*****

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*****
* : DEPTH * RATIOS * MOL/MOL * HEAVY METALS * * *
* : M * NO3/ * P04 * TOC/ * TOTN/ * TOTP/ * HG * MYG/L * PB * MYG/L * CU * MYG/L * ZN * MYG/L * CD * MYG/L * MN * MYG/L * NI * MYG/L * CR * MYG/L * F * *
* : * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 0 * <2 * 15 * 311 * 21 * 21 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 4 * 16 * 488 * 31 * 31 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 8 * 17 * 567 * 34 * 34 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 12 * 9 * 516 * 56 * 56 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 16 * 4 * 100 * 23 * 23 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 20 * 4 * 74 * 21 * 21 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 30 * 4 * 49 * 12 * 12 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 40 * 5 * 41 * 9 * 9 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 50 * 5 * 40 * 8 * 8 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 60 * 5 * 38 * 8 * 8 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 80 * 7 * 42 * 8 * 8 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 100 * 5 * 31 * 6 * 6 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 125 * 5 * 29 * 6 * 6 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* 150 * <0 * 8 * 17 * 2 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*****
* : LESS THAN VALUE * * * * * : GREATER THAN VALUE * * * * *
*****

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CONTROLLED DATA

MAINE HYDROGRAPHIC DEPTH STATION

```

*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * NIVA * H.H.GRAN * 71160-30 * OSLOFJORD * DK-1 * NORTH * EAST * 99 * 780816 * 1415 *
* WIND * DIRECTION * DEG.CELS * DEPTH * M * AIR TEMP. * SECCHI-DISC * WEATHER * CLOUDS *
* W/S * (0-36) * R * DRY * WET * * * * *
* SMOOTH: WAVES 0.1-0.5M * NO * ICE *
* COMMENT1
* CHI-TR+GP 0-2M, NS, OP 0-2,4,8,12M, CTD-TEMP 0-16, -SAL 0-30M, S102 IN MG/ *
*****

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DEPTH	TEMP.	SAL.	DENS.	OP	H2S	ML/L	0/0	02-SAT	TOTP	PO4P	ORGP	TOTN	NO3N	NH4N	ORGAN	TOC	ST
0	17.30	22.680	16.073	5.14			87.8	8	<2	<2	>6	240	<10	60	>170	2.90	.2
4	16.76	23.730	16.900	5.46			92.8	11	<2	<2	>9	200	<10	20	>170	2.73	.1
8	15.84	25.840	13.798	4.62			78.1	3	<2	<2	>1	155	<10	<10	>135	2.23	.2
12	12.40	29.350	22.179	3.36			54.1	2	<2	<2	>0	145	10	30	105	1.56	1.7
16	10.33	30.100	23.123	3.08			47.6	8				225	135	20	70	1.30	.6
20	8.62	30.710	23.865	2.59			38.7	27	25	25	2	305	225	<10	>70	1.20	.6
30	6.39	32.770	25.721	1.68			24.4	60	58	58	2	365	295	<10	>60	.95	1.0
40	6.62	33.144	26.050	1.82			26.4	62	60	60	2	330	280	<10	>40	1.55	1.3
50	6.56	33.253	26.144	1.30			18.8	74	73	73	1	345	270	<10	>65	.90	1.4
60	6.52	33.300	26.186	1.40			20.2	74	75	75	-1	295	255	<10	>30	.98	1.5
70	6.48	33.351	26.231	1.68			24.3	80	73	73	7	320	260	<10	>50	.90	1.4
80	6.46	33.367	26.246	1.82			26.3	68	69	69	-1	315	265	<10	>40	.80	1.4
90	6.41	33.394	26.274	2.24			32.3	68	67	67	1	300	245	<10	>45	.95	1.3

DEPTH	TOC/TOTN	TOC/TOTP	TOC/TOTP	HG	PB	CU	ZN	CD	MN	NI	CR	F
0	14	935	66									
4	16	640	114									
8	17	1917	160									
12	13	2012	62									
16	7	419	25									
20	5	115	13									
30	3	41	12									
40	5	64	9									
50	8	31	9									
60	8	34	10									
70	8	3	9									
80	8	3	10									
90	8	4	10									

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*****
* RATIOS *
* NO3/PO4 *
* MOL/MOL *
* HEAVY METALS *
* LESS THAN VALUE <
* GREATER THAN VALUE >
*****

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CONTROLLED DATA

MARINE HYDROGRAPHIC DEPTH STATION

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*****
+ COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
+ NORWAY * NIVA * H.H.GRAN * 71160-30 * OSLOFJORD * FL-1 * NORTH * EAST * M * 165 * 780817 * 030 *
+ WIND * DIRECTION * AIR TEMP. * DEG.CELS. * SFCCHI-DISC * WEATHER * CLOUDS *
+ SPEED * (0-36) * DRY * WFT * M * * CONTINUOUS LAYER OF CLOUDS * 8/8 *
+ CALM: WAVES 0.0M * ICF * NO * * *
+ COMMENT1 * * * * *
+ COMMENT2 * * * * *
+ CHLOROPHYLL 0-2M, DP 0-2,4,8,12M, NS, CTD-TEMP 0-16, -SAL 0-30M * * * * *
*****

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DEPTH	TEMP.	SAL.	DENS.	SIGMA-T	O2	H2S	02-SAT	TOTP	P04P	ORGP	TOTN	NO3N	NH4N	ORGN	TOC
0	16.70	24.600	17.656	17.854	5.46	93.2	3	<2	>1	160	160	<10	15	>135	2.68
4	16.47	24.780	17.854	18.478	5.08	86.4	9	<2	>7	170	170	<10	<10	>150	2.10
8	16.05	25.480	18.478	21.727	4.90	83.0	4.5	<2	>2.5	130	130	<10	<10	>110	2.03
12	12.96	28.900	21.727	22.942	3.43	55.7	3	<2	>1	135	135	10	20	105	1.53
16	10.85	29.980	22.942	23.863	3.29	51.4	12	8	4	225	225	<10	<10	>85	1.33
20	9.00	30.780	23.863	25.558	2.91	43.8	23	23	0	250	250	<10	<10	>45	1.15
30	7.34	32.640	25.558	26.092	2.35	34.5	42	44	-2	355	355	<10	<10	>105	1.15
40	6.61	33.195	26.092	25.158	2.38	34.5	54	52	2	350	350	<10	<10	>100	.93
50	6.52	33.265	25.158	26.206	2.49	36.0	57	51	6	345	345	<10	<10	>95	.90
60	6.49	33.320	26.206	26.231	2.56	37.0	57	52	5	280	280	<10	<10	>35	1.03
80	6.46	33.347	26.231	26.243	2.49	36.0	57	52	5	275	275	<10	<10	>25	.83
100	6.46	33.363	26.243	26.260	2.45	35.4	58	59	-1	410	410	<10	<10	>160	.88
125	6.45	33.382	26.260	26.263	2.49	36.0	59	61	-2	325	325	<10	<10	>80	.85
150	6.42	33.382	26.263		2.56	37.0	59	55	4	345	345	<10	<10	>95	.90

DEPTH	NO3/	TOC/	TOTN/	HG	PB	CU	ZN	CD	HEAVY METALS	CR	NI	MN	MYG/L	MYG/L	MYG/L
0	20	2304	118	* MYG/L	* MYG/L	* MYG/L	* MYG/L	* MYG/L	* MYG/L	* MYG/L					
4	14	602	42	42	64	100	41	24	19	19	14	13	11	11	11
8	18	1163	64	64	100	41	24	19	14	13	11	11	11	11	11
12	13	1315	100	41	24	19	14	13	11	11	11	11	11	11	11
16	36	7	286	41	24	19	14	13	11	11	11	11	11	11	11
20	19	5	129	41	24	19	14	13	11	11	11	11	11	11	11
30	12	4	71	19	14	13	11	11	11	11	11	11	11	11	11
40	10	3	44	14	13	11	11	11	11	11	11	11	11	11	11
50	10	3	41	13	11	11	11	11	11	11	11	11	11	11	11
60	10	4	47	11	11	11	11	11	11	11	11	11	11	11	11
80	10	4	38	11	11	11	11	11	11	11	11	11	11	11	11
100	9	3	39	16	16	16	16	16	16	16	16	16	16	16	16
125	9	3	37	12	12	12	12	12	12	12	12	12	12	12	12
150	10	3	39	13	13	13	13	13	13	13	13	13	13	13	13

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*****
+ :LESS THAN VALUE
+ :GREATER THAN VALUE
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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * NORTH * EAST * DEPTH * DATE * TIME *
* * * * *
* NORWAY * NIVA * H.H.GRAN * 71160-30 * OSLOFJORD * KN-1 * 59.38.0 * 10.37.8 * 201 * 780817 * 1115 *
*****
* WIND * DIRECTION * AIR TEMP. * SECCHI-DISC * WEATHER * CLOUDS *
* * * * *
* SPEED * (0-36) * DRY * WET * DEPTH * M * PARTLY CLOUDY * 2/8 *
* * * * *
* SEA * WAVES * 0.1-0.5M * NO * ICE *
* * * * *
* SMOOTH * COMMENT *
* * * * *
* CHL-NTR 0-2M, OP 0-2.4.8, 12M, CTD-TEMP 0-20, -SAL 0-30M
*****

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DEPTH	TEMP.	SAL.	DENS.	02	H2S	02-SAT	TOTP	P04P	ORGP	TOTN	NH4N	NO3N	MICROGR./L.	TOC	FE
0	17.70	23.930	16.972	5.29	91.8	91.8	7	<2	>5	155	<10	<10	10	>135	2.15
4	17.63	24.000	17.003	5.39	93.4	93.4	7	<2	>5	155	40	<10	10	>105	
8	17.59	24.050	17.050	5.32	92.1	92.1	7	<2	>5	115	15	<10	15	>90	
12	17.56	24.050	17.056	5.08	87.9	87.9	4	4	0	140	<10	<10	10	>120	
16	17.03	24.490	17.510	5.11	87.8	87.8	5	<2	>3	140	10	<10	10	>120	
20	12.48	29.080	21.956	4.03	64.8	64.8	17	13	4	200	105	<10	105	>85	
30	9.24	31.550	24.426	3.89	59.2	59.2	26	23	3	250	150	<10	150	>90	
40	7.46	33.097	25.900	4.62	68.2	68.2	19	14	5	230	155	<10	155	>65	
50	6.37	33.632	26.467	4.83	69.8	69.8	21	16	5	195	175	<10	175	>10	
60	6.45	34.074	26.805	4.76	69.1	69.1	24	21	3	205	180	<10	180	>15	
80	6.08	34.560	27.235	4.80	69.3	69.3	33	30	3	185	180	<10	180	>-5	
100	6.09	34.682	27.330	4.69	67.8	67.8	27	28	-1	180	180	<10	180	>-10	
125	6.11	34.752	27.383	4.69	67.8	67.8	33	35	-2	220	175	<10	175	>35	.68
150	6.12	34.784	27.407	4.80	69.4	69.4	35	34	1	200	180	<10	180	>10	.70
195	6.06	34.823	27.445	4.90	70.8	70.8	35	34							

DEPTH	RATIOS		MOL/MOL		HEAVY METALS									
	NO3/	P04	TOC/	TOTN/	HG	PR	MYG/L	CU	ZN	CD	MN	NI	CR	F
0	16	792	49	49										
4			36	36										
8			77	77										
12	<6		62	62										
16			26	26										
20			21	21										
30			21	21										
40			21	21										
50			19	19										
60			12	12										
80			15	15										
100														
125			4	5.3										
150			4	5.2										
195														

< :LESS THAN VALUE. > :GREATER THAN VALUE

**Tokt den 12/9 1978.**

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*****
* COUNTRY * INSTITUTE * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * NIVA * HIFRAN * 71160-30 * OSLOFJORD * EP-1 * NORTH EAST * 154 * 780912 * 1000 *
* WIND * DIRECTION * (0-36) * DRY * WET * M * DEPTH * COLOUR * WEATHER * CLOUDS *
* SPEED * M/S * AIR TEMP. * SECCHI-DISC * NOT OBSERVED * NOT OBSERVED *
* SEA * NOT OBSERVED * ICE * NOT OBSERVED * NOT OBSERVED * NOT OBSERVED *
* COMMENTS *
* NTR+CHL 0-2M, QP 0-2,4,8,12M, CTD-TEMP+SAL 0-150M
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*****
* : DEPTH * TEMP. * SAL. * DENS. * O2 * H2S * 02-SAT * TOTP * P04P * ORGP * TOTN * MICROGR./L * TOC *
* : M * DEG.C * O/00 * SIGMA-T * ML/L * ML/L * O/O * O/O * * * * * * * * * * * * * * * * * * * * * *
* : 0 * 11.40 * 26.110 * 19.852 * 6.63 * 102.4 * 5 * 17 * <2 * >15 * 315 * <10 * 2.40 *
* : 4 * 8.81 * 29.760 * 23.095 * .81 * 12.1 * 28 * 20 * >3 * 8 * 285 * 2.43 *
* : 8 * 7.55 * 31.160 * 24.368 * 1.15 * 16.8 * 53 * 44 * 9 * 585 * 310 * 1.63 *
* : 16 * 7.48 * 31.770 * 24.856 * 1.46 * 21.4 * 61 * 52 * 9 * 440 * 310 * 1.35 *
* : 20 * 7.30 * 32.140 * 25.171 * 1.99 * 29.1 * 60 * 50 * 10 * 395 * 280 * 1.20 *
* : 30 * 6.92 * 32.890 * 25.811 * 1.46 * 21.3 * 75 * 70 * 5 * 360 * 240 * .98 *
* : 40 * 6.75 * 33.090 * 25.991 * 1.16 * 16.8 * 90 * 78 * 12 * 365 * 260 * .95 *
* : 50 * 6.64 * 33.280 * 26.155 * 1.36 * 19.7 * 84 * 76 * 8 * 325 * 240 * .88 *
* : 60 * 6.55 * 33.360 * 26.229 * 1.60 * 23.2 * 85 * 72 * 13 * 300 * 225 * .90 *
* : 80 * 6.44 * 33.440 * 26.307 * * * * * * * * * * * * * * * * * * * * * *
* : 100 * 6.52 * 33.550 * 26.383 * * * * * * * * * * * * * * * * * * * * * *
* : 125 * 6.55 * 33.570 * 26.395 * * * * * * * * * * * * * * * * * * * * * *
* : 150 * 6.56 * 33.590 * 26.409 * * * * * * * * * * * * * * * * * * * * * *
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*****
* : DEPTH * RATIOS * MOL/MOL * HEAVY METALS * * * * *
* : M * N03/ * P04 * TOC/ * TOTN/ * TOTP * * * * * * * * * * * * * * * * * * * * * *
* : 0 * * * * 9 * 364 * 41 * * * * * * * * * * * * * * * * * * * * * *
* : 4 * * * * 10 * 1253 * 126 * * * * * * * * * * * * * * * * * * * * * *
* : 8 * 34 * 3 * 150 * 52 * * * * * * * * * * * * * * * * * * * * * *
* : 12 * 19 * 3 * 66 * 24 * * * * * * * * * * * * * * * * * * * * * *
* : 16 * 13 * 3 * 51 * 16 * * * * * * * * * * * * * * * * * * * * * *
* : 20 * 12 * 4 * 52 * 15 * * * * * * * * * * * * * * * * * * * * * *
* : 30 * 8 * 3 * 34 * 11 * * * * * * * * * * * * * * * * * * * * * *
* : 40 * 7 * 3 * 27 * 9 * * * * * * * * * * * * * * * * * * * * * *
* : 50 * 7 * 3 * 27 * 9 * * * * * * * * * * * * * * * * * * * * * *
* : 60 * 7 * 3 * 27 * 8 * * * * * * * * * * * * * * * * * * * * * *
* : 80 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* : 100 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* : 125 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
* : 150 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*****
* :LFSS THAN VALUE *
* :GREATER THAN VALUE *
*****

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**Tokt den 17-18/10 1978.**

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*****
** COUNTRY + INSTITUTION + SHIP + PROJECT + LOCATION + STATION + POSITION + FAST + DEPTH + DATE + TIME +
** NORWAY + NIVA + H.H.GRAN + 71160-30 + OSLOFJORD + EP-1 + 59.46.8 + 10.43.6 + 154 + 781018 + 10 +
** WIND + AIR TEMP. + SECCHI-DISC + WEATHER + CLOUDS +
** SPEED DIRECTION * DEG.CELS * DRY WET * DEPTH * M * FOR THICK DUST OR HAZE * R/R *
** 1.0 18 + 4.1 * 3.5 GRAY *
** SEA * ICE *
** CALM: WAVES 0.0M * NO *
** COMMENT:
** CHL+PTR 0-2M, 0P 0-2.4, 8.12M, 4S, CTD-SAL 0-20M, TOT-P VALUES UNACCEPTABLE * SI02 IN MG/L.
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DEPTH	TEMP.	SAL.	DENS.	02	H2S	02-SAT	TOTP	PO4P	ORGP	TOTN	NO3N	NH4N	ORGN	TOC	SI
0	8.80	27.900	21.645	7.54	111.0	26	6	4	20	375	<10	105	>260	2.08	.2
4	8.84	28.270	21.928	7.61	112.4	27	4	23	23	485	<10	130	>345	2.43	.2
8	9.06	28.540	22.106	7.90	117.5	11	<2	>9	>9	265	<10	25	>230	1.98	.2
12	9.18	29.450	22.798	4.68	70.2	7	2	5	5	240	50	15	175	2.33	.3
16	9.14	30.570	23.677	2.14	32.3	2	7	-5	-5	365	205	15	145	1.40	.6
20	8.47	31.450	24.465	1.16	17.3	40	40	62	425	455	325	15	85	1.30	.9
30	7.54	32.288	25.254	1.02	15.0	62	62	75	450	450	320	10	140	1.83	1.6
40	6.86	32.825	25.768	.62	9.0	75	75	79	345	345	255	15	75	1.18	1.8
50	6.69	33.156	26.051	.80	11.6	110	110	89	310	310	240	10	70	1.03	1.8
60	6.53	33.343	26.219	1.23	17.8	73	73	89	285	285	230	10	45	1.05	3.6
80	6.46	33.445	26.308	1.34	10.4	110	110	110	315	315	220	10	85	1.10	2.3
100	6.51	33.499	26.344	1.02	14.8	100	100	100	280	280	220	10	50	1.08	2.9
125	6.51	33.511	26.353	.44	6.4	140	140	140	215	215	50	75	90	1.10	2.7
150	6.54	33.531	26.365	.36	5.2										

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*****
** DEPTH + RATIOS + MOL/MOL + HEAVY METALS +
** M * NO3/PO4 + TOC/TOTN + TOC/TOTP + Hg + PB + CU + ZN + MN + NI + CR + F +
** : LESS THAN VALUE + : GREATER THAN VALUE +
*****

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COUNTRY \* INSTITUTION \* SHIP \*\* PROJECT \*\* LOCATION \*\* STATION \* POSITION \* DEPTH \*\* DATE \* TIME \*  
 \* NORWAY \* NIVA \* H.H.GRAN \* 71160-30 \* OSLOFJORD \* KN-1 \* NORTH \* 59.38.0 \* 200 \* 781017 \* 1300 \*  
 \* WIND \* AIR TEMP. \* SECCHI-DISC \* WEATHER \* CLOUDS \*  
 \* SPEED DIRECTION \* DEG.CFTS \* DEPTH \* M \* RAIN \* 8/8 \*  
 \* \* (0-36) \* DIR \* REF \* 6.5 \* GREEN \*  
 \* \* \* \* \* \* \* \* \* \*  
 \* SEA \* ICE \* \* \* \* \* \* \* \* \* \*  
 \* CALM: WAVES 0.0M \* NO \* \* \* \* \* \* \* \* \* \*  
 \* COMMENT1 \* \* \* \* \* \* \* \* \* \*  
 \* CHL+TR 0-2M, CTD-TEMP 0-4M, -SAL 0-30M. \* \* \* \* \* \* \* \* \* \*

DEPTH * M	TEMP * DEC.C	SAL * O/100	DENS * SIGMA-T	ML/L	* O2	ML/L	H2S * ML/L	* O2-SAT * O/100	TOTP * MICROGR./L	PO4P * MICROGR./L	ORGP * MICROGR./L	TOTN * MICROGR./L	NO3N * MICROGR./L	NH4N * MICROGR./L	ORGN * MICROGR./L	TOC * MG/L	FF * MG/L
0	10.00	25.800	19.834	6.11	91.2	0	103.0	6	8	-2	265	50	80	135	50	2.00	
4	10.06	26.560	20.416	6.86	90.6	7	90.6	5	7	-2	220	50	50	120	110		
8	10.10	26.910	20.667	6.00	90.1	4	85.7	7	4	3	195	50	30	130	135		
12	10.08	27.290	20.970	5.97	83.6	13	57.7	17	13	4	210	60	25	130	135		
16	10.08	28.020	21.547	5.65	58.8	7	74.5	9	7	2	220	225	70	25	130		
20	9.93	28.610	22.029	5.51	64.6	25	57.7	7	25	3	255	150	15	15	90		
30	9.16	31.210	24.174	4.26	58.8	30	67.7	28	30	1	260	170	15	15	75		
40	8.92	32.145	25.276	3.84	74.5	31	67.7	31	27	4	260	170	15	15	75		
50	9.16	32.623	25.695	4.76	67.8	14	67.8	19	17	5	225	125	15	15	85		
60	9.96	33.289	26.000	4.41	67.3	4.41	67.3	22	17	5	240	140	15	15	85	1.60	
80	9.03	33.523	26.000	4.62	66.8	31	66.8	31	27	4	275	180	15	15	80		
100	6.92	34.160	27.240	4.65													
125	6.19	34.584	27.333	4.69													
150	6.12	34.690	27.373	4.62													
195	6.12	34.741	27.373	4.62													

\*\*\*\*\*  
 \* HEAVY METALS \*  
 \* MOL/MOL \*  
 \* TOC/ \*  
 \* TOCN/ \*  
 \* TOPT/ \*  
 \* HC \*  
 \* HG \*  
 \* H2S \*  
 \* ML/L \*  
 \* O2 \*  
 \* SIGMA-T \*  
 \* DENS \*  
 \* SAL \*  
 \* TEMP \*  
 \* DEPTH \*  
 \* M \*  
 \* TOC/ \*  
 \* TOCN/ \*  
 \* TOPT/ \*  
 \* HC \*  
 \* HG \*  
 \* H2S \*  
 \* ML/L \*  
 \* O2 \*  
 \* SIGMA-T \*  
 \* DENS \*  
 \* SAL \*  
 \* TEMP \*  
 \* DEPTH \*  
 \* M \*

CONTROLLED DATA

MARINE HYDROGRAPHIC DEPTH STATION

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * * H.H.GRAN * 71160-30 * OSLOFJORD * AP-2 * NORTH * FAST * M * 781018 * 1415 *
* WIND * AIR TEMP. * SECCHI-DISC * WEATHER * CLOUDS *
* SPEED DIRECTION * DEG.CELS. * DEPTH * PARTLY CLOUDY *
* M/S (0-36) * DRY * WET * M * 2.5 * GREEN *
* 2.0 * 18 * * * * 3/8 *
* SEA * NOT OBSERVED * ICE * NOT OBSERVED *
* NOT OBSERVED * * * * *
* COMMENT1 *
* CHL+PTR+OP 0-2M, NS, CTD 0-25M *
*****

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1 53 1

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*****
* DEPTH * TEMP. * SAL. * DENS. * O2 * H2S * O2-SAT * NUTRIENTS * MICROGR./L * TOC *
* M * DEG.C * O/00 * O/00 * ML/L * ML/L * O/0 * TOTP * PO4P * ORGP * TOTN * NO3N * NH4N * ORGN * MG/L * FE *
* 0 * 8.70 * 27.300 * 21.101 * 6.60 * 96.6 *
* 4 * 9.02 * 28.240 * 21.878 * 6.45 * 95.7 *
* 8 * 9.16 * 29.640 * 22.170 * 5.98 * 89.2 *
* 12 * 9.03 * 29.000 * 22.459 * 4.57 * 68.1 *
* 16 * 8.89 * 30.450 * 23.622 * 1.81 * 27.1 *
* 20 * 8.37 * 31.260 * 24.331 * 2.25 * 33.5 *
* 25 * 7.81 * 31.960 * 24.959 * 24.959 * 0.42 *
*****

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CONTROLLED DATA 79.4.6-9:42:54 PAGE:7

MARINE HYDROGRAPHIC DEPTH STATION

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*****
COUNTRY + INSTITUTION + SHIP + PROJECT + LOCATION + STATION + POSITION + DEPTH + DATE + TIME +
* NORWAY * NIVA * H.H.GRAN * 71160-30 * OSLOFJORD * CO-1 * 59.51.9 * 71 * 781018 * 11 *
WIND * AIR TEMP. * SECCHI-DISC * WEATHER * CLOUDS +
* SPEED * DIRECTION * DEG.CELS * MET * DEPTH * COLOUR *
* 2.0 * 18 * DRY * WET * 5.0 * GREEN *
SEA * ICE *
* RIPPLED * WAVES 0.0-0.1M * NO *
COMMENT1 *
* CHL+NTR+OP 0-2M. NS. CTD 0-70M *
*****

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*****
+ DEMS. * 02 * H2S * O2-SAT * TOTP * P04P * ORGP * TOTN * NO3N * NH4N * ORGN * TOC * FF *
+ : DEPTH * TEMP. * SAL. * SIGMA-T * ML/L * ML/L * O/O * O/O * MICROGR/L *
+ : M * 8.80 * 28.400 * 22.035 * 7.58 * 112.0 *
+ : 4 * 8.78 * 28.300 * 21.960 * 7.50 * 110.7 *
+ : 8 * 9.04 * 28.710 * 22.242 * 6.78 * 100.9 *
+ : 12 * 9.15 * 29.530 * 22.865 * 4.21 * 63.1 *
+ : 16 * 9.22 * 30.230 * 23.400 * 3.05 * 46.0 *
+ : 20 * 8.78 * 31.030 * 24.091 * (1.60) *
+ : 30 * 7.62 * 32.370 * 29.307 * *
+ : 40 * 6.91 * 32.190 * 25.262 * 7.4 *
+ : 50 * 6.69 * 33.240 * 26.117 * .07 *
+ : 60 * 6.66 * 33.280 * 26.152 * .82 *
+ : 70 * 6.65 * 33.300 * 26.159 * .82 *
*****
( ) : UNCERTAIN VALUE
*****

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* 102 JAY * RIVA * H.H.GRAN * 71160-30 * OSLOFJORD * RL-4 * 59.52.7 N 10.34.5 E * 28 * 781018 * 1310 *
* WIND * AIR TEMP. * SECCHI-DISC * WEATHER * CLOUDS *
* SPEED * DIRECTION * DEG.CELS * DEPTH * M * PARTLY CLOUDY *
* M/S * (0-36) * DRY * WET * M * * * *
* 0.0 * 0 * 9.7 * * * * *
* SEA * ICE * NOT OBSERVED *
* NOT OBSERVED * * * * *
* COMMENT1 * * * * *
* CHL-MTR+0 0-2M, NS, CTD 0-25M *
*****

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*****
* DEPTH * TEMP. * SAL. * O/100 * SIGMA-T * ML/L * ML/L * H2S * O2 * O2-SAT * C/O * TOTP * P04P * ORGP * T01N * NO3N * NH4N * ORGN * MCAL * FF *
* 0 * 7.00 * 24.700 * 24.700 * 19.267 * 8.37 * 8.37 * 118.3 * 118.3 * 92.0 * 92.0 * * * * * * * * * * *
* 4 * 9.48 * 28.490 * 28.490 * 22.005 * 6.13 * 6.13 * 61.2 * 61.2 * 19.2 * 19.2 * * * * * * * * * * *
* 8 * 9.53 * 28.910 * 28.910 * 22.324 * 4.06 * 4.06 * 4.4 * 4.4 * * * * * * * * * * *
* 12 * 9.42 * 30.170 * 30.170 * 23.323 * 1.27 * 1.27 * * * * * * * * * * *
* 16 * 8.84 * 30.890 * 30.890 * 23.973 * .29 * .29 * * * * * * * * * * *
* 20 * 8.09 * 31.230 * 31.230 * 24.348 * * * * * * * * * * *
* 25 * 7.06 * 32.060 * 32.060 * 25.140 * * * * * * * * * * *
*****

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**Tokt den 14/12 1978.**

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*****
* COUNTRY * INSTITUTION * SHIP * PROJECT * LOCATION * STATION * POSITION * DEPTH * DATE * TIME *
* NORWAY * G.KNUDSEN * 71160-30 * OSLOFJORD * EP-1 * NORTH * EAST * M * * *
* AIR TEMP. * SFCCHI-DISC * WEATHER * * * * *
* WIND DIRECTION * DEG.CELS * WET * M * * * *
* (0-36) * DRY * * * * *
* 36 * -2.3 * -2.4 * 7.0 * LIGHT-GREEN * PARTLY CLOUDY * * * * *
* * * * *
* SEA SMOOTH * WAVES 0.1-0.5M * * * * *
* * * * *
* COMMENTS * * * * *
* NTR+CHL 0-2M * * * * *
*****

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DEPTH	TEMP.	SAL.	DENS.	02	H2S	02-SAT	TOTP	P04P	ORGP	TOTN	N03N	NH4N	ORGN	TOC
M	DEC.C	O/00	ML/L	ML/L	ML/L	O/0	O/0	MG/L						
0	.60	28.210	22.647	7.27	87.7	31	24	7	400	120	140	140	140	
4	1.05	28.210	22.628	7.29	89.0	26	25	1	430	120	135	175	175	
8	1.19	28.250	22.653	7.21	88.3	26	20	6	410	130	155	125	125	
12	6.34	30.170	23.745	2.78	39.2	44	30	14	500	330	<10	<10	>160	
16	7.92	31.250	24.388	1.87	27.6	50	47	3	415	330	<10	<10	>75	
20	8.28	31.860	24.814	1.41	21.0	56	53	3	405	320	<10	<10	>75	
30	7.92	32.410	25.296	1.49	22.1	57	56	1	375	300	<10	<10	>65	
40	7.24	32.670	25.595	.65	9.5	70	68	2	385	320	<10	<10	>55	
50	6.91	32.980	25.883	.60	8.7	78	74	4	350	280	<10	<10	>60	
60	6.67	33.220	26.104	.73	10.6	82	78	4	320	250	<10	<10	>60	
75	6.50	33.370	26.244	.84	12.1	87	81	6	295	240	<10	<10	>45	
100	6.52	33.450	26.304	.38	5.5	115	120	-5	315	230	<10	<10	>75	
125	6.57	33.490	26.329	.25	3.6	115	100	15	335	225	<10	<10	>100	
150	6.57	33.530	26.361	.12		215	200	15	310	<10	<10	<10	>290	

DEPTH	M03/	TOC/	TOTN/	HG	PB	CU	ZN	NI	CR	F
M	P04	TOTP	TOTP	MYG/L	MYG/L	MYG/L	MYG/L	MYG/L	MYG/L	MG/L
0	11	29	29							
4	11	37	37							
8	14	35	35							
12	24	25	25							
16	16	18	18							
20	13	16	16							
30	12	15	15							
40	10	12	12							
50	8	10	10							
60	7	9	9							
75	7	7	7							
100	4	6	6							
125	5	6	6							
150	<0	3	3							

< \*\*\*\*\*:LESS THAN VALUE \*\*\*\*\*  
 > \*\*\*\*\*:GREATER THAN VALUE \*\*\*\*\*

CONTROLLED DATA

MARINE HYDROGRAPHIC DEPTH STATION

COUNTRY \* NORWAY \*  
 SHIP \* G.KNUDSEN \*  
 PROJECT \* 71160-30 \*  
 LOCATION \* OSLOFJORD \*  
 POSITION \* NORTH \* 59.49.1 \* EAST \* 10.33.8 \*  
 STATION \* DK-1 \*  
 WEATHER \* CLOUDS \*  
 WIND \* AIR TEMP. \*  
 DEGR.CELS \* WET \* 8.5 \*  
 DRY \*  
 DIRECTION \* (0-36) \*  
 DEPTH \* M \*  
 SECCHI-DISC \* COLOUR \*  
 NOT OBSERVED \*  
 NOT OBSERVED \*  
 NOT OBSERVED \*  
 SFA \* ICE \*  
 NOT OBSERVED \*  
 NOT OBSERVED \*  
 COMMENTS \*  
 NTR+CHL 0-2M \*

DEPTH	TEMP.	SAL.	DENS.	02	02	H2S	02-SAT	TOTP	P04P	ORGP	TOTN	MICROGR./L	TOC
M	DEC.C	O/00	SIGMA-T	ML/L	ML/L	ML/L	O/O	ML/L				NH4N	MG/L
0	1.50	28.360	22.726	7.19	7.19	88.9	88.9	31	23	8	345	115	65
4	2.15	28.390	22.713	7.11	7.11	89.4	89.4	25	18	7	335	100	155
8	2.21	28.420	22.733	7.06	7.06	88.9	88.9	23	17	6	305	100	115
12	3.78	29.220	23.255	6.28	6.28	82.7	82.7	23	17	6	310	110	125
16	7.35	30.950	24.230	4.80	4.80	69.7	69.7	26	24	2	310	160	90
20	8.52	31.840	24.763	3.92	3.92	58.8	58.8	33	30	3	280	180	>90
25	8.69	32.360	25.144	3.85	3.85	58.2	58.2	34	31	3	230	165	>55
30	8.78	32.580	25.302	4.22	4.22	64.0	64.0	29	23	6	225	145	>70
40	8.50	32.810	25.524	3.57	3.57	53.9	53.9	35	33	2	270	165	<10
50	7.77	32.960	25.749	1.98	1.98	29.4	29.4	56	53	3	265	220	<10
60	7.39	32.900	25.755	1.05	1.05	15.5	15.5	74	71	4	280	225	<10
75	7.19	33.060	25.908	.85	.85	12.5	12.5	74	72	2	290	240	<10
90	7.12	33.100	25.949	.86	.86	12.6	12.6	72	72	0	325	245	<10

HEAVY METALS

DEPTH	TOC/TOTN	TOC/TOTP	TOC/MOL	P04	MN3/	RATIOS	P04	TOC/TOTN	TOC/TOTP	TOC/MOL	NI	CR	F
M			MOL/MOL								MYG/L	MG/L	MG/L
0	11	25		11	30		11	30			NI	CR	F
4	12	35		12	29		12	29			MG/L	MG/L	MG/L
8	13	30		13	26		13	26			NI	CR	F
12	14	26		14	19		14	19			MYG/L	MG/L	MG/L
16	15	17		15	10		15	17			NI	CR	F
20	13	11		13	8		13	11			MYG/L	MG/L	MG/L
25	12	9		12	7		12	9			NI	CR	F
30	14	8		14	9		14	8			MYG/L	MG/L	MG/L
40	11	10		11	8		11	10			NI	CR	F
50	9	7		9	8		9	7			MYG/L	MG/L	MG/L
60	7	7		7	8		7	7			NI	CR	F
75	7	8		7	10		7	8			MYG/L	MG/L	MG/L
90	8			8			8				NI	CR	F

< : LESS THAN VALUE  
 > : GREATER THAN VALUE