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**ENSIS Workshop in
Yantai
3–7 November 1997
Workshop report**

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Summary

Background

The ENSIS project was launched in November 1996. In the project funded by NORAD, the collaborating partners are the Yantai Environmental Monitoring Centre (YEMC) and the ENSIS group, consisting of the Norwegian Institute of Air Research (NILU), the Norwegian Institute of Water Research (NIVA) and the NORGIT Centre. The project has a planned time frame of three years.

Projects Status

The Deputy Director of the YEMC, Mr. Gao Zhan Jun, presented the status of the project from the Chinese side. The selection of monitoring sites for air quality has been decided, and the construction and equipping of the monitoring stations have been initiated. This work is planned to be completed by the end of January 1998.

Since the last meeting in March, YEMC has collected data on emissions to air, consumption of fossil fuels and other data as described in the draft document "Input data specifications – AirQUIS 2.0".

A first selection of sites for water monitoring were performed in November 1996, but due to more detailed information on the possibilities for good monitoring procedures, changes were proposed. It was also agreed between the project partners to focus on drinking water control. Suggested stations were now Menlou Reservoir, Dong Motang, and Fourth Drinking Water Plant.

Work performed during the workshop

The following topics were discussed during the workshop:

- Air Emission inventory, including industry, traffic and domestic use of fossil fuels.
- Dispersion models. NILU presented the context and functionality of the EPISODE model, which calculates hourly average concentration distribution, based on collected emission inventory.
- Modelling area: Two modelling grids were discussed and defined. One covers Yantai city has a resolution of 1× 1 km. The other covers a larger surrounding area, including the Development Zone and the districts of Fushan and Laishan.
- Data and information on water quality delivered during the workshop include overview maps, land coverage maps, maps of user interests, industrial point sources, monitoring stations and population data. Also monitoring data from the rivers, Menlou reservoir and industry together with information on domestic water and agricultural practices were provided. The procedures for

Quality Control of the water samples were described in a special paper and delivered during the meeting.

- The three proposed water monitoring stations were inspected during the workshop. It was concluded that the selected stations were very well suited for the project.

Procurement of Instruments and Data Equipment

YEMC has in co-operation with the ENSIS group prepared lists of air and water quality instruments, and of data equipment. The water quality instrument list was signed before the workshop.

The following related topics were discussed:

- Following the text in the addendum to the contract between NORAD and SSTC, NIVA has ordered the water quality instruments according to the agreed list. These instruments have been shipped for Yantai.
- NILU and YEMC have agreed on the contents of the air quality instrument list. One set of the instruments shall be delivered in Norway for testing and adaptation of the NILU data logger and the automatic data acquisition system, (A-DACS).
- The content of the data equipment list from the YEMC was accepted by the ENSIS group prior to the workshop. However, a disagreement still remains regarding the delivery of the equipment to Norway.
- The Norwegian side stated that the project plan is based on the assumption that this equipment is to be delivered in Norway. If the data equipment is not delivered in Norway, the project plan has to be revised according to the extra time consumption and costs related to installation of the ENSIS system in Yantai.
- The disagreement on delivery of data equipment will have to be solved after the workshop.

Major Project Activities for 1998

According to the project plan, both parts agreed upon the following activities for 1998:

Activity	Date
Completion and decoration of water quality stations	December, 1997
Installation of water quality instruments	January, 1998
Installation of air quality instruments	February, 1998
Delivery of air emission inventory data	February, 1998

Activity	Date
Workshop in Yantai <ul style="list-style-type: none"> • Abatement Strategy planning • Description of the water model • Status on air and water monitoring • Installation of M-DACS 	March, 1998
Adaptation and testing of ENSIS in Norway	March-July, 1998
Training of Yantai personnel in Norway	August, 1998
Modification of the ENSIS system	September – October, 1998
Workshop in Yantai <ul style="list-style-type: none"> • Installation of the first ENSIS version • Training in the use of the ENSIS system • Abatement Strategy planning 	November, 1998

This activity plan above must be revised if the delivery of necessary equipment is further postponed. A more detailed activity plan will be presented in the Revised Project Plan for 1998.

ENSIS Workshop in Yantai 3–7 November 1997

Workshop report

1. Introduction

On 27. November 1996, an agreement was signed in Beijing between the Norwegian Agency for Development Co-operation (NORAD) and The State Science and Technology Commission (SSTC) regarding Environmental Surveillance and Information System for Yantai, China. According to this agreement and the project proposal on the above mentioned project, a start-up Workshop was held in Yantai 25-29 November 1996.

The institutions participating in the project are Yantai Municipal Science and Technology Commission (YMSTC), Yantai Environmental Monitoring Centre (YEMC) and Yantai Environmental Bureau (YEPB) from the Chinese side. The ENSIS group consists of the institutions Norwegian Institute for Air Research (NILU), Norwegian Institute for Water research (NIVA) and the NORGIT Centre.

This report is a summary of the second workshop held in Yantai 3–7 November 1997. The main purposes of the workshop was to agree upon the equipment lists for data and air quality, prepare for installation of the water monitoring instruments, discuss the collection of data related to air emissions and prepare a revised time plan for 1998.

2. Working group summaries

The agenda for the workshop was presented by the Chinese side at the beginning of the workshop (Appendix A). The minutes from the workshop and the signed instrument lists are given in Appendices B and C, respectively.

2.1 Air quality

2.1.1 Monitoring stations

Mr. Gao Zhan Jun presented the status of the selected monitoring sites for air quality. Two of the stations have been modified to meet NEPA recommendations. Preparations and decorations of the monitoring sites have started and the stations will be ready for installation of the monitors in February 1998.

Mr. Bøhler and Mr. Riise visited a new air quality monitoring station together with Mr. Gao and Mr. Fu. The location was close to a major road and close to the sea south-east of the city centre. In the area between the road and the sea, where the station was located, there were residential areas. On the other side of the road there was open grassland and forest. The suggested location was on the third floor, approximately twenty meters from the road. To reduce the local impact of the road, Mr. Bøhler suggested that the station should be moved to another wing of

the building. The new location is approximately 50-60 meters from the road, and closer to the residential areas. The new location will better describe the impact for the whole area and not specific the contribution from the closest road.

2.1.2 Emission inventory

Mr. Bøhler and Mr. Riise presented the concept and variety of emission sources in general and in the context of the ENSIS system. The ENSIS emission database was presented and explained to a certain level of detail. A new revision (Revision 3) of the draft document "Input data Specifications – AirQUIS 2.0" was submitted to the emission inventory group.

Mr. Wei Han and Mr. Fu presented the work done on emission inventory data collection and organisation. They had been working according to the previous version of the input data specifications. Several point sources had been identified, although some data are still missing. It was agreed to use the NEPA source classification.

Two levels of "administrative districts" were identified. They were named "Blue districts" and "Square districts". The "Square districts" corresponded to squares of one or two square kilometres, fitting exactly into the coordinate system on a detailed map. This map is on the scale 1:50000 and defines the coordinate system of the ENSIS application for Yantai. The ENSIS coordinate system is an exact translation of the coordinate system on this map. The origo of the ENSIS co-ordinate system is positioned in the lower left corner of the map. The definition of the coordinate system and the blue districts was drawn on a separate map that NILU brought home from this visit.

Area Source Data have been collected as distributed according to the "Square Districts". These data had so far been collected directly as emission data. This is not the best solution, since ENSIS can easily calculate emissions from consumption data by using emission factors. It was therefore agreed to collect consumption data instead of emission data.

It was noted that there is no use of unleaded gasoline in Yantai, but that this will be introduced before the year 2000. There is a lack of data for emission factors for traffic and other emission sources. It will be investigated if such data can be retrieved from the Guangzhou/NORCE project.

It was agreed that all collected data will be translated to English, and that they will be sent to NILU as they are collected and translated. NILU needs this for evaluation of the data collection, and for the construction of the Yantai ENSIS installation. The Chinese side will prepare a first emission inventory report after data for all sources in the defined modeling area are collected. This will be done by the end of February 1998. The collected data are valid for 1996 or more recent.

2.1.3 Dispersion modelling

Mr. Bøhler presented the EPISODE model, which is developed by NILU. This model contains sub models for calculating concentration contributions from

point-, area- and traffic sources. The use of the different sub models and the relations between them were explained to a limited level of detail. A more detailed and technical presentation will be given during the forthcoming workshop.

Further, the modelling areas were discussed and defined. The definition was given in the "ENSIS co-ordinate system, as described in previous chapter. A point was made of including the new air quality monitoring site in the smaller grid. The inclusion of Muping into the modelling grid was discussed, but it was decided to leave this as a possible later enhancement.

Topography data were discussed. The best map for constructing a digital topography file exists in only one copy, and this is presently at the NORGIT Centre in Norway.

There will be two meteorological stations in Yantai city available for the project. One of these is operated by the Meteorological Office, and was inspected by NILU personnel. During 1997, the station had been moved from the roof of one building to the roof of a new and higher neighboring building. According to the Meteorological Office, the measured values from the new location were the same as for the previous one. These data must be purchased, if required.

The other meteorological station in Yantai city is the one that is planned to be built as part of the present project. In addition to these two stations, meteorological measurements are made in the Fushan and Muping districts. It was decided to start with only the stations included in the project and evaluate the need for additional meteorological data in a later phase of the project.

2.2 Water Quality

2.2.1 Monitoring sites

A first selection of sites for water monitoring was performed in November 1996, but due to more detailed information on the possibilities for good monitoring procedures, changes were proposed. It was also agreed between the project partners that focus should be on drinking water control. Suggested stations were now the Menlou Reservoir, Dong Motang, and the Fourth Drinking Water Plant.

2.2.2 Summary from the site inspections

In November 1996, a first site inspection trip was carried out to four possible water monitoring stations in the Yantai area, namely Taokou, Menlou Reservoir, Fourth Drinking Water Plant and New Jia River Bridge. Menlou Reservoir should be a full equipped station, Taokou and New Jia River Bridge were planned as reduced equipped stations.

At the start of the Workshop meeting, it was agreed between the project partners to focus on drinking water control. Suggested new stations were Dong Motang in exchange for Taokou, and the Fourth Drinking Water Plant in exchange for the New Jia River Bridge. In addition, the building planned for housing the monitoring equipment at Menlou Reservoir could not be used due to construction work, and a new building suitable for housing of the equipment was suggested.

The inspection trip also included a visit to the new building at the Menlou Reservoir.

Dong Motang

Across the river is a rubber dam (rubber piping filled with water). The dam, Third Dam of Jia River Management Department, is used for maintaining the water level in the river during periods of low flow. The First Drinking Water Plant has its water inlet 1000 m upstream from the rubber dam. This station is important for controlling the raw water quality for the First Drinking Water Plant.

Suitable housing was located approx. 5 m from the river bank. In the first floor a 6 m² room will be made available for the instruments. Necessary lifting height for the water is approx. 2 m. Necessary wall space for the instruments can be arranged when two tables/pictures are removed. The room needs cleaning. Electricity, telephone lines and tap water are available in the building. There is permanent personnel stationed in the building. This location will be equipped as a reduced station.

Menlou Reservoir

The dam and the outlet from the reservoir (which is an inlet to the Fourth Drinking Water Plant) were inspected. Housing for the instruments has to be changed from the building inspected last year, and the new building is situated 60 m from the drinking water intake, where the water pipes for the Fourth Drinking Water Plant starts. This water inlet delivers 50% of the drinking water to the city of Yantai. The room for the instruments needs cleaning, and it was also suggested to cover the window from insight. Heating is necessary, and electricity is available in the building. Telephone communication has to be taken from a nearby passing telephone line, approximately 10 m away. Tap water is available just outside the room. This location will be a full equipped station.

Fourth Drinking Water Plant

A visit was made to the Fourth Drinking Water Plant, also mentioned as Fushan Drinking Water Plant in the Workshop Report from 1996. The measuring point is situated in the outer Jia River just before close to where the two Jia River branches meet. Due to damming across the river just downstream the meeting point of the two rivers, there are some mixing of the two river branches at this station. This point is nevertheless the most representative for the outer Jia River branch. However, as an intake to the Fourth Drinking Water Plant located there, it is of importance to follow closely the water quality of this station.

An agreement will have to be made with the management people responsible for the Fourth Drinking Water Plant for placement of the instruments and the sampling of the intake water to the plant. However, it is clear that within the Drinking Water Plant there is electricity and telephone lines available.

2.2.3 Necessary equipment for all the on-line measuring stations

The instruments at each station should be placed in a housing with specified requirements. Two pumps are necessary for taking river water into the instruments in the most secure way. To prevent sampling water from freezing during winter, the feeding pipeline has to be dug into the ground. The water outlet must be placed downstream the water intake or directly into the sewage system. Heating is needed inside the sampling room during winter time. The following specifications are given:

Feeding pipeline:	1" tubing, covered by soil for insulation
Filter:	Providing filtered water to 500 μm
Pumps:	Delivering approx. 15 l/min at the instrumentation level. A pump with approx. 1,5 kg/cm ² is suggested
Room temperature:	5–40°C
Tap water:	In-house for cleaning the instruments.
Electricity:	220 V AC, 50 Hz single phase preferably 10–16 amps. for the monitoring instruments and the water pump
Telephone line:	To transfer the data

All these specifications were evaluated for the visited stations during the inspection trip.

2.2.4 Data collection in the River Jia Catchment

A Draft Status Report of the Data Collection in the River Jia Catchment was provided by NIVA, and the listed types of information were discussed one by one.

Maps

- Overview maps
- Land coverage
- User interests

Industrial point sources

Monitoring stations

Population

Monitoring data

- Monitoring in the rivers
- Monitoring in the reservoir
- Water flow
- Industry
- Sediment data
- Physical data
- Domestic waste water
- Agriculture

Quality Control Procedures

Water Quality

It was agreed that status on the different types of information should be taken into the Draft Status Report of the Data Collection in the River Jia Catchment, and that the updated Status Report of the Data Collection in the River Jia Catchment will be prepared by NIVA.

It was explained that the database for industry data today holds information on the industry of Yantai City only. YEMC took on the task to prepare the same type of database also for the two other important industrial areas in the catchment, namely Fushan district and the developing zone, Kaifaqv. This information will be ready before the next project meeting.

Information on deposition volume during the year will also be provided by YEMC.

2.2.5 Conclusions from the Water Quality Discussions

The selected stations Menlou Reservoir, Dong Motang and Fourth Drinking Water Plant are all stations suitable for the project. The main specifications given under the section on "Necessary equipment for all the on-line measuring stations" were repeated and agreed.

It was underlined by YEMC that an appointment would have to be made with the management of the Forth Drinking Water Plant before the decision of the monitoring site in their building can be officially approved. This was not expected to cause any problems, but a confirmation is needed from YEMC as soon as possible, and before the installation date is decided.

The exact length of the electrical cable and tubing for bringing water into the monitoring rooms must be calculated according to the actual distances when the location of the three stations are confirmed.

NIVA undertook to provide an interior drawing of the monitoring rooms, to explain how the equipment should be installed. A drawing of the pumping system with the two pumps and the tubing will also be provided.

Detailed information on the instrument requirements with respect to flow, electricity and chemicals were delivered to YEMC. They will prepare the necessary chemicals for running and calibration when the instruments are installed.

2.3 Data loggers and acquisition system

Prior to workshop, the Chinese side had decided before this workshop to purchase the automatic data acquisition system(A-DACS) and data loggers from NILU. The NILU data logger was described and the difference between the analogue data logger offered by Gemini and the digital logger from NILU was explained. The main advantage of the NILU logger is that the operator can perform error

handling, calibration and zero span check of the instruments with a digital logger. NILU will send a description of the NILU data logger to YEMC.

2.4 Equipment lists

The instrument list for water quality was agreed upon and signed by both parties prior to this workshop. During the workshop, both parties signed the lists for data equipment and air quality.

Following the text in the addendum to the contract between NORAD and SSTC, NIVA had ordered the water quality instruments according to the agreed list. These instruments had been shipped for Yantai prior to the workshop.

NILU and YEMC have agreed on the contents of the air quality instrument list. The air quality monitors will be ordered by YEMC in China. One set of the instruments will be delivered in Norway for testing and adaptation of the NILU data logger and the automatic data acquisition system, (A-DACS).

NILU and YEMC had agreed upon the data equipment list prior to the workshop. To obtain a stable and good ENSIS application for Yantai a minimum of data equipment, i.e. the server and one client, must be shipped to Norway. This topic must be clarified between SSTC and YEMC after the workshop.

2.5 Major Project Activities for 1998

According to the project plan, both parts agreed upon the following activities for 1998:

Activity	Date
Completion and decoration of water quality stations	December, 1997
Installation of water quality instruments	January, 1998
Installation of air quality instruments	February, 1998
Delivery of air emission inventory data	February, 1998
Workshop in Yantai <ul style="list-style-type: none"> • Abatement Strategy planning • Description of the water model • Status on air and water monitoring • Installation of M-DACS 	March, 1998
Adaptation and testing of ENSIS in Norway	March-July, 1998
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Workshop in Yantai <ul style="list-style-type: none"> • Installation of the first ENSIS version • Training in the use of the ENSIS system • Abatement Strategy planning 	November, 1998

This activity plan above must be revised if the delivery of necessary equipment is further postponed. A more detailed activity plan will be presented in the Revised Project Plan for 1998.

Appendix A

Agenda for the 2nd ENSIS workshop

Second Workshop for Yantai ENSIS Project in 1997
1997.11.3-11.7 Yantai

Day	Tasks
Monday 3 December Nov	Morning: •Meet and welcome Mr.Bohler and other two experts, arrange hotel Afternoon:•Discuss on the agenda •Both sides report work status in the last period. •Status of air and water measurements
Tuesday 4 December Nov	Morning:(parallel sessions) •Inspect water quality sites and discuss its building. •Discuss air emission inventory and model Afternoon:(parallel sessions) •Discuss air emission inventory and model contd. •Discuss building of water quality sites, jia river water quality model, and pollution database in district.
Wednesday 5 December Nov	Morning:(parallel sessions contd.) •Discuss air model and discuss function and installation of A-DACS data. •Discuss water quality contd. Afternoon: •Requirement of building the air and water quality sites. •Purchasing equipment.
Thursday 6 December Nov	Morning: •Discuss equipment purchasing etc. •Discuss project plan for 1998. Afternoon: •Discuss project plan for 1998 contd.
Friday 7 December Nov	Morning: •Form project plan for 1998. •Workshop summary. Afternoon:See Mr.Bohler and other experts off.

Morning:8:30-12:00, Afternoon:13:30-17:00.

Appendix B

Minutes from the 2nd workshop

Minutes from the ENSIS workshop in Yantai 3.-7. November 1997

Background

The ENSIS project was launched in November 1996. In the project funded by NORAD, the collaborating partners are the Yantai Environmental Monitoring Center (YEMC) and the ENSIS group, consisting of Norwegian Institute of Air Research (NILU), Norwegian Institute of Water Research (NIVA) and the NORGIT Center. The project has a planned time frame of three years.

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Work performed during the workshop

The following topics were discussed during the workshop:

- Air Emission inventory, including industry, traffic and domestic use of fossil fuels.
- Dispersion models. NILU presented the context and functionality of the EPISODE model, which calculates hourly average concentration distribution, based on collected emission inventory.
- Modeling area: Two modeling grids were discussed and defined. One covers Yantai city has a resolution of 1 × 1 km. The other covers a larger surrounding area, including the Development Zone and the districts of Fushan and Laishan.
- Data and information on water quality delivered during the workshop include overview maps, land coverage maps, maps of user interests, industrial point sources, monitoring stations and population data. Also monitoring data from the rivers, Menlou reservoir and industry together with information on domestic water and agricultural practices were provided. The procedures for Quality Control of the water samples were described in a special paper and delivered during the meeting.
- The three proposed water monitoring stations were inspected during the workshop. It was concluded that the selected stations were very well suited for the project.

Procurement of Instruments and Data Equipment

YEMC has in co-operation with the ENSIS group prepared lists of air and water quality instruments, and of data equipment. The water quality instrument list was signed before the workshop.

The following related topics were discussed:

- Following the text in the addendum to the contract between NORAD and SSTC, NIVA has ordered the water quality instruments according to the agreed list. These instruments have been shipped for Yantai.
- NILU and YEMC have agreed on the contents of the air quality instrument list. One set of the instruments shall be delivered in Norway for testing and adaptation of the NILU data logger and the automatic data acquisition system, (A-DACS).

- The content of the data equipment list from the YEMC was accepted by the ENSIS group prior to the workshop. However, a disagreement still remains regarding the delivery of the equipment to Norway.
- The Norwegian side stated that the project plan is based on the assumption that this equipment is to be delivered in Norway. If the data equipment is not delivered in Norway, the project plan has to be revised according to the extra time consumption and costs related to installation of the ENSIS system in Yantai.
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This activity plan above must be revised if the delivery of necessary equipment is further postponed. A more detailed activity plan will be presented in the Revised Project Plan for 1998.

Date :

7/11.97

Crow Zhangjun

Yantai Environmental Monitoring Center

Date :

7/11.1997

Trond Bøhler

Norwegian Institute for Air Research

Appendix C

Data equipment list, air and water instrument lists

**The List of Imported Equipment
for Yantai Automatic Monitoring Station Computer Service System**

21.name of product	22.item and specification	23.amount	24.cost (US\$)	25.trade country	26.commodity code (H.S.)
Network service	HP NS LH Pro Dual	1	13566	USA	
configuration	Dual CPU P6/200 512K cache				
	64bit PCI bus ATX main board				
	2x PCI Ultra SCSI				
	Matrox Millium II w/8MB250MHZ DAC				
	17" color monitor				
	128M ECC memory				
	Hot swap hard disk 4.2G × 4				
	Type steamer HP Surestore DAT DDS-3 12-24				
	LAN adapter HP Deskdirect 10/100TX PCI fast 100+10M drop cable				
	Myex RAID controller Wide SCSI				
mouse keyboard floppy disk driver					
super workstation	HP Kayak XU	3	17502	USA	
configuration	CPU PII 6/266				
	64 bit PCI bus ATX main board				
	64M memory				
	4.5G Ultra SCSI-II hard disk				
	24xSCSI CDROM				
	Sound blaster AWE64 sound card				
	21" color monitor				

21.name of product	22.item and specification	23.amount	24.cost (US\$)	25.trade country	26.commodity code (H.S.)
	HP Deskdirect 10/100 TX PCI fast LAN adapter + drop cable				
	Adaptec Ultra SCSI controller				
	mouse keyboard floppy disk driver				
standard workstation	HP VL5 5/200 MMX	2	4712	USA	
configuration	32M memory				
	1.6G hard disk				
	17''color monitor				
	mouse keyboard floppy disk driver				
	LAN adapter 100M				
HUB	CISCO 8 port 100M	1	1047	JAPPAN	
UPS	HP Power wise 2100VA UPS	2	2028	USA	
UPS battery pack	for HP Power wise 2100VA UPS	4	1728	USA	
Plotter	HP750C	1	6998	USA	
Erasable CD ROM and CDs	SONY	2	2839	JAPPAN	
		8			
Printer	HP DJ 1500M	1	1500	USA	
Scanner	HP 4P 2400DPI	1	1259	USA	
DDS-DAT-cassette	HP 4mm 120m 4.0G	16	1332		
Total	54511\$ (389,753NOK,1\$=7.15NOK)				

On the basis of the addendum to the agreement between SSTC and NORAD and the addendum to the contract in June between us, the total funds for purchasing computer service system equipment in 1997 are 630,000 NOK, including 390,000 NOK for hardware (total 54,545 \$, 1\$=7.15NOK). The above hardware equipment list has been agreed by both sides, we determine to purchase according to this list.

Place and date

Yantai, 7th of November, 1997

Cao Zhanjun

For Yantai Environmental
Monitoring Centre

Place and date

Yantai, 7th of November, 1997

Trond Bøhler

For Norwegian Institute for
Air Research

The List of Imported Equipment for Yantai Air Automatic Monitoring Station

21.name of product	22.item and specification	23.amount	24.cost	25.trade country	26.commodity code(H.S.)
fluorescent SO ₂ analyzer (internal span source, spare parts for 1 year)	API MODEL 100A	6	62,185	USA	
NO _x analyzer (internal span source , spare parts for 1 year)	API MODEL 200A	6	62,714	USA	
BETA ray TSP monitor (including PM10)	ANDERSEN GBAM 1020	6	76,880	USA	
CO analyzer (internal span source, spare parts for 1 year)	API MODEL 300	3	27,920	USA	
dynamic corrector (spare parts for 1 year)	API MODEL 700	1	14,959	USA	
zero air source	M701	1	3,929	USA	
METONE meteorology equipment		1	5,565	USA	
SO ₂ 、NO _x span gas and steel cylinder		7	6,251	USA	
air sampler collecting tube (with air compressor)		5	6,750	USA	
data logger (16 channels)	NILU	5	18,375	Norway	
modem	28800bps × 5 33600bps × 1	6	2100		
centre system software	A-DACS	1	5,244		
total price	292,872(total2,094,034.8NOK, 1\$=7.15NOK)				

On the basis of the addendum to the agreement between SSTC and NORAD and the addendum to the contract in June between us , the total funds for purchasing air equipment in 1997 are 2,100,000 NOK(total 293,706 \$, 1\$=7.15NOK).The above equipment list has been agreed by both sides . However NILU would prefer to use TEOM monitor instead of the Andersen beta ray monitors which NILU has no experience with. YEMC agree to use the A-DACS of NILU. The two sides agree to purchase according to this list.

Place and date

Yantai, 7th of November, 1997

Cao-zhanjun

For Yantai Environmental
Monitoring Centre

Place and date

Yantai, 7th of November, 1997

Trud Bøhler

For Norwegian Institute for
Air Research

**The List of Imported Equipment
for Yantai Water Quality Automatic Monitoring Station**

21. name of product	22. item and specification	23. amount	24. cost	25. trade country
multi-function analyzer with auto-washing system	Polymetron	3	25,496	France
spare parts for multi-function analyzer	Polymetron	3	5,874	France
ammounia analyzer	Polymetron 8810	2	22,434	France
nitrate analyzer	Polymetron 8810	1	11,217	France
phosphate analyzer	Polymetron 8810	1	11,217	France
TOC analyzer with filter	RAJ 1950	1	21,958	USA
* Dataloggers with GSM communication		3	12,993	Sweden
Water taps		12	979	
Batteries (with charger and converter)		3	4,336	
Compressors (with tube and fittings)		3	1,119	
Fittings			699	Norway
Pumps	6kg, 30l/min	2	1,818	
Pumps	1.5kg, 20l/min	4	2,238	
atomic absorption	PE300	1	73,427	USA
total	195,805\$(1,400,000NOK, 1\$=7.15NOK)			

* After later agreements this has ben changed to an upgraded logger suitable for permanent telephone lines. The price is the same.

On the basis of the addendum to the agreement between SSTC and NORAD and the addendum to the contract in June between us, the total funds for purchasing water quality equipments in 1997 are 1,400,000NOK (total 195,805\$, 1\$=7.15NOK). The above equipments list has been agreed by both sides, we determine to purchase according to this list.

Place and date

Yantai, 16th of October, 1997

Gao Zhanjun

For Yantai Environmental
Monitoring Centre

Place and date

Kjelsds, 20. October, 1997

Stein M. Wathne

For Norwegian Institute for
Water Research



Norwegian Institute for Air Research (NILU)

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<p>ABSTRACT</p> <p>Norwegian Institute for Air Research (NILU) co-ordinates on behalf of the ENSIS group (NILU, NIVA, Norgit) a project for Yantai Municipal Science and Technology Commission, China, regarding installation of an Environmental Surveillance and Information System (ENSIS). This system consists of modules for air and water monitoring and management. The Norwegian side is funded by NORAD. The project started in November 1996 and will last for three years. This workshop report describes the costs the activities performed during the second workshop in Yantai 3-7 November 1997.</p>			
<p>NORWEGIAN TITLE</p> <p>ENSIS Yantai - Seminar 3. 7. November 1997</p>			
KEYWORDS Monitoring	Modeling	Management	
<p>ABSTRACT (in Norwegian)</p> <p>NILU utfører, sammen med ENSIS-gruppen (NILU, NIVA, Norgit), et prosjekt for Yantai Municipal Science and Technology Commission, China, vedr. installasjon av ENSIS-systemet i Yantai, Kina. ENSIS-systemet er et planverktøy for luft- og vannkvalitet som omfatter målinger og spredningsmodeller. Prosjektet startet i november 1996 og har en varighet på tre år. NORAD finansierer den norske siden av prosjektet. Denne rapporten omhandler de aktiviteter som ble utført under den andre workshopen som ble avholdt 3.-7. November 1997.</p>			

* Classification

A	Unclassified (can be ordered from NILU)
B	Restricted distribution
C	Classified (not to be distributed)