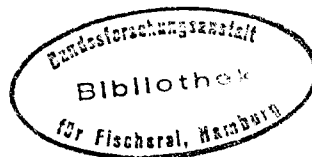


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International Council for the
Exploration of the Sea

C.M.1993/E:5



**REPORT OF THE STEERING GROUP FOR THE COORDINATION OF THE
BASELINE STUDY ON CONTAMINANTS IN BALTIC SEDIMENTS**

Helsinki, 19-20 April 1993

This document is a report of a Working Group of the International Council for the Exploration of the Sea and does not necessarily represent the views of the Council. Therefore, it should not be quoted without consultation with the General Secretary.

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**STEERING GROUP FOR THE COORDINATION OF THE
BASELINE STUDY ON CONTAMINANTS IN BALTIC SEDIMENTS**

Helsinki, 19-20 April 1993

**1 OPENING OF THE MEETING, ADOPTION
OF THE AGENDA**

The meeting was opened at 10.00 hrs on 19 April 1993 by the Chairman, Dr Matti Perttilä. The draft agenda was adopted without changes and is attached as Annex 1.

The list of participants is attached as Annex 2.

2 STATION/AREA LIST

The sampling areas for the Baseline Study had already been decided during the 1992 meeting of the Group. The final selection of the exact sampling sites had been left to experts from the different areas of the Baltic Sea.

On the basis of these station proposals, the Finnish Institute of Marine Research had sent application forms to the appropriate countries to obtain permission to take sediment samples.

It was noted that a few station positions needed readjustment. The final list of stations (27 primary stations) is given in Annex 3.

3 CRUISE LOGISTICS AND PARTICIPATION

The cruise will start on 13 June 1993 in Copenhagen. The expedition will thereafter cover the Kattegat, the Kiel and the Lübeck Bights, the Arkona Basin, the Slupsk Furrow, the Bornholm Basin, the Gdansk Bay, the eastern Gotland Deep, Riga Bay, the western Gotland Deep, the northern Baltic Proper, and arrive at Helsinki by 25 June. The cruise will continue on 28 June to the Gulf of Finland and the Gulf of Bothnia. The cruise will end in Helsinki on 9 July. The cruise itinerary is given in Annex 4.

On the basis of the earlier considerations of the sampling activities, the following list of necessary logistics was adopted, as well as the responsible persons/units:

Platform (RV Aranda)	FIMR
Basic Hydrography (CTD, S, O ₂)	Matti Perttilä
Echosounding	Lauri Niemistö
Side scan sonar	Per Jonsson
Remote videocamera	Ingemar Cato
Bottom photography and sediment profiling	Per Jonsson
Sediment core x-ray equipment	Ingemar Cato/ Birger Larsen
Gemini sampler	Lauri Niemistö
Niemistö sampler	Lauri Niemistö
Box corer	Lauri Niemistö
Vibra sampler	Boris Winterhalter
Ponar sampler	Per Jonsson
Piston corer	Boris Winterhalter
Slicing equipment	Lauri Niemistö
Redox measurement equipment	Lauri Niemistö/ Ingemar Cato
Plastic Petri dishes (5,000)	Mirja Leivuori
Glass sample containers*	Per Jonsson
Pre-weighing of the plastic dishes	Mirja Leivuori
Deep-freeze container	Lauri Niemistö
Trays for holding the dishes	Ingemar Cato
Balance (suitable for ship use)	Per Jonsson
Sample bag evacuation system*	Boris Winterhalter
Microscope (plus accessories)	Matti Perttilä

*Subject to decisions on financing.

The list of cruise participants, according to segments of the cruise (leg 1: Copenhagen-Helsinki 13-25 June; leg 2: Helsinki-Maarianhamina 28 June-5 July; leg 3: Maarianhamina-Helsinki 5-9 July), is as follows:

Name	leg 1	leg 2	leg 3
Ingemar Cato	x		
Per Jonsson	x	x	
Jonas Edlund	x		
Rolf Carman		x	
Valter Axelsson	x	x	x
Birger Larsen	x		
Fredrik Wulff			
Lars Rahm			
Hartmuth Heinrich	x		
Heldur Keisi	x	x	x
Ülle Piibar	x	x	x
Olegas Pustelnikovas	x	x	x
Mihail Spiridonov	x	x	x
Szymon Uscinowich	x	x	x
Dan Conley		x	
Lauri Niemistö	x	x	x
Mirja Leivuori	x		
Harri Kankaanpää		x	x
Maija Hälvä	x	x	x
Janne Bruun	x		
Jussi Rapo	x	x	x
Boris Winterhalter		x	x
Janne Perttilä	x	x	x
Matti Perttilä	x	x	x
Total number	18	16	13

Eventual changes in participation should be submitted to Matti Perttilä as soon as possible.

4 SAMPLE PREPARATION AND DISTRIBUTION

Pretreatment, background information

- a) For analyses of trace metals, carbonates, organic carbon, nutrients, and dating:
- before freeze-drying, samples should be weighed for water content determination;

- the frozen samples should be freeze-dried and weighed again;

- the dry samples will be sent to the participating laboratories for homogenization and analysis.

b) For organic contaminant analyses:

- there should be different samples for different extractions;

- sub-division of the samples should be carried out before freezing;

- freeze-drying must not be done.

Sub-samples will be stored in pre-weighed sample bottles. For samples intended for organic analyses, glass bottles will be used.

Ingemar Cato will provide an offer from the commercial freeze-drying unit that will carry out the drying. The offer should also include an estimate for the price of the weighing of the sample dishes (before and after the drying).

Samples will be shipped from Helsinki to Sweden in the deep-freeze container; shipment will take place when the receiving unit is ready to carry out the freeze-drying. After freeze-drying, the samples will be shipped back to FIMR for distribution to the participants.

5 ANALYSES, PARTICIPATING LABORATORIES AND RESPONSIBLE PERSONS

The following list of analyses is recommended for the participating laboratories.

Background information:

- navigation and echosounding data,
- x-ray picture of the sample core (primary stations),
- *in-situ* profile pictures,
- redox potential,
- water content,
- dating (separate cores for laminate counting and/or performing radionuclide (^{210}Pb , ^{137}Cs) analyses on sub-samples of the primary cores),
- organic carbon (C_{org}),
- carbonate,
- total nitrogen (N-tot),
- total phosphorus (P-tot) [also selected fractions for some cores].

Inorganic contaminants:

- Hg (AAS, cold vapour),
- total P, Cd, Pb, Zn, Cu, Ni, Co, Cr, Fe, Mn, As, Ag, Al, V.

Organic contaminants* (individual compounds):

- PCBs,
- DDTs,
- polybrominated diphenylethers (PBDEs),
- chlorophenols,
- HCB,
- HCH,
- chlorinated naphthalenes,
- chlordanes,
- PAHs.

*Subject to financing.

Organic contaminants (sum parameters):

- Extractable organic chlorine (EOCl), EOBr, EOI.

The total number of samples will be about 1000 (500 for primary cores, 500 for secondary cores).

The following laboratories (persons) were identified to carry out the analyses:

Age determination, mineralogy

Birger Larsen (DGU): 20-25 primary cores by the ^{210}Pb method (subject to financing);

Lauri Niemistö (FIMR): 4-6 primary cores by the ^{210}Pb method, 25 primary cores by ^{137}Cs method;

Ingemar Cato (GSS): ca. 5 primary cores by the ^{137}Cs method.

The Chairman will contact Szymon Uscinowich (Poland) for the conduct of mineralogical characterizations (as discussed at the 1992 meeting).

Organic carbon, total nitrogen

Rolf Carman (Stockholm University): 100 C, N analyses;

Horst Albrecht (BSH): 400 C_{org} , N-tot analyses;

Boris Winterhalter (GRC): C_{org} , N-tot for the Gulf of Finland samples;

Mirja Leivuori (FIMR): N-tot for the Gulf of Bothnia samples;

Ingemar Cato (GSS): C_{org} , N-tot for the Kattegat samples;

Birger Larsen (DGU): C_{org} , N-tot for the Gulf of Riga samples.

Inorganic contaminants

Horst Albrecht (BSH): 400 samples,

Mirja Leivuori (FIMR): 500 samples (including P-tot).

Organic contaminants

Per Jonsson will decide on the analytical laboratory after the question of financing has been solved.

Horst Albrecht will study the possibilities of having 250-300 samples analysed in Germany for PCBs, DDTs, CPs, HCB and HCH.

6 QUALITY CONTROL

Sample digestion

The different methodologies for the digestion of sediment samples for trace element analyses were briefly discussed. It was agreed that Horst Albrecht and Mirja Leivuori should be in close contact in order to make sure that the digestion procedure to be used for the Baseline samples is identical in both laboratories.

Documentation

Matti Perttilä and Lauri Niemistö will write a document on the sampling and sub-sampling procedure to be used.

In addition, Matti Perttilä will write to the participating laboratories and ask them to give details on their sample pretreatment and analysis procedures. This information will then be compiled and distributed to all participants. Only validated methods should be used.

Traceability of data

All data results must be traceable to the original sample/sampling event. Consequently, a data system must be used, in which the entire history of the samples can be recorded. It was agreed that ICES should serve as the data center for the Sediment Baseline Study. Matti Perttilä will be in contact with the ICES data center in order to ensure the compatibility of the sampling information collection system on board the RV Aranda with the structure of the data base at ICES.

It was stressed that the data base should have a simple structure for easy data exchange, and that it should be

PC-compatible. Additional information from laboratories concerning, e.g., analytical procedures, should be made available as text files.

The accuracy of the chemical analyses should be ensured by a proper use of Certified Reference Materials (CRM). The ICES data base should also be able to accept data on the results of analyses of reference materials in association with field sample data. All field data should be traceable to corresponding CRM data.

It was noted that while sediment reference material is available from different sources, none of it is of Baltic Sea origin. The Chairman will ask the participating laboratories to provide information on the types of CRMs they use and their procedures for using them. Rules of using identical quality control procedures must be agreed on by the participants upon the arrival of the samples.

Access to data

Normal ICES procedures will be followed; the data will be immediately available to participants in the Baseline Study (after the usual data validation procedures have been employed), and they will be available for general use after the publication of a joint report on the results of the study.

7 PROJECT FINANCING

It was noted that at its 1992 Statutory Meeting, ICES had agreed to support the Baseline Study with DKK 20,000. This sum will be used to purchase the sample containers.

The Helsinki Commission has allocated ca. FIM 140,000 for the project, but this sum is not yet available.

Most of the financing is taking place through the research budgets of the participating institutes.

Per Jonsson is applying for funds from the Nordic Council of Ministers for the analysis of organic contaminants. No decision has yet been reached.

8 ACTION LIST AND TENTATIVE SCHEDULE

Action	Responsible	Deadline
Information to participants	Matti Pertilä	15 May 1993
Feedback from logistic requirements	See list above	15 May 1993
Data system (sampling)	Matti Pertilä	13 Jun 1993
Documentation on methodology and quality control	Matti Pertilä	13 Jun 1993
Cruise	FIMR	13 Jun-9 Jul 1993
Freeze-drying	Ingemar Cato	30 Sep 1993
Sample distribution	Matti Pertilä	31 Dec 1993
Data system (data base)	ICES	31 Dec 1993
Analyses completed and data reported to ICES	See list above	31 Dec 1995
Joint report prepared	Steering Group	31 Dec 1996

9 ANY OTHER BUSINESS

The next meeting of the Steering Group will be held in association with the 1994 meeting of the Working Group on the Baltic Marine Environment. There was no other business.

10 CLOSING THE MEETING

The Chairman closed the meeting at 12.00 hours on 20 April 1993.

ANNEX 1

STEERING GROUP FOR THE COORDINATION OF THE BASELINE STUDY ON CONTAMINANTS IN BALTIC SEDIMENTS

Helsinki, Finland, 19-20 April 1993

AGENDA

1. Opening of the meeting, adoption of the agenda.
2. Station/area list.
3. Cruise logistics and participation.
4. Sample preparation and distribution.
5. Analyses, participating laboratories and responsible persons.
6. Quality control.
7. Project financing.
8. Action list and tentative schedule.
9. Any other business.
10. Closing of the meeting.

ANNEX 2

STEERING GROUP FOR THE COORDINATION OF THE
BASELINE STUDY ON CONTAMINANTS IN BALTIC SEDIMENTS

Helsinki 19-20 April 1993

List of Participants		
Horst Albrecht	Bundesamt für Seeschifffahrt und Hydrographie (BSH) Bernhard Nocht Str. 78 D-2000 Hamburg 36 Germany	
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Matti Perttilä (Chairman)	Finnish Institute of Marine Research (FIMR) P.O. Box 33 SF-00931 Helsinki Finland	Tel. + 358 0 331 044 Fax + 358 0 331 376
Heikki Pitkänen	Water & Environment Research Institute P.O. Box 33 SF-00931 Helsinki Finland	Tel. + 358 0 331 044 Fax + 358 0 331 376
Olegas Pustelnikovas	Lithuanian State Institute of Geography Akademijos str.2 2600 Vilnius Lithuania	Fax 761 318
Boris Winterhalter	Geological Survey of Finland (GRC) Betonimiehenkuja 4 SF-02150 Espoo Finland	Tel. + 358 0 331 044 Fax + 358 0 331 376

ANNEX 3

ICES STEERING GROUP FOR THE COORDINATION OF THE
BASELINE STUDY ON CONTAMINANTS IN BALTIC SEDIMENTS

Helsinki, 19-20 April 1993

STATION LIST

Station	Latitude	Longitude
Copenhagen		
Kattegat 1	57°12'	11°30'
Kattegat 2	56°42'	11°30'
Kiel Bight	54°36'	10°27'
Lübeck Bight	54°05'	11°10'
Mecklenburg Bight	54°19'	11°33'
Arkona Basin	55°00'	13°45'
Bornholm Basin	55°15'	15°59'
Gdansk Bay	54°35'	19°25'
Lithuanian coast	55°35'	20°30'
East Gotland Deep	57°19'	20°03'
Riga Bay 1	57°30'	23°15'
Riga Bay 2	57°45'	23°45'
Fårö Deep	58°06'	19°50'
West Gotland Deep	58°10'	18°11'
Landsort Area	58°39'	18°30'
LL19	58°52'	20°15'
Helsinki		
Gulf of Finland 1	59°43'	24°39'
Gulf of Finland 2	59°50'	25°49'
Gulf of Finland 3	59°48'	27°07'
Gulf of Finland 4	59°33'	27°46'
Gulf of Finland 5	59°46'	28°15'
Gulf of Finland 6	60°19'	27°59'
Åland Sea	60°00'	19°34'
EBI	61°00'	19°45'
Härnösand Deep	62°40'	19°00'
BO3	64°18'	22°22'
F2	65°24'	23°30'
Helsinki		

ANNEX 4

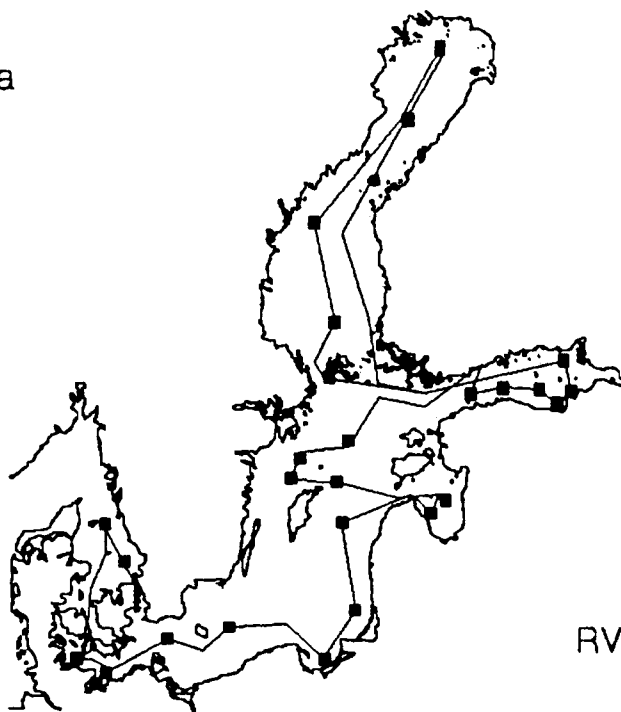
CRUISE ITENERARY FOR THE BASELINE STUDY OF CONTAMINANTS IN BALTIC SEA SEDIMENTS

RV Aranda, 13 June - 9 July 1993

Sediment Baseline Study

13.6. - 9.7.1993

Baltic Sea



RV ARANDA

Finnish Institute of Marine Research