

NILU TR: 7/92

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Progress Report No. 1 Cost Statements

T. Krognnes



NILU

NORSK INSTITUTT FOR LUFTFORSKNING
Norwegian Institute for Air Research
POSTBOKS 64 — N-2001 LILLESTRØM — NORWAY



CONTRACT EV4V-CT90-0222
PEROXY ACETYL NITRATE INTERCALIBRATION
PROGRESS REPORT no 1
1/5-91 TO 30/4-92

CO-ORDINATOR:

T. KROGNES

NILU, 26 05 1992

CO-ORDINATOR'S OVERVIEW

Progress reports and cost statements from all the contractors and associated contractors are included on the following pages. Also some informal partners contribute actively. KFA Jülich has co-operated with Meteorologieconsult. The JRC Ispra does not receive financial support through the project contract, but has submitted a progress report. The AEA Harwell has participated in the experimental work, but has not submitted a separate progress report.

PREP.1

The project started immediately after the contract signature, but the progress was slow the first few weeks. Also different summer holidays in the respective countries caused delays. The phase was scheduled to take 6 weeks, but was completed after 15 weeks. The participants reported existing calibration methods. To identify unknown error sources, the participants were asked to prepare more detailed descriptions than for normal publications. An internal report was distributed to the participants at the conclusion. A mixture of new material and previously published material was included in the report. The advance payment from the CEC was immediately transferred to the participants in accordance with the contract.

Vennligst adresser post til NILU, ikke til enkeltpersoner/Please reply to the institute.

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PREP.II

Project phase PREP.II started in project week 16. A strategy meeting was arranged at NILU in project week 18 (as scheduled). The participants refined existing analysis methods. Some laboratories prepared to use methods that they had not previously worked with. The results were reported in an internal report that was distributed to the participants in project week 26.

PREP.III

The trial standard distribution took place in project week 26. The standards were analysed by the participants, and samples were returned to the co-ordinator. The standards must be transported by air, packed with carbon ice in an insulated box. Both air security and customs formalities may cause delays, and the standards will be destroyed if they are heated to room temperature. 10 boxes of standards were distributed. One parcel was lost in the air transport. One return parcel arrived at NILU during the Christmas holiday, and the contents were destroyed. However the destroyed samples were also analysed, and they revealed important information about possible error sources.

The returned samples could not be analysed immediately due to problems with the ion chromatograph. When the problem had been located, two months passed before a new column was delivered. The last experiments of this phase are therefore performed in project week 57, and the internal report will be distributed in project week 58. A preliminary overview of the results was distributed to the participants in project week 44.

The results of the trial distribution show a standard deviation better than 20% for concentrated standards and approximately 40% for more dilute standards (the outliers are included in the figures). After elimination of outliers, the main group of results has a standard deviation of approximately 12% for all samples. The results are promising, but also demonstrate that a closer quality control is needed.

The standards in the 3 intercalibration distributions will be accompanied by a better solvent reference for IR (infra red) calibration methods, as the trial revealed that the standards were unsuitable for such methods. The trial also revealed that when a standard is completely thermally decomposed in a closed bottle, acetate is produced. This contradicts some earlier experiments, and calls for new studies of the chemistry of PAN decomposition in a dilute solution.

FURTHER WORK

The project continues in accordance with the original plan with one exception. A new strategy meeting was not planned, but is strongly recommended by the participants. The extra meeting will be arranged between phases CAL.I and CAL.II.

The project is presently 26 weeks delayed according to the original schedule. Some phases may possibly be accelerated, but new delays should also be expected due to differing holidays in the participating countries. The project should be expected to finish 26 weeks after the scheduled completion. The total execution time will then be 2½ year. The total amount of work is not significantly changed, so that the original economic frame is still relevant. In some cases technical problems cause additional costs in a participating

laboratory. These may appear as allowable costs in the cost statements, but no changes in the CEC contribution is expected. A revised project schedule is enclosed with this progress report.

PARTICIPANT NO 1, NILU

WORK PERFORMED

NILU has prepared detailed method descriptions for ion chromatographic determination of PAN by acetate analysis, and for air transport of PAN standards. NILU has compiled internal reports for the phases PREP.I and PREP.II. NILU has organised the air freight of PAN standards. The standards for the trial distribution were purified by HPLC and calibrated by ion chromatography (acetate analysis after alkaline hydrolysis). After return to NILU, the concentrated standards have been re-calibrated. The dilute standards await re-calibration. The internal report from phase PREP.III will be produced in June 1992. NILU was the host of the strategy meeting in project week 18. T. Krognes visited Meteorologieconsult, KFA Jülich and TNO in April 1992 to see details of the calibration methods and equipment used. Due to technical problems NILU has not yet set up a PAN monitor for continuous operation at the institute site.

RESULTS OBTAINED

The trial distribution demonstrated that PAN standards (in spite of their thermal instability and the complicated air transport regulations for dangerous goods) may be distributed within Europe without large loss of PAN. Furthermore, the standard deviation of the analysis results was within the expected range. Some outliers remain unexplained, and further refinement of the calibration methods is called for.

Analysis of thermally decomposed PAN standards revealed that acetate under certain conditions will be formed. No nitrite was found in the thermally decomposed standards. These results are important, as the project is designed to identify unknown error sources.

The visits to other participants very efficiently increases knowledge and understanding of the practical implementation of the calibration methods.

FURTHER WORK

NILU will continue participation in the project according to the revised work schedule. Ambient air PAN monitoring will be started at NILU in June 1992.

**STEP PAN INTERCALIBRATION
CONTRACT EV 4V-CT90-0222**

PROGRESS REPORT NR 1

R.Romero and P.Oyola, Swedish Environmental Protection Agency, Atmospheric Research Division, Studsvik 611 82 Nyköping, Sweden.

Report of activities in the Step Pan-Intercalibration Project, carried out by the Atmospheric Research Division (ARD). Period between May 1991 and April 1992.

1.- Set up of the Pan Analyzer Instrument.

The Peroxyacetyl Nitrate (PAN) is measured by an isothermal gas chromatograph, equipped with a gas sampling valve, a packed column and an ECD (Electron Capture Detector). After some modifications in the chromatographic system (made by the co-ordinator of the project T.Krognes) the PAN analyzer was set up for field measurements at Aspvreten station (about 90 km southwest of Stockholm).

2.- Continuous sampling.

The PAN analyzer, located at Aspvreten station, was previously calibrated with the help of Ted bags and liquid standard mixtures delivered by NILU (Lilleström, Norway). Since February 1992, the PANANALYZER has been working for unattended routine measurement of background levels of PAN.

3.- Intercalibration Programme.

In accordance with the co-ordinator and the schedule of the STEP PAN Intercalibration project, the ARD have participated in an intercalibration programme together with all the participants of the project "Trial Pan Standard Distribution".

4.- Parallel activities.

The ARD is working with a dynamic calibration system for PAN measurements, where with the help of a glass unit, PAN liquid solution is connected directly to the sample loop of the PANANALYZER and simultaneously to an NO-chemiluminiscens monitor, working in ppt level.

5.- Travels.

On 4-6 September 1991, Dr P.P.Oyola attended a working meeting, which was held in Lilleström, Norway at NILU and organized by the project co-ordinator Mr.T.Krognes. On early November Dr.R.Romero spent two days at CNR, Italy with Dr Ciccio to discuss about the CNR-PAN dynamic calibration system.

WORK SCHEDULE, REVISED JUNE 1992

CALENDAR WEEK	PROJECT WEEK	PROJECT PHASE	PROJECT ACTIVITY (ALL WEEKS MENTIONED ARE <u>PROJECT</u> WEEKS)
19/91-22/91	1-4	PREP.I	Participants consolidate existing "local" methods and report them to the co-ordinator. Publication reprints and detailed description of methods and difficulties forwarded to NILU by express mail before end of week 4.
24/91	6	"	NILU compiles internal report.
32/91-35/91	14-17	PREP.II	NILU prepares standards and methods for trial distribution.
23/91-35/91	5-17	"	Participants prepare additional methods to be used for intercomparisons. Participants report results and bring reports to NILU in week 18. Participants take summer holiday as required within this period.
36/91	18	"	All participants travel to NILU for a 3 day seminar and strategy meeting. Participants prepare short presentations of their methods and planned contribution to the project.
37/91-38/91	19-20	"	NILU compiles internal report and sends to participants at the end of week 20.

CALENDAR WEEK	PROJECT WEEK	PROJECT PHASE	PROJECT ACTIVITY (ALL WEEKS MENTIONED ARE <u>PROJECT</u> WEEKS)
39/91	21	PREP.III	Trial standard distribution. Due to customs and transport formalities, standards will not be given to the participants during the meeting in week 18.
40/91-42/91	22-24	"	Participants calibrate distributed standards and local standards with at least two methods. Participants calibrate GC with different standards and different application methods.
43/91-44/91	25-26	"	Participants report results. The report and PAN standard samples (packed with carbon ice) are returned to NILU by air express parcel at the end of week 27.
45/91-47/91	27-29	"	NILU recalibrates the returned PAN standards by ion chromatography. NILU compiles internal report. Sends report to participants at the end of week 29.
<u>ORIGINAL</u>			
<u>REVISED</u>			
23/92-24/92	57-58	CAL.I	NILU prepares standards for distribution. Participants correct methods if necessary.
24/92	58	"	First intercalibration standard distribution.
25/92-27/92	59-61	"	Participants start calibration experiments (as in weeks 22-24).

CALENDAR WEEK	PROJECT WEEK	PROJECT PHASE	PROJECT ACTIVITY (ALL WEEKS MENTIONED ARE <u>PROJECT</u> WEEKS)
28/92-34/92	62-68	"	Summer holidays. Available time should be used for method refinements and ambient PAN data preparation.
35/92-36/92	69-70	"	Participants complete calibrations (as in weeks 22-24).
37/92-38/92	71-72	"	Participants report results. The report and PAN standard samples (packed with carbon ice) are returned to NILU by air express parcel at the end of week 72.
39/92-41/92	73-75	"	NILU recalibrates the returned PAN standards by ion chromatography. NILU compiles internal report.
42/92	76	"	Strategy meeting, report from CAL.I will be ready for the meeting.
43/92	77	CAL.II	NILU prepares standards. Participants correct methods if necessary.
44/92	78	"	Second intercalibration standard distribution.
45/92-47/92	79-81	"	Calibrations.
48/92-50/92	82-84	"	Participants report results. The report and PAN standard samples (packed with carbon ice) are returned to NILU by air express parcel in week 84.

CALENDAR WEEK	PROJECT WEEK	PROJECT PHASE	PROJECT ACTIVITY (ALL WEEKS MENTIONED ARE <u>PROJECT</u> WEEKS)
51/92	85	CAL.II	NILU recalibrates the returned PAN standards by ion chromatography.
52/92-53/92	86-87	"	Christmas holiday.
1/93-2/93	88-89		NILU compiles internal report. Sends report to participants at the end of week 89.
3/93-4/93	90-91	CAL.III	NILU prepares standards. Participants correct methods if necessary.
5/93	92	"	Third intercalibration standard distribution.
6/93-8/93	93-95	"	Calibrations.
9/93-11/93	96-98	"	Participants report results. The report and PAN standard samples (packed with carbon ice) are returned to NILU by air express parcel in week 98.
12/93-13/93	99-100	"	NILU recalibrates the returned PAN standards by ion chromatography.
14/93	101	"	Easter holiday
15/93-16/93	102-103		NILU compiles internal report. Sends report to participants at the end of week 103.

CALENDAR WEEK	PROJECT WEEK	PROJECT PHASE	PROJECT ACTIVITY (ALL WEEKS MENTIONED ARE <u>PROJECT</u> WEEKS)
17/93-20/92	104-107	EV.I	Participants calibrate all ambient PAN data, tabulate them and perform quality control. Each participant sends his data with comments and suggested conclusions to all other participants by express mail at the end of week 107.
21/93-25/93	108-112	EV.II	Editors complete draft versions of publications and distribute to participants in week 112.
26/93-33/93	113-120	"	Summer holiday.
34/93-37/93	121-124	EV.III	Participants evaluate draft reports and send their suggestions to the editors by express mail at the end of week 124.
-41/93	-128	EV.IV	Editors submit publications to appropriate journals.

Cost Statement

for the period from 01.05.91 to 30.04.92
 Project Title : PEROXY ACETYL NITRATE INTERCALIBRATION
 Contract No. : EV4V-CT90-0222
 Name of Contractor/ : NORWEGIAN INSTITUTE FOR AIR RESEARCH
 Associated Contractor ⁽¹⁾ : to ⁽²⁾
 Currency : NOK

Categories of Cost ⁽³⁾		Amount for the period	
<u>Direct Costs</u>			
1.	Labour ⁽³⁾	NOK	633.712
2.	Travel and subsistence ⁽⁴⁾		
	- within Western Europe		
	- outside Western Europe		
3.	Durable equipment		
4.	Consumables ⁽⁵⁾	NOK	18.870
5.	External assistance		
	- Associated Contracts		
	- subcontracts/services	NOK ⁽⁶⁾	348.503
6.	Computing		
7.	Other items ⁽⁵⁾	NOK	28.286
<u>Indirect Costs</u>			
8.	Overheads recovered on labour		
9.	Overheads recovered on other direct costs ⁽⁷⁾		
10.	Fixed contribution at 20 % ⁽⁸⁾		
<u>Taxation and Customs Duties</u>			
11.	VAT ⁽⁹⁾		
<u>Adjustments</u>			
12.	Adjustments to costs previously reported ⁽¹⁰⁾		
Total:		NOK	1.029.371
....% contribution of Commission:			

SEK 322.688

Contractor's Certificate ⁽¹¹⁾

(SEK 100 = NOK 108)

We certify that the above costs are derived from the resources employed which were necessary for the work under the contract, that such costs have been incurred and fall within the definition of allowable costs specified in the contract, and that any necessary permissions of the Commission have been obtained

We certify that any necessary adjustments, for any reason, to costs reported in previous cost statements have been incorporated in the above statement ⁽¹⁰⁾

Date: 27 May 1992

Date: 27 May 1992

Name of Project Manager ⁽¹²⁾

Name of Financial Officer:

Terje Krognnes

Paal Berg

Signature of Project Manager:

Terje Krognnes

Signature of Financial Officer:

Paal Berg

(1) Delete as necessary - for Associated Contractor see Art. 3 of Annex II.

(2) The Associated Contractor must specify the name of the Contractor to which it is associated.

(3) Separate details are required for each category in accordance with the annexes which follow.

(4) See Art. 26 of Annex II.

(5) Separate details are only required with the final cost statement. For consumables, generic descriptions are required only for categories over 10.000 ECU.

(6) Each Associated Contractor must submit a separate cost statement for its costs, through the Contractor to which it is associated.

(7) The categories of costs on which such overheads are charged should be identified. If the specification of the amount of the overheads is not practicable, a note to this effect should be included in the cost statement.

(8) For Contractors/Associated Contractors charging additional costs. The calculation must exclude a contribution on VAT and on any costs of Associated Contracts of the Contractor. See Part E.

(9) See Article 32 of Annex II - only the amount recoverable by the Commission in accordance with Article 32.3.2 to be shown separately. The VAT form must also be completed.

(10) Not applicable for the first cost statement. Any necessary adjustments, for example to reflect actual rates instead of budgeted rates, must be made in subsequent statements. Details and reasons for any adjustments must be provided.

(11) The Project Manager and the Financial Officer must sign the certificate.

(12) The person designated to be in direct charge of the performance of the work - see Article 1.5 of Annex II.

For the period from 01.05.91 to 30.4.92

Contract No. :
 Name of Contractor/ :
 Associated Contractor :
 Currency :

COST CATEGORY : LABOUR AND OVERHEADS

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Category ⁽¹⁾	No. of Man Hours/ Months ⁽²⁾	Labour Rate ⁽³⁾ overhead incl.	Overheads added to the Labour) Rate ⁽⁴⁾	Loaded Labour Rate Col. (C) + (D)	Labour Cost Amount Col. (B) • (C)	Overheads Amount Col. (B) • (D)
Scientist	1.078	585.44			631.104	
Techn.	8	326.-			2.608	
Sub-Totals					633.712	
Total (labour+overheads)					NOK 633.712	

- (1) Labour should normally be specified by category, (e.g. engineer, technician, cost department, etc.), clearly identifiable to contractors' labour rates or charging bands. Individuals should be identified by name where they are specified in the contract as key personnel, or when required for the project under Article 36.4.
- (2) Delete as appropriate in accordance with any specifications of the Commission - normally man hours should be used and, where hourly rates for cost reporting purposes have been agreed with the Commission, man hours must be used.
- (3) The labour rate comprises the elements specified in Article 24.1 of Annex II.
- (4) Overheads principles are specified in Article 25 of Annex II. If a percentage addition is added for overheads, the percentage should be specified. If overheads are added to any element other than labour costs, the amount should be shown separately in the cost statement.

Cost Statement

for the period from April 1991 to April 1992
 Project Title : STEP PAN INTERCALIBRATION
 Contract No. : STEP - 900289
 Name of Contractor/ :
 Associated Contractor ⁽¹⁾ : to ⁽²⁾
 Currency : Swedish crowns - SEK

Categories of Cost ⁽³⁾	Amount for the period
<u>Direct Costs</u>	
1. Labour ⁽³⁾	225.750
2. Travel and subsistence ⁽⁴⁾	20.000
- within Western Europe	
- outside Western Europe	
3. Durable equipment	20.000
4. Consumables ⁽⁵⁾	10.000
5. External assistance	(6)
- Associated Contracts	
- subcontracts/services	
6. Computing	13.000
7. Other items ⁽⁵⁾	
<u>Indirect Costs</u>	
8. Overheads recovered on labour	
9. Overheads recovered on other direct costs ⁽⁷⁾	
10. Fixed contribution at 20% ⁽⁸⁾	
<u>Taxation and Customs Duties</u>	
11. VAT ⁽⁹⁾	33.938,07
<u>Adjustments</u>	
12. Adjustments to costs previously reported ⁽¹⁰⁾	
Total:	322.688 :-
....% contribution of Commission:	

Contractor's Certificate ⁽¹¹⁾

We certify that the above costs are derived from the resources employed which were necessary for the work under the contract, that such costs have been incurred and fall within the definition of allowable costs specified in the contract, and that any necessary permissions of the Commission have been obtained.

We certify that any necessary adjustments, for any reason, to costs reported in previous cost statements have been incorporated in the above statement ⁽¹⁰⁾

Date: 920526

Date: 26 May 1992

Name of Project Manager ⁽¹²⁾

Name of Financial Officer:

P.P.Oyola

Ronny Fern

Signature of Project Manager:

Signature of Financial Officer:

P.P. Oyola

Ronny Fern

(1) Delete as necessary - for Associated Contractor see Art. 3 of Annex II.

(2) The Associated Contractor must specify the name of the Contractor to which it is associated.

(3) Separate details are required for each category in accordance with the annexes which follow.

(4) See Art. 26 of Annex II.

(5) Separate details are only required with the final cost statement. For consumables, generic descriptions are required only for categories over 10.000 ECU.

(6) Each Associated Contractor must submit a separate cost statement for its costs, through the Contractor to which it is associated.

(7) The categories of costs on which such overheads are charged should be identified. If the specification of the amount of the overheads is not practicable, a note to this effect should be included in the cost statement.

(8) For Contractors/Associated Contractors charging additional costs. The calculation must exclude a contribution on VAT and on any costs of Associated Contracts of the Contractor. See Part E.

(9) See Article 32 of Annex II - only the amount recoverable by the Commission in accordance with Article 32.3.2 to be shown separately. The VAT form must also be completed.

(10) Not applicable for the first cost statement. Any necessary adjustments, for example to reflect actual rates instead of budgeted rates, must be made in subsequent statements. Details and reasons for any adjustments must be provided.

(11) The Project Manager and the Financial Officer must sign the certificate.

(12) The person designated to be in direct charge of the performance of the work - see Article 1.5 of Annex II.

For the period from April 1991 to April 1992

Contract No. : STEP - 900289
 Name of Contractor/ :
 Associated Contractor :
 Currency : Swedish crowns - SEK

COST CATEGORY : LABOUR AND OVERHEADS

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Category ⁽¹⁾	No. of Man Hours/ Months ⁽²⁾	Labour Rate ⁽³⁾	Overheads added to the Labour) Rate ⁽⁴⁾	Loaded Labour Rate Col. (C) + (D)	Labour Cost Amount Col. (B) • (C)	Overheads Amount Col. (B) • (D)
Scientist	5	125.000				
Technician	6,5	100.750				
Sub-Totals						
Total (labour+overheads)					225.750 :-	

- (1) Labour should normally be specified by category, (e.g. engineer, technician, cost department, etc.), clearly identifiable to contractors' labour rates or charging bands. Individuals should be identified by name where they are specified in the contract as key personnel, or when required for the project under Article 36.4.
- (2) Delete as appropriate in accordance with any specifications of the Commission - normally man hours should be used and, where hourly rates for cost reporting purposes have been agreed with the Commission, man hours must be used.
- (3) The labour rate comprises the elements specified in Article 24.1 of Annex II.
- (4) Overheads principles are specified in Article 25 of Annex II. If a percentage addition is added for overheads, the percentage should be specified. If overheads are added to any element other than labour costs, the amount should be shown separately in the cost statement.

For the period from April 1991 to April 1992

Contract No. : STEP - 900289
 Name of Contractor/ :
 Associated Contractor :

Currency : Swedish crowns - SEK

COST CATEGORY : DURABLE EQUIPMENT

Description	Date of Purchase	Cost	% Allocation to Project ⁽¹⁾	Amount ⁽²⁾
Cooling-bath	9 10306	24.057		10.000
NO-Monitor	9 10731	73.321		10.000
			Total ⁽³⁾	20.000 :-

COST CATEGORY : EXTERNAL ASSISTANCE⁽⁴⁾

Supplier ⁽⁵⁾	Amount
Total ⁽³⁾	

COST CATEGORY : COMPUTER COST

Description	Amount
Logger & Software	13.000
Total ⁽³⁾	
13.000 :-	

- (1) Based on use of item of equipment for the contract.
- (2) Commission contribution to be reimbursed in a single amount for the contract period. Amount to report is Actual cost x depreciations rate (33 1/3% per year for minor computing equipment; 20% per year for other equipment) x % allocation to project x contract duration from date of purchase - see Article 27 of Annex II.
- (3) If the amount charged includes any addition for overheads or a handling charge, the addition should be specified separately.
- (4) Includes subcontract work but excludes work of Associated Contractors.
- (5) Any relationship of ownership or control between the supplier and the Contractor must be declared.

FORM TO BE SUBMITTED IN TRIPLICATE WITH THE COST STATEMENT CALLED FOR IN ARTICLE 5 OF THE CONTRACT TOGETHER WITH SUPPORTING DOCUMENTATION.⁽¹⁾

Contract No : STEP - 900289

Currency: Swedish crowns - SEK

Name of Contractor/
Associated Contractor:

VAT statement for the period from 9104 to 9204

Name of supplier	Invoice No ⁽¹⁾	Amount of invoice		Amount charged in accordance with the contract ⁽²⁾	
		Net amount	VAT	Net amount	VAT
Tillquist AB	452817	24.057	6.014,25	24.057	6.014,25
Hesselvik AB	689	146.642,50	36.660,63	73.621	18.330,32
Envilogg AB	91009-10	39.125	9.781	23.125	5.781
Kontram	925144	61.000	15.250	15.250	3.812,50
Total VAT ⁽³⁾ :					33.938,07

I certify that the above expenditure has been incurred and falls within the definition of allowable costs specified in the Contract. I certify that the amount of V.A.T. has not been directly or indirectly recovered and is not directly or indirectly recoverable and that all actions with respect to V.A.T. recovery specified by the Contract have been taken.

Date : 920526

Name of Financial Officer:

Ronny Fern

Signature :

Ronny Fern

(1) See Article 32.3.2 of Annex II

(2) To take account of e.g. the depreciation or the percentage charged to the Contract

(3) To be reported on the summary page of the cost statement, item "VAT"

TILLQUIST

TILLOQUIST ANALYS AB
 Vår ref/Our ref.
 244/244 T ENGSTRÖM

Gödemottagare (taxi, postaddress)/Contigee (taxi, postal address)
 NATURVÅRDSVERKET
 LUFTLAB
 STUO SVIK
 611 82 NYKÖPING

FAKTURA/INVOICE

Datum/Date: 91-03-06
 Faktura/Invoice No.: 452817
 Kundnr./Cust. No.: 22098
 Orderdatum/Order date: 91-02-19
 Vårt order/Our order No.: 153541
 Er datum/Your date: 91-02-19
 Er beställingsnr/Your order No.: ROMERO

Sid/Page: 1
 N

Köpare/Buyer
 NATURVÅRDSVERKET
 LUFTLAB
 STUO SVIK
 611 82 NYKÖPING

Leveransadress (ort annan än postadress)/Del. address (if other than postal)

Leveransvillkor/Terms of delivery

FRITT VART LAGER EXKL. EMB.

Märkning/mark of goods
 ROMERO

STATENS NATURVÅRDSVERK	
Insk.	1991-03-07
Siffror	189.00
Kredit	embet

Betalningsvillkor/Terms of payment

30 DGR NETTO EFTER FAKT.DATUM

Transportslag/Mode of transport

Sista betalningsdag/Last day of payment: 91-04-05
 Vid försenad betalning debiteras dröjsmålsränta med 21.00%

Leveransbestämmelser
 IML 91

Ange faktura- och kundnummer vid betalning.
 Please mark all payments with above invoice No. and Customer No.

BANKGIRO 980-3404 POSTGIRO 5274-6

Bankref. GOTABANKEN, SWEDEN

ACCOUNT NO. 4171-100234-4 SEK

Fas Item	Specification Description	Antal Qty	Pris per enhet Unit price	Belopp Amount
010	151-03-B-690050 193-1601 HAAKE F3-CH	1	23800.00	23800.00
800	FRAKT/EMBALLAGE			257.00
MOTTAGET		Datum 91.03.08		
Underskrift		<i>Romero</i>		
ATTESTERAS		Datum		
Kostn bäraas	Kostn slag	Kostn ställe		
5.....	2.....	4.....		
Anslog	Verksamhetsområde			
3.....	7.....			
Underskrift				
MOMSPL BELOPP 24057.00		MOMS 25.00 % 6014.25		EJ MOMSPLIKT
		ÖRESUTJÄMNING 0.25-		ATT BETALA 30071.00

Tryckprogram 11 Uppsk

51

ENVILOGG

datateknik AB

FAKTURA

STATENS NATURVÅRDSVERK	
Ink	1991-12-04
Adress	
Stad	
Postadress	

Fakturanr

91010

Datum

910813

Kund

Statens naturvårdsverk
Luftlaboratoriet

611 82 NYKÖPING

Vår referens

Marcelo Tapia

Er referens

Kai Rosman

Specifikation

Balopp

3 st datorkort a' 6 000:-	18 000:-
3 st 4 MB RAM a' 2 000:-	6 000:-
<i>Exkl. moms: 24.000:-</i>	
MOTTAGET	Datum 911204
Underskrift <i>Kai Rosman</i>	
ATTESTERAS	Datum 91-12-12
Kostn bärare 5990491-2	Kostn slag 2
	Kostn ställe 4820-7

Betalas senast

910913

Anslag 31-5	Verksamhetsområde 7
Underskrift <i>P. P. Ojola</i>	

Summa

24 000:-

Moms 25%

6 000:-

Att betala

30 000:-

moms: 6000:-

Org.nr 55630-2881

Bankgiro
Postgiro

MOTTAGET	Datum 911204
Underskrift <i>Kai Rosman</i>	
ATTESTERAS	Datum
Kostn bärare 485-769425090-5	Kostn slag 2
	Kostn ställe 4
Anslag 3	Verksamhetsområde 7
Underskrift <i>P. P. Ojola</i>	

Vid försenad betalning debiteras dröjsmålsränta med 8% + diskonto

Postadress/Postal address
Box 801
S-751 08 Uppsala
Sweden

Gatuadress/Visiting address
Kungsängsvägen 29
Uppsala

Fax/Fax
018-12 59 04
+46 18 12 59 04

Telefon/Phone
018-12 59 00
018-12 59 02
018-12 59 03

ENVILOGG

datateknik AB

242

FAKTURA

STATENS NATURVÅRDSVERK	
Ink. 1991-12-04	
Ink. nr.	Uppg.
Kund nr.	

Fakturanr

91009

Datum

910813

Kund

Statens naturvårdsverk
Luftlaboratoriet

611 82 NYKÖPING

Vår referens

Marcelo Tapia

Er referens

Kai Rosman

Specifikation

Belopp

Arvode enligt beställning 144-3270-91

15 125:-

Exkl. moms: 15.125:-

moms: - 3781:-

MOTTAGET	Datum 911204	
Underskrift	<i>Kai Rosman</i>	
ATTESTERAS	Datum 91-12-12	
Kostn bärare	Kostn slag	Kostn ställe
5 990491-2	2	4 820-9
Anslag	Verksamhetsområde	
3	1	
Underskrift	<i>P.-P. Ojale</i>	
910813		

MOTTAGET	Datum 911204	
Underskrift	<i>Kai Rosman</i>	
ATTESTERAS	Datum 91-12-12	
Kostn bärare	Kostn slag	Kostn ställe
5 85090-5	2	4
Anslag	Verksamhetsområde	
3	7	
Underskrift	<i>P.-P. Ojale</i>	
	15 125:-	

Moms 25%

3 781:-

Att betala

18 906:-

Org.nr 556340-2881

Bankgiro 5435-7694
Postgiro 429 56 88-8Vid försenad betalning debiteras
dröjsmålsränta med 8% + diskontoPostadress/Postal address
Box 801
S-751 08 Uppsala
SwedenGatuadress/Visiting address
Kungsängsvägen 29
UppsalaFax/Fax
018-12 59 04
+46 18 12 59 04Telefon/Phone
018-12 59 00
018-12 59 02
018-12 59 03

19 MAJ '92 14:57 NATURV.VERK LUFTLAB.46 155263073
 KONTRAM-ESSHOLM AB
 BOX 464
 S-124 04 SANDHAGEN

NATURV.VERK LUFTLAB. S 19
 Org.nr: 536289-311

431-

STATENS NATURVÄRDSVERK	
Ink. 1992-03-17	
Saker.	Löper.
Huvud objekt	

Lev.address/Delivery address

Kund/Customer

STATENS NATURVÄRDSVERK
 LUFTENHETEN / STUO SVIK
 611 82 NYKÖPING

STATENS NATURVÄRDSVERK
 611 82 NYKÖPING

Ordertyp/Order type	Ordernummer/Order No.	Datum/Date
NORMALORDER	920118	920313
Er referens/Your reference	Orderdatum/Order date	Leveransdatum/Delivery date
GUNNAR NYQUIST	920219	920312
Er order/Your order	Leveranssätt/Ship via	
BREV BEST. 920213	BILGÖDS	
Godsstatus/Status	Leveransvillkor/Terms of delivery	
GUNNAR NYQUIST	FRITT VÄRT LAGER	

KUNDEN/CUSTOMER NO.		NUMMERNUMMER	
15521690		925141	
DOCUMENT/DOKUMENT			
FAKTURA			
BETALNINGSVILLKOR/TERMS OF PAYMENT			
30 DAGAR NETTO			
Vår referens/Our reference			
BG /GÖSTA LINDAHL			

Pos	Art.nr/Benäm./Enn/Pe	Bestält	Levererat	R	A pris	Rabatt	Belopp
1	LOGGER 1000 DATA-LOGGER 15 analoga ingångar LCD-display med knappsett.	2.00	2.00		12750.00		25500.00
2	LOGGER 1000 DATA-LOGGER 15 analoga ingångar LCD-display med knappsett. 8 digitala ingångar med reläer. ***** INKL. ETT PROGRAM FÖLGER. *****	2.00	2.00		17500.00		35000.00
3	OVANSTÄMDE PRIS FÖRUTSÄTTER RETUR AV 2 (TVÅ) LOGGER-AR						

Exkl. moms: 61 000,-
 MOMS, REDUCERAD

25.00% på 61000.00 15250.00

MOTTAGET		Datum	
1992-03-18		1992-03-18	
Underskrift			
P. P. Ojale			
ATTESTERAS		Datum	
1992-03-19		920319	
Kostn bärare			
5990491-2	Kostn slag	2772-2	Kostn ställe
		4880-7	
Anslag		Verksamhetsområde	
31-5		7	
Underskrift			
P. P. Ojale			

MOTTAGET		Datum	
1992-03-18		1992-03-18	
Underskrift			
P. P. Ojale			
ATTESTERAS		Datum	
1992-03-19		920319	
Kostn bärare			
385001-6	Kostn slag	2	Kostn ställe
		4	
Anslag		Verksamhetsområde	
3		7	
Underskrift			
P. P. Ojale			

Varuvarde Kostnader Moms Utjmn Betalning/SE

51000.00 15250.00 76250.00

Vid betalning efter 920412 debiteras dröjsmålsränta med diskonto + 10.00%

UNIVERSITE PARIS XII
Avenue Général de Gaulle, 94010 Créteil Cedex, France

G. TOUPANCE, P. COLIN, M. JAFARI

15 mai 1992

STEP-PAN program

Progress Report N°1

I - Analytical techniques :

Preparation of test PAN solutions : PAN is prepared by the classical technique of nitration of peracetic acid. PAN is extracted in hexane, a volatile solvent which allows direct injection into the GC-ECD. Solution is divided into samples of some ml which are kept in freezer at -20°C . For calibration one tube is taken from the freezer (solution 1).

Two analytical techniques have been carefully tested in the lab before application to the trial run.

1 - Saltzman technique :

0.5 ml of PAN solution 1 (conveniently diluted previously if necessary) and 4ml of 0.01N sodium hydroxyde are introduced in a 10ml calibrated flask. After hydrolysis the volume is filled up to 10 ml by Saltzman reactive. Concentration of nitrite ions is determined by UV absorption of the solution.

2 - IC of NO_2^- and AcO^- ions :

0.5ml of solution 1 and 4 ml of 0.01N sodium hydroxyde are introduced in a 10ml calibrated flask. After hydrolysis (30mn), flask is filled up to 10ml by phtalic acid $4 \cdot 10^{-3}\text{M}$ to drop pH down to 5-6. $100\mu\text{l}$ of the resulting solution is injected into the IC. The eluent is phtalic acid $4 \cdot 10^{-3}\text{M}$ with $\text{Na}_2\text{B}_4\text{O}_7$ in order to fix pH at 3,4. Flow rate of eluent is $1\text{ml}/\text{mn}$ and detection is made by conductimetry. Retention times are $1\text{mn}10\text{s}$ for AcO^- and 7mn for NO_2^- .

In both cases, calibration of the analytical technique was made by using known solutions of nitrite and acetate, which are analysed following the same procedure as for PAN solutions.

Preparation of solution for injection into the CG-ECD : An aliquot of PAN solution 1, of concentration determined as indicated above, is diluted by hexane to 1/20000, through successive operations in calibrated flasks (solution 2). 0.1 to 1 μ l of this solution 2 is injected into the GC and the response plotted as a function of sample volume.

II - TRIAL RUN

1 - Analysis by Saltzman technique :

1.1 - Solution 100 μ g/ml : Operation is run as described above but with trial solution in place of test solution 1 . Each experiment is repeated 3 times and the mean value is calculated.

1.2 - Solution 10 μ g/ml : Idem as 1-1 for hydrolysis and IC analysis.

1.3 - Solutions containing NPN : Not tested.

Solution PAN 100 μ g/ml	: 106,1 μ g/ml
Id + NPN 100 μ g/ml	: Not tested
Solution PAN 10 μ g/ml	: 10,37 μ g/ml
Id + NPN 10 μ g/ml	: Not tested
NPN 100 μ g/ml	: Not tested

2 - Analysis by IC:

2.1 - Solution 100 μ g/ml : Operation is run as described above but with trial solution in place of test solution 1 . Each experiment is repeated 3 times and the mean value is calculated.

2.2 - Solution 10 μ g/ml : Idem as 2-1 for hydrolysis and IC analysis.

2.3 - Solutions containing NPN : same tests.

2.4 - Results :

Solution PAN 100 μ g/ml	: 95.82 and 93,59 μ g/ml
Id + NPN 100 μ g/ml	: 104.65 μ g/ml
Solution PAN 10 μ g/ml	: 11,9 μ g/ml
Id + NPN 10 μ g/ml	: 11,12 μ g/ml
NPN 100 μ g/ml	: No result, wrong experiment!

III - FIELD MEASUREMENTS

TOR station of Bretagne have been reorganized by the beginning of february. The present location is 48°30'N, 04°46'W, 20m asl. The automated PAN analyser have been calibrated in lab, transported to Bretagne and installed on site. During the first months, local problems related to the reorganisation of the site have made lost of data. Data are routinely obtained since the beginning of april.

IV - PROBLEMS :

No satisfactory data have been obtained by the gas IR calibration technique during the trial run. No data have been reported for this reason.

The field analyser have been more long than expected to deliver data.

V - CONTINUATION :

As planned in the general lines.



RELEVÉ DES DEPENSES

pour la période du 01/05/1991 au 30/03/1992

titre du projet

contrat N° EV4V CT 90 022

Nom du contractant LABO.DE PHYSIOCHIMIE DE L'ENVIREONNEMENT UPVM

Monnaie nationale FRANCS

CATEGORIES DE DEPENSES	MONTANT POUR LA PERIODE INDIQUEE
<u>COUTS DIRECTS</u>	
1 - PERSONNEL	
2 - DEPLACEMENTS	
-en Europe Occidentale	31 055,08
-en dehors de l'Europe Occidentale	
3 - MATERIEL DURABLE	6 144,00
4 - MATERIEL CONSOMMABLE	
5 - SOUS-TRAITANCE	
-contrats associés	
-sous-contrats/services	
6 - COUTS INFORMATIQUES	
7 - AUTRES DEPENSES	50 325,86
<u>COUTS INDIRECTS</u>	
8 - FRAIS GENERAUX CALCULES SUR LES DEPENSES DE PERSONNEL	
9 - FRAIS GENERAUX CALCULES SUR D'AUTRES COUTS DIRECTS	5 749,38
10 - CONTRIBUTION FORFAITAIRE DE (...)	
<u>TAXES ET DROITS DE DOUANE</u>	
11 - TVA	EXONERE
<u>RECTIFICATIONS</u>	
12 - RECTIFICATIONS DES DEPENSES ANTERIEURES	
TOTAL	93 274,32
..% contribution de la Commission	

Attestation du contractant

Nous certifions que les dépenses ci-dessus ont été effectués dans le cadre des travaux définis dans le contrat et qu'elles étaient nécessaires à la bonne exécution de ces travaux, qu'il s'agit de dépenses réelles rentrant dans la définition contractuelle des dépenses remboursables et que toutes les autorisations nécessaires ont été obtenues de la Commission.

Date : 23/04/92

Date : 22 MAI 1992

Signature du Chef de projet :

Signature du Responsable Financier :

L'Attachée d'Administration
Scolaire et Universitaire

Jeannine MILKA

PART B. DETAILED REPORT OF THE CONTRACTORS
AND SUB-CONTRACTORS.

Contractor/Sub-contractor: University of Patras
Department of Chemistry
Leading scientist: Dr. Sotirios Glavas
Scientific staff: Demetrios Danalatos

Address: GR-261 10 PATRAS, HELLAS

Telephone: 0030 61 997134 Telex: 312447 UNPA
Fax: 0030 61 991996 E-Mail:

I. OBJECTIVES FOR THE REPORTING PERIOD:

To standardize existing calibration methods of ECD for Peroxy Acetyl Nitrate analysis. To apply in addition to the ion chromatographic method that depends on the determination of nitrite anion, the ion chromatographic method that depends on the determination of acetate anions.

To analyze the distributed by NILU PAN standards.

To set up an automatic PAN sampling and analysis instrument.

II. OBJECTIVES FOR THE NEXT PERIOD:

To analyze the distributed by NILU PAN standards and thus make improvements in the already practiced methods of ECD calibration for PAN.

To monitor automatically PAN at the Patras University campus and correlate its values with ozone and if possible with meteorological data.

III. MAIN RESULTS OBTAINED (max. 2 pages):
(METHODOLOGY, RESULTS, DISCUSSION)

The instrument that is used for the analysis of PAN and which we want to calibrate is a HP-5890 Gas Chromatograph equipped with an Electron Capture Detector. The analytical column is a wide-bore 0.53mm id capillary column HP-1 non polar 100% methyl silicone gum column. He is the carrier gas with 10% CH₄ in Argon as the make up gas of the detector.

The calibration of the ECD for PAN is based on the accurately known PAN quantity diluted in an appropriate solvent. The amount of PAN used as standard is determined by ion chromatography as nitrite anions routinely in our laboratory. In addition for the standards distributed by NILU we determined the amount of PAN using IC determination of acetate anions.

For the first trial distribution of PAN standards our results were:

		Standard A	Standard C
NILU	IC/AC ⁻	100.2	10.8
Patras	IC/AC	95.2	9.8
	IC/NO ₂ ⁻	73.3	7.9

Units µgPAN/ml hexane.

We have constructed an automatic instrument for the PAN analysis in ambient air. Continuous PAN measurements are now available since the beginning of March 1992. Until the end of April the ambient PAN concentrations range from 0.2-2 ppb.

PART H

Cost Statement

for the period from 1 May 1991 to 30 April 1992

Project Title : Peroxy Acetyl Nitrate Intercalibration
 Contract No. : EV4V -CT90- 0222
 Name of Contractor/
 Associated Contractor ⁽¹⁾ : University of Patras, Dept. ⁽²⁾ of Chemistry
 Currency : Drachmas

Categories of Cost ⁽³⁾		Amount for the period
<u>Direct Costs</u>		
1.	Labour ⁽³⁾	300148
2.	Travel and subsistence ⁽⁴⁾ - within Western Europe - outside Western Europe	287336
3.	Durable equipment	897401
4.	Consumables ⁽⁵⁾	1524280
5.	External assistance - Associated Contracts - subcontracts/services	⁽⁶⁾
6.	Computing	
7.	Other items ⁽⁵⁾	
<u>Indirect Costs</u>		
8.	Overheads recovered on labour	
9.	Overheads recovered on other direct costs ⁽⁷⁾	
10.	Fixed contribution at 20 % ⁽⁸⁾	647629
<u>Taxation and Customs Duties</u>		
11.	VAT ⁽⁹⁾	228981
<u>Adjustments</u>		
12.	Adjustments to costs previously reported ⁽¹⁰⁾	
Total:		3885775
100.% contribution of Commission:		

Contractor's Certificate ⁽¹¹⁾

We certify that the above costs are derived from the resources employed which were necessary for the work under the contract, that such costs have been incurred and fall within the definition of allowable costs specified in the contract, and that any necessary permissions of the Commission have been obtained.

We certify that any necessary adjustments, for any reason, to costs reported in previous cost statements have been incorporated in the above statement ⁽¹⁰⁾

Date: 04 May 1992

Date: 04 May 1992

Name of Project Manager ⁽¹²⁾ Sotirios Glavas Name of Financial Officer: Sotirios GlavasSignature of Project Manager: *Sotirios Glavas*Signature of Financial Officer: *Sotirios Glavas*

- (1) Delete as necessary - for Associated Contractor see Art. 3 of Annex II.
 (2) The Associated Contractor must specify the name of the Contractor to which it is associated
 (3) Separate details are required for each category in accordance with the annexes which follow.
 (4) See Art. 26 of Annex II.
 (5) Separate details are only required with the final cost statement. For consumables, generic descriptions are required only for categories over 10.000 ECU.
 (6) Each Associated Contractor must submit a separate cost statement for its costs, through the Contractor to which it is associated.
 (7) The categories of costs on which such overheads are charged should be identified. If the specification of the amount of the overheads is not practicable, a note to this effect should be included in the cost statement.
 (8) For Contractors/Associated Contractors charging marginal costs/additional expenditure. The calculation must exclude a contribution on VAT and on any costs of Associated Contracts of the Contractor. See Part E
 (9) See Article 32 of Annex II - only the amount recoverable by the Commission in accordance with Article 32.3.2 to be shown separately. The VAT form must also be completed.
 (10) Not applicable for the first cost statement. Any necessary adjustments, for example to reflect actual rates instead of budgetted rates must be made in subsequent statements. Details and reasons for any adjustments must be provided.
 (11) The Project Manager and the Financial Officer must sign the certificate.
 (12) The person designated to be in direct charge of the performance of the work - see Article 1.5 of Annex II

For the period from 1 May 1991 to 30 April 1992

Contract No. : EV4V -CT90- 0222
 Name of Contractor/ : University of Patras-Dept. Of Chemistry
 Associated Contractor : -
 Currency : Drachmas

COST CATEGORY: LABOUR AND OVERHEADS

(A) Category ⁽¹⁾	(B) No. of Man Hours/ Months ⁽²⁾	(C) Labour Rate ⁽³⁾	(D) Overheads added to the Labour) Rate ⁽⁴⁾	(E) Loaded Labour Rate Col. (C) + (D)	(F) Labour Cost Amount Col. (B) · (C)	(G) Overheads Amount Col. (B) · (D)
1/2 Scientist	7	5 months x 37665 + 1 month x 58823 + 1 month x 53000	*		300148	
* Salaries specified by the Research Committee of our University for a graduated chemist who has not however received his diploma yet.						
Sub-Totals						
Total (labour+ overheads)					300148	

- (1) Labour should normally be specified by category, (e.g. engineer, technician, cost department, etc.), clearly identifiable to contractors' labour rates or charging bands. Individuals should be identified by name where they are specified in the contract as key personnel, or when required for the project under Article 36.4.
- (2) Delete as appropriate in accordance with any specifications of the Commission - normally man hours should be used and, where hourly rates for cost reporting purposes have been agreed with the Commission, man hours must be used.
- (3) The labour rate comprises the elements specified in Article 24.1 of Annex II.
- (4) Overheads principles are specified in Article 25 of Annex II. If a percentage addition is added for overheads, the percentage should be specified. If overheads are added to any element other than labour costs, the amount should be shown separately in the cost statement.

For the period from 1 May 1991 to 30 April 1992

Contract No. : EV4V -CT90- 0222
 Name of Contractor/ : University of Patras-Dept. of Chemistry
 Associated Contractor : -
 Currency : Drachmas

COSTCATEGORY : DURABLE EQUIPMENT

	Description	Date of Purchase	Cost	% Allocation to Project ⁽¹⁾	Amount ⁽²⁾
①	GC	20.12.1990	2050000	100	820000
⑥	Pressure regulator	04.09.1991	153400	100	51082
⑦	Freezer	22.11.1991	93001	100	26319
				Total ⁽³⁾	897401

COSTCATEGORY : EXTERNAL ASSISTANCE⁽⁴⁾

Supplier ⁽⁵⁾	Amount
	Total ⁽³⁾

COSTCATEGORY : COMPUTER COST

Description	Amount
	Total ⁽³⁾

- (1) Based on use of item of equipment for the contract.
- (2) Commission contribution to be reimbursed in a single amount for the contract period. Amount to report is :
 Actual cost x depreciations rate (331/3% per year for minor computing equipment; 20% per year for other equipment) x % allocation to project x contract duration from date of purchase - see Article 27 of Annex II.
- (3) If the amount charged includes any addition for overheads or a handling charge, the addition should be specified separately.
- (4) Includes subcontract work but excludes work of Associated Contractors.
- (5) Any relationship of ownership or control between the supplier and the Contractor must be declared.

FORM TO BE SUBMITTED IN TRIPLICATE WITH THE COST STATEMENT CALLED FOR IN ARTICLE 5 OF THE CONTRACT TOGETHER WITH SUPPORTING DOCUMENTATION.⁽¹⁾

Contract No : EV4V-CT90-0222

Currency : Drachmas

Name of Contractor/ University of Patras, Dept. of Chemistry

Associated Contractor:

VAT statement for the period from 1 May 1991 to 30 April 1992

	Name of supplier	Invoice No ⁽¹⁾	Amount of invoice		Amount charged in accordance with the contract ⁽²⁾	
			Net amount	VAT	Net amount	VAT
①	HELLAMCO	215/20.12.90	2050000	369000	820000	147600
②	Ε.Γ. ΚΟΥΚΙΟΥ	189/14.10.91	236000	42480	236000	42480
③	ΑΝΤΙ ΣΕΛ Ο.Ε.	4518/26.7.91	104760	8381	104760	8381
④	ΑΝΤΙ ΣΕΛ Ο.Ε.	4533/26.7.91	77300	6184	77300	6184
⑤	Κ.Χ. ΜΙΑΛΤΑΣ	403/28.11.91	135200	24336	135200	24336
					Total VAT ⁽³⁾ :	228981

I certify that the above expenditure has been incurred and falls within the definition of allowable costs specified in the Contract. I certify that the amount of V.A.T. has not been directly or indirectly recovered and is not directly or indirectly recoverable and that all actions with respect to V.A.T. recovery specified by the Contract have been taken.

Date: 29 April 1992

Name of Financial Officer: SOTIRIOS GLAVAS

Signature: *Sotirios Glavas*

(1) See Article 32.3.2 of Annex II

(2) To take account of e.g. the depreciation or the percentage charged to the Contract

(3) To be reported on the summary page of the cost statement, item "VAT"

Νέα τηλ/να: 64.73.423/7
 Αριθμ. Π.Μ. (21) 2.274.100

ΜΙΧΑΗΛ ΧΡ. ΚΟΝΤΟΓΙΑΝΝΗΣ

ΑΦΜ 15208460



Τ.Θ. 65074, ΨΥΧΙΚΟ - 15410 Γραφεία: Κηφισίας & Σικελιάνου 2 Ν. Ψυχικό - Τηλ. 6473423/7 Telex: 224903 HEMC GR.

ΤΙΜΟΛΟΓΙΟ ΠΩΛΗΣΗΣ

№ 215

(ΤΟ ΠΑΡΟΝ ΣΤΟΙΧΕΙΟ ΔΕΝ ΑΠΟΤΕΛΕΙ ΣΥΝΟΔΕΥΤΙΚΟ ΜΕΤΑΦΟΡΑΣ)

Ν. ΨΥΧΙΚΟ 20/12/ 1990

ΟΝΟΜΑΤΕΠΩΝΥΜΟ ΠΑΝ/ΜΙΟ ΠΑΤΡΟΝ/Τ.Μ. ΧΗΜΕΙΑΣ - ΤΟΜΕΑΣ ΧΗΜ. ΕΦΑΡΜΟΓΩΝ Κ.Ρ.Ε.Β.ΒΑΡΡ
 ΕΠΑΓΓΕΛΜΑ ΑΝΩΤΑΤΩ ΕΚΡ/ΜΩ ΙΩΣΥΜΑ Α.Φ.Μ. ΑΝ/67
 ΔΙΕΥΘΥΝΣΗ ΡΙΟΝ - ΡΑΤΡΑ ΠΟΛΗ ΡΑΤΡΑ
 ΑΡΙΘ. ΔΕΛΤ. ΑΠΟΣΤΟΛΗΣ 255

ΠΟ-ΤΑ	ΜΟΝΑΔΑ ΜΕΤΡΗΣΗΣ	Ε Ι Δ Ο Σ	ΤΙΜΗ ΜΟΝΑΔΑΣ	ΑΞΙΑ ΓΙΑ Φ. Π. Α.	
				6%	18%
1	τ.ε.φ.	Αεριοχρωματωγράφω Hewlett-Packard (HP-5890 series II) 021905	2.050.000		2.050.000
		(1)			

ΓΙΑ ΤΟΝ ΠΕΛΑΤΗ

ΑΡΙΘ. ΠΑΡ/ΛΙΑΣ ΠΕΛΑΤΟΥ

Σύνολο 2.050.000
 Φ. Π. Α. 369.000
 ΓΕΝΙΚΟ ΣΥΝΟΛΟ 2.419.000,-

ΕΙΡΗΝΗ Γ. ΚΟΥΚΙΟΥ
ΕΠΙΣΤΗΜΟΝΙΚΑ ΟΡΓΑΝΑ
ΤΕΧΝΙΚΗ ΚΕΝΤΡΟ
ΤΗΛ. 35 32.443 FAX: 3640275
ΣΟΛΩΜΟΥ 16 - ΤΑΧ. ΘΥΡΙΑΣ: 20143
100 22 ΑΘΗΝΑ Α.Φ.Μ 43203349

ΤΙΜΟΛΟΓΙΟ ΠΩΛΗΣΗΣ
- ΔΕΛΤΙΟ ΑΠΟΣΤΟΛΗΣ

Αριθ. _____

189

ΠΕΛΑΤΗΣ

Ημερομηνία 14-10-1991

Όνοματεπώνυμο

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

Επάγγελμα

ΤΜΗΜΑ ΧΗΜΕΙΑΣ

Α.Φ.Μ. ΝΠΔΔ

Διεύθυνση

Πόλη ΠΑΤΡΑ

Ώρα Παράδοσης ή Αποστολής

ΠΟΣΟΤΗΤΑ	ΜΟΝΑΔΑ ΜΕΤΡΗΣΗΣ	ΕΙΔΟΣ	ΤΙΜΗ ΜΟΝΑΔΑΣ	ΑΞΙΑ ΓΙΑ Φ.Π.Α.		
				6%	18%	36%
5	τεμ.	Εξοπλισμ. μέρων Ν62 μν 20 lit.	47200		236000	
		(2)				
		/				

ΤΕΜ. ΠΕΝΤΕ

Σύνολο

236000

Φ.Π.Α.

42480

Γενικό Σύνολο

278.480

ΚΕΝΤΡΙΚΟ

ΩΡΑ ΕΝΑΡΞΗΣ ΑΠΟΣΤΟΛΗΣ

ΓΙΑ ΤΟΝ ΠΕΛΑΤΗ

ΩΡΑ ΠΑΡΑΔΟΣΗΣ

Θεσσαλονίκη 26. 7. 1991

№ 4518

3

ΤΙΜΟΛΟΓΙΟ ΠΩΛΗΣΗΣ - ΔΕΛΤΙΟ ΑΠΟΣΤΟΛΗΣ

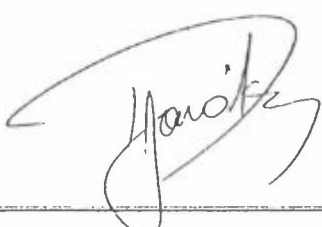
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ΕΠΩΝΥΜΙΑ ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ - ΤΜΗΜΑ ΧΗΜΕΙΑΣ - Α.Φ.Μ. []

ΔΙΕΥΘΥΝΣΗ ΤΟΜΕΑΣ ΠΕΡΙΒΑΛΛΟΝΤΟΣ - Κ² ΓΕΛΑΒΑΣ ΠΟΛΗ ΠΑΤΡΑ.

Α/Α	ΚΩΔΙΚΟΣ ΕΙΔΟΥΣ	ΠΕΡΙΓΡΑΦΗ ΕΙΔΟΥΣ	ΜΟΝΑΔΑ ΜΕΤΡΗΣΗΣ	ΠΟΣΟΤΗΤΑ	ΤΙΜΗ	ΑΞΙΑ	
						8%	18%
✓ 1	14,812-1	3,4 - ΔΙΝΙΗΟΤΟΛΚΕΝΕ ✓	100 gr	1	7250	7250	
✓ 2	23,988-7	1 ΒΡΟΜΟΒΚΤΑΝΕ ✓	50 gr	1	9250	9250	
✓ 3	13,561-5	2-ΒΡΟΜΟ - 2 ΜΕΤΗΥΛΠΡΟΠΑΝΕ ✓	100 gr	1	5450	5450	
✓ 4	30,687-8	" " 2 ΜΕΤΗΥΛΒΚΤΑΝΕ ✓	100 gr	1	8000	8000	
✓ 5	15,658-2	1 ΒΡΟΜΟ - 2 ΜΕΤΗΥΛΠΡΟΠΑΝΕ ✓	100 gr	1	3360	3360	
✓ 6	Β7,810-6	1 ΒΡΟΜΟΠΡΟΠΑΝΕ ✓	100 ml	1	4650	4650	
✓ 7	23,990-9	2 ΒΡΟΜΟΠΡΟΠΑΝΕ ✓	50 gr	1	9700	9700	
✓ 8	12,409-5	1 ΒΡΟΜΟ - 3 ΜΕΤΗΥΛΒΚΤΑΝΕ ✓	100 gr	1	3800	3800	
✓ 9	Β7,520-4	2 ΒΡΟΜΟΠΕΝΤΑΝΕ ✓	100 gr	1	8850	8850	
✓ 10	26,784-8	3 ΒΡΟΜΟΠΕΝΤΑΝΕ ✓	25 gr	1	9250	9250	
✓ 11	D20060-3	2,6 - ΔΙΝΙΗΟΤΟΛΚΕΝΕ ✓	25 gr	1	8000	8000	
✓ 12	29,588-4	Ο - ΧΥΛΕΝΕ ✓	500 ml	2	5000	10000	✓
✓ 13	18,556-6	Μ - ΧΥΛΕΝΕ ✓	1 lt	1	7200	7200	-
✓ 14	31,719-5	Ρ - ΧΥΛΕΝΕ ✓✓	500 ml	2	5000	10000	-

ΜΕΤΡΗΤΟΙΣ ΤΡΟΠΟΣ ΠΛΗΡΩΜΗΣ : ΜΕ ΠΙΣΤΩΣΗ ΑΝΤΙΚΑΤΑΒΟΛΗ	[]	ΣΥΝΟΛΑ	104.760
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	Ο ΠΑΡΑΛΑΒΩΝ	Φ. Π. Α.	8381
		ΣΥΝΟΛΟ ΑΞΙΑΣ	104.760
		ΣΥΝΟΛΟ Φ. Π. Α.	8381
		ΠΛΗΡΩΤΕΟ ΠΟΣΟ	113141



και υλικά εφαρμογής χημικών

καθ. κ. Ριζοβάς

Καλλιθέα 4/9/91

Ωρα αποστολής 10:30

224

Καλλιθέα

(01)95 12 966

Ελεξ 224375 ELCH

Fax: (01)95 69 073

A.Φ.Μ. 95379863

**ΤΙΜΟΛΟΓΙΟ ΠΩΛΗΣΗΣ
ΔΕΛΤΙΟ ΑΠΟΣΤΟΛΗΣ**

ΠΕΛΑΤΗΣ

№ 135

Πελάτης : Παύλος Πατρών / Ημίμα Διεύθυνση

Επάγγελμα : Ταξεία Περιβαλλοντισμού

A.Φ.Μ.:

Διεύθυνση : Πάτρα

T.K.

Πόλη: Ρίο Πάτρα

ΠΟΣΟΤΗΤΑ	ΕΙΔΟΣ	ΤΙΜΗ ΜΟΝΑΔΑΣ	ΑΞΙΑ ΠΟΥ ΥΠΟΚΕΙΤΑΙ ΣΕ Φ.Π.Α. ΜΕ ΣΥΝΤΕΛΕΣΤΗ		ΣΥΝΟΛΟ
			8%	18%	
1	Ρυθμιστική πιεστής τύπου FA PMD 600-02A	130.000		130.000	130.000
	<p style="text-align: center;">?</p> <p style="text-align: center;">ΔΕ</p> <p style="text-align: center;">National Contribution ΕΠΧΝ - CT 90-0222</p> <p style="text-align: center;">24143</p>				
ΟΛΟΓΡΑΦΑ	ΣΥΝΟΛΟ ΠΟΣΟΤΗΤΑΣ: Ένας αριθμ. 16 ημερ πλεον	ΣΥΝΟΛΟ		130.000	130.000
	ΣΥΝΟΛΟ ΑΞΙΑΣ: Επιδότηση πέννη δα χρησ αλκείας, 16 ημερ 6/6	Φ.Π.Α.		23400	23400
		ΣΥΝΟΛΟ ΓΙΑ ΠΛΗΡΩΜΗ			153.400

Ο ΠΑΡΑΔΟΥΣ

Εβελίνα

Ο ΠΑΡΑΛΑΒΩΝ

Zouras
National Contribution
ENYU-CT 90-0222

F

ΣΠΙΟΤΗ ΕΛΚΑ COMPUTER FORM ΤΗΛ.: (061) 276 481 (Φ 03306)

ΛΕΥΚΟ: ΠΕΛΑΤΗΣ • ΚΙΤΡΙΝΟ: ΣΤΕΛΕΧΟΣ

ΧΡΗΣΗ ΕΝΤΥΠΟΥ: • ΤΙΜΟΛ. ΠΡΩΙΝΗΣ - ΔΕΛ. ΑΡΧΙΤΕΚΤΟΝΗΣ
 • ΤΙΜΟΛ. ΠΡΩΙΝΗΣ • ΔΕΛ. ΑΡΧΙΤΕΚΤΟΝΗΣ • ΠΕΤ. ΣΗΜΕΙΩΜΑ
 • ΑΠΟΔ. ΔΙΑΜ. ΠΡΩΙΝΗΣ • ΔΕΛΤ. ΕΠΙΤΡ. ΔΙΑΜ. ΠΡΩΙΝΗΤΟΝ
 • ΤΙΜΟΛΟΓΙΟ ΠΑΡΟΧΗΣ ΥΠΗΡΕΣΙΩΝ

ΦΙΛΙΠΠΟΣ
 ΕΜΠΟΡΒΙΟΤΕΧΝΙΚΗ & ΑΝΤΙΠΡΟΣΩΠΕΥΤΙΚΗ ΑΝΩΝΥΜΟΣ ΕΤΑΙΡΙΑ
 ΗΛΕΚΤΡΙΚΩΝ ΕΙΔΩΝ & ΣΥΣΚΕΥΩΝ
 ΚΟΛΟΚΟΤΡΩΝΗ 25, 262 21 ΠΑΤΤΑ - ΤΗΛ.: (061) 73.900, 73.909 • ΦΑΧ: (061) 220.137
 ΑΦ.Μ.: 94135099 - Α.Δ.Α.Ε.: 1007/22/Β/86/35



PHILIPS

ΕΙΔΟΣ ΠΑΡΑΣΤΑΤΙΚΟΥ
 Δ. ΑΠΟΣΤΟΛΗΣ-ΤΙΜΟΛΟΓΙΟ

ΣΕΙΡΑ 00710
ΑΡΙΘΜΟΣ 22/11/91
ΗΜΕΡΟΜΗΝΙΑ 09:55
ΟΡΑ ΠΑΡΑΔΟΣΗΣ ή ΕΜΒΑΣΗΣ ΑΠΟΣΤΟΛΗΣ

ΣΤΟΙΧΕΙΑ ΠΕΛΑΤΗ

ΚΩΔ. ΠΕΛΑΤΗ: 000045
ΕΠΩΝΥΜΙΑ: ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ
ΔΙΕΥΘΥΝΣΗ: ΕΙΘΗ
ΠΟΛΗ: ΠΑΤΤΑ
ΕΠΑΓΓΕΛΜΑ: Δ. ΥΠΗΡΕΣΙΩΝ
ΑΦ.Μ.: ΤΗΛ.

ΤΡΟΠΟΣ ΠΛΗΡΩΜΗΣ: ΕΝΙ ΠΙΣΤΩΣΕΙΣ
ΕΚΠΙΣΤΗ ΠΕΛΑΤΗ: 1/2

ΚΩΔΙΚΟΣ	ΠΕΡΙΓΡΑΦΗ	Μ.Μ.	ΠΟΣΟΤΗΤΑ	ΤΙΜΗ ΜΟΝΑΔΑΣ	%	ΕΚΠΙΣΤΗ ΠΟΣΟ	ΚΑΘΑΡΗ ΑΞΙΑ	% ΦΠΑ	ΑΞΙΑ ΦΠΑ
00-2013	ΚΑΤΑΡΚΥΤΗΣ 727 PH 130L	78,814	1	78,814	0	78,814	13	14,157	

ΠΡΟΗΓ. ΥΠΟΛΟΓΙΟ	1,045,419	ΚΑΘΑΡΗ ΑΞΙΑ	78,814	% ΦΠΑ	13	ΑΞΙΑ ΦΠΑ	14,157
ΝΕΟ ΥΠΟΛΟΓΙΟ	1,138,417						

ΑΡ. ΘΕΩΡΗΣΗΣ
 015332

ΠΑΡΑΤΗΡΗΣΕΙΣ:
 ΤΙΜΗΜΑ ΧΗΜΕΙΑΣ ΤΟΜΕΑΣ ΧΗΜΕΙΑΣ ΠΕΡ/ΓΟΣ
 ΚΑΒΗΓΗΤΗΣ ΚΑΝΑΒΑΣ 977-128 ΝΟΤΤΟ ΩΡΗΤΟ

ΣΥΝΟΛΟ ΑΞΙΑΣ	78,814	ΣΥΝΟΛΟ ΕΚΠΙΣΤΗΣ	0
ΣΥΝΟΛΟ ΚΑΘΑΡΟ	78,814	ΣΥΝΟΛΟ ΦΠΑ	14,157
ΓΕΝΙΚΟ ΣΥΝΟΛΟ	93,001		
ΕΠΙΒΑΡΥΝΣΕΙΣ ΦΠΑ			
ΤΕΛΙΚΗ ΑΞΙΑ	93,001		

* ΤΑ ΕΜΠΟΡΕΥΜΑΤΑ ΤΑΞΙΔΕΥΟΥΝ ΓΙΑ ΛΟΓΙΣΜΟ ΚΑΙ ΚΙΝΔΥΝΟ ΤΟΥ ΑΓΟΡΑΣΤΗ.
 * ΓΙΑ ΚΑΘΕ ΔΙΑΦΟΡΑ ΑΡΜΟΔΙΑ ΕΙΝΑΙ ΤΑ ΔΙΚΑΣΤΗΡΙΑ ΤΗΣ ΠΑΤΡΑΣ.
 * ΕΞΟΦΛΗΣΗ ΕΝΤΟΣ 30 ΗΜΕΡΩΝ, ΜΕΤΑ ΤΟ ΧΡΟΝΙΚΟ ΑΥΤΟ ΔΙΑΣΤΗΜΑ ΕΠΙΒΑΡΥΝΕΙΣ ΜΕ ΤΟΥΣ ΝΟΜΙΜΟΥΣ ΤΟΚΟΥΣ.

ΕΚΔΟΣΗ ΕΛΕΓΧΟΣ ΠΑΡΑΛΑΒΗ

Progress report STEP PL900289 "PAN INTERCALIBRATION"

J.C.Th.Hollander, TNO-Institute of Environmental Sciences,
PO Box 6011, 2600 JA Delft, The Netherlands.

The project started effectively in week 20 of 1991 with the preparation of a report, reviewing the current methods at TNO for the measurement of PAN, calibration of the PAN-analyzer, synthesis of standard PAN solutions and the assessment of PAN-concentrations in those solutions. The report also includes some testing and validation data of those methods.

In addition to the operative method of analysis of PAN solutions by FTIR, we developed and exercised the method of hydrolysis of PAN with subsequent analysis of the hydrolysis products Ac, NO₂ and NO₃ ions by ion chromatography. After some preliminary exercises with methods based on literature data, it was concluded that with available experimental facilities the three ions could not be determined satisfactory in a single chromatographic run. Therefore separate methods were developed for Ac (ion exclusion chromatography) and NO₂/NO₃ (ion exchange chromatography) ions.

The precision of the methods (including the hydrolysis step) appears to be quite good, while allowing much lower detection limits for PAN as compared to the operative FTIR-method.

Because of the need to separate the analyses of ionic species in different chromatographic methods, the necessary adaption of the experimental facilities for this and the interference of the summer holiday period with the project planning, this part of the work could not be finished before the strategy meeting held at NILU from 4 to 6 september 1991. At that time some problems related to instability with time of stored hydrolysed samples, selection of a proper acetate standard and a systematic difference between the FTIR and ion chromatographic methods were left to be solved together with the work for the first (trial) intercomparison.

At the strategy meeting we presented the performance of our analytical methods as available then and outlined our strategy with respect to the analyses to be carried out in the intercomparisons to come and the evaluation of the data to be obtained. A systematic approach on how to identify and quantify different error sources and the required analytical data for that purpose was presented shortly after the meeting.

The experimental part of the trial intercomparison was carried out through weeks 44 to 49 of 1991. It included analyses of PAN standard solutions distributed by the co-ordinator and solutions synthesised in our laboratory at the beginning of the project and shortly before the trial intercomparison. The analytical methods included FTIR and ion chromatography of Ac, NO₂ and NO₃

ions after hydrolyses. The analyses were carried out shortly after the arrival of the samples from the co-ordinator and repeated just before the latter were returned to the co-ordinator. In between, samples were taken to the monitoring site for gas chromatographic analyses of on site prepared static gaseous dilutions from the solutions, simultaneously serving PAN-analyzer calibration with standards from different origin.

The first trial has shown fair agreement between the different analytical methods applied in our laboratory, but some problems have also become evident. These are related to the lower detection limit of the NO₃ analysis (only a few percent of PAN-nitrogen is generally converted to NO₃), blank levels of Ac and probably also of NO₂ and some presently unexplained outlying results which may originate from insufficiently controlled elements of the experimental procedures. The investigation of the error sources and detailed interpretation of the results is now in progress. The analytical results as such have been reported to the co-ordinator, a full report will be presented by the end of may 1992.

The results of this first (trial) intercomparison and its preparative investigations have already been very helpful in clarifying some ambiguities in earlier results of the assessment of PAN in standard solutions and PAN analyzer calibrations based on them, resulting in improvement of the quality of historic ambient PAN-concentration data.

Ambient PAN measurements were started at monitoring site Kollumerwaard (geographical co-ordinates 53° 20' 02'' N, 06° 16' 38'' E), some 250 km NE of Delft in week 28 of 1991 and have continued since.

Availability of the data is generally good apart from some start-up problems and occasional interruptions by failures of the data acquisition and telemetric facilities. This has required several visits to the (distant) monitoring site in excess to those planned for regular inspection, maintenance and calibration.

Summary statistics of the first half year of PAN data shows low true Atlantic background concentrations for only a very small NNE compass sector, higher concentrations in the neighbouring compass sectors with air masses originating from the North Sea regions and highest concentrations in the southern compass sectors when the monitoring site is downwind from major urban and industrial regions. It is therefore expected that the data will be suitable for the intended studies on the contribution of PAN to the oxidant budget over the North Sea region and PAN levels in background areas as well as downwind from large cities.

Monitoring will be continued for at least another half year from the moment of writing this report. This will ensure sufficient overlap with the monitoring periods at other locations by other participants.

Delft, may 1992.

PART H
Cost Statement

for the period from May 1st, 1991 to May 1st, 1992

Project Title : Peroxyl acetyl nitrate intercalibration
 Contract number : EV4V-CT90-\0222
 Name of Contractor : TNO-IMW
 Associated Contractor : to
 Currency : NLG

Categories of Cost	Amount for the period
<u>Direct Costs</u>	
1. Labour	<i>f</i> 115.023,50
2. Travel and subsistence	
- within Western Europe	<i>f</i> 3.841,89
- outside Western Europe	
3. Durabel equipment	
4. Consumables	<i>f</i> 521,30
5. External assistance	
- Associated Contracts	
- subcontracts/services	
6. Computing	<i>f</i> 3.500,--
7. Other items	
<u>Indirect Costs</u>	
8. Overheads recovered on labour	
9. Overheads recovered on other direct costs	
10. Fixed contribution at 20%	
<u>Taxation and Customs Duties</u>	
11. VAT	
<u>Adjustments</u>	
12. Adjustments to costs previously reported	
TOTAL	<i>f</i> 122.886,69
50% contribution of commission	<i>f</i> 61.443,35

Contractor's Certificate

We certify that the above costs are derived from the resources employed which were necessary for the work under the contract, that such costs have been incurred and fall within the definition of allowable costs specified in the contract, and that any necessary permissions of the Commission have been obtained.



We certify that any necessary adjustments, for any reason, to costs reported in previous cost statements have been incorporated in the above statement.

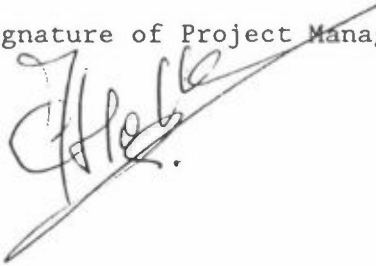
Date:

Date: 18/5/92

Name of Project Manager:
Drs. J.C.T. Hollander

Name of Financial Officer:
Th.J. Kroes

Signature of Project Manager:



Signature of Financial Officer:



for the period from May 1st, 1991 to May 1st, 1992

Project Title : Peroxyl acetyl nitrate intercalibration
 Contract number : EV4V-CT90-\0222
 Name of Contractor : TNO-IMW
 Associated Contractor : to
 Currency : NLG

COST CATEGORY: DURABLE EQUIPMENT

Description	Date of Purchase	Cost	% Allocation to project	Amount
Total				

COST CATEGORY: EXTERNAL ASSISTANCE

Supplies	Amount
Total	

COST CATEGORY: EXTERNAL ASSISTANCE

Description	Amount
Computer supplies	f 3.500,--
Total	f 3.500,--



for the period from May 1st, 1991 to May 1st, 1992

Project Title : Peroxyl acetyl nitrate intercalibration
 Contract number : EV4V-CT90-\0222
 Name of Contractor : TNO-IMW
 Associated Contractor : to
 Currency : NLG

COST CATEGORY: LABOUR AND OVERHEADS

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Category 1991	No. of Man Hours	Labour Rate	Overheads added to the Labour Rate	Loaded La- bour Rate Col. (C)+(D)	Labour Cost Amount Col. (B)+(C)	Overheads Amount Col.(B)+(D)
Senior Scientist	14.0	250,--			3.500,--	
Scientist	151.5	200,--			30.300,--	
Research assistant	229.5	150,--			34.425,--	
Technician	201.5	120,--			24.180,--	
Technician	15.5	92,--			1.426,--	
Sub-Totals					93.831,--	
Total (Labour +overheads)						

COST CATEGORY: LABOUR AND OVERHEADS

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Category 1992	No. of Man Hours	Labour Rate	Overheads added to the Labour Rate	Loaded La- bour Rate Col. (C)+(D)	Labour Cost Amount Col. (B)+(C)	Overheads Amount Col.(B)+(D)
Senior scientist	4.0	265,--			1.060,--	
scientist	73.5	215,--			15.802,50	
Research assistant	23.0	160,--			3.680,--	
Technician	5.0	130,--			650,--	
Sub-Totals					21.192,50	
Total (Labour +overheads)					115.023,50	

Interim Report PAN Intercomparison Project

Report period: May 1991-May 1992

Joint report of Meteoconsult/Glashütten and KFA-Jülich.

J. Rudolph, M. Schmitt, K. P. Müller, G. Nohr, P. Matusca

1. OVERVIEW

The activities in the report period consisted of three packages:

- i. Ambient (field) measurements
- ii. Instrument development and test
- iii. Calibration and intercomparison of calibrations

The field measurements consisted of two measurement series: continuous measurements at the Tenerife background station and a two months ship campaign in the ocean regions around Europe.

The instrument development and tests focussed on the problem of instrument stability and "memory effects". In addition to this a modular GC dedicated to PAN measurements was constructed.

The main activity of the calibrations concentrated on the trial distribution of the PAN standards. But also several tests with different calibration techniques have been started.

2. FIELD MEASUREMENTS

Since the beginning of the project in situ measurements of PAN are made at the "TOR" background station at Tenerife (Spain). These measurements are made by a combination of ECD-GC with a cryogenic preconcentration step. The technique follows in principal the procedure developed at the KFA-Jülich. The detection limits are sufficient to allow the determination of PAN in background air.

Measurement frequency is one measurement each hour. The measurements are calibrated by comparison with photochemically produced PAN in the gas phase (acetone/ NO_x mixture). This calibration is based on the use of a NO_x deficit and a nearly quantitative conversion of NO_x into PAN. The amount of NO_x is determined by analysis with a TECAN NO_x analyzer and comparison with the TOR NO_x standard.

During a ship cruise in spring 1991 measurements of PAN were made in the Mediterranean sea, the eastern part of the North Atlantic and the North Sea. The measurements were made with a technique similar to the one described above, but the calibration was based on a comparison with a PAN reference gas produced by a permeation system. The PAN concentration in the reference gas was determined by hydrolysis of PAN in a dilute hydroxide solution and

subsequent NO_2^- determination by a modified Griess-Saltzmann method. PAN and peroxypropionyl nitrate (PPN) were measured with a time resolution of about one hour. PPN was quantified by comparison with the PAN reference gas and correction for the slightly different molar response.

3. INSTRUMENT TESTS AND DEVELOPMENTS

For future tests, field measurements and intercomparisons a moveable, dedicated chromatograph for PAN measurements was constructed. The instrument includes a cryogenic preconcentration trap and a column oven and detector unit for subambient temperature operation with Peltier cooling. Presently the instrument is in the test phase.

One of the major problems which causes uncertainties in the PAN measurements is the change of instrument response depending on the conditioning of the column. Following longer periods (some days) without sample injection, the response of the instrument is significantly lower than during continuous operation. The "start up" behaviour of the instrument depends strongly on the type of samples.

For liquid samples a stable response is obtained already after two injections, even at PAN concentrations of $1 \mu\text{g}/\text{l}$. For gaseous samples with 0.1-1ppb of PAN in dry nitrogen (from a permeation device) 6-10 injections are needed. Moreover, the response of the instrument for dry, gaseous samples from the permeation system depends on the interval between the injections (e.g. the increase of the interval between different injections from 10 min to 30 min reduced the PAN signal by 20%). We have started to test modifications of the system to allow stable, reliable operation without response changes due to memory effects. This is an important condition for the reliable and precise comparison of gas phase and liquid phase PAN calibrations.

4. Calibration and Intercomparison

Three types of calibration methods for PAN are used:

- a. Comparison with liquid solutions with known PAN concentrations.
- b. Comparison with PAN in nitrogen from a permeation system.
- c. Comparison with photochemically produced PAN (photolysis of excess acetone in the presence of NO_x).

The PAN concentration for a and b is determined by hydrolysis of PAN in alkaline solution and subsequent determination of NO_2^- (photometric method similar to Griess/Saltzmann). Also acetate measurements can be used, however presently the IC used for acetate measurement is defect. The calibration of c is based on a

comparison of the NO_x concentration in the photolysis volume with the TOR NO_x standard by a chemoluminescence instrument (TECAN).

The samples from the "Intercomparison Trial Distribution" were analyzed by three methods:

- a. Hydrolysis and NO₂⁻ measurement.
- b. Hydrolysis and acetate measurement.
- c. Comparison with the Jülich PAN solution by GC.

It should be noted, that the transport to Tenerife was not successful. Therefore only results for the "Jülich samples are available. The result are summarized in the following table:

All concentrations are given in ug PAN/ml solution

Sample(*)	NO ₂ ⁻ (l)	Acetate(+)	GC(&)
A (100)	103+/-3	111+/-7	102.5+/-1
B (100)	106+/-2	107+/-9	107.5+/-2
C (10)	10.0+/-0.3	11.1+/-3	9.8+/-0.09
D (10)	9.5+/-0.2	11.4+/-2	9.4+/-0.07

* The nominal "submitted" PAN concentration is given in parenthesis.

l The results are based on three complete analysis series including hydrolysis, possible drifts in the sample composition is ignored.

+ The results are based on repeated measurements of the same hydrolysis solution. The acetate analysis by IC were made by G. Helas from the MPI Mainz. IC column was Dionex AS4, eluent about 1mmol of borate buffer. A H₂SO₄ micro membrane suppressor was used.

& The results are based on 6-10 measurements, the concentration of the KFA reference solution (113ug/ml) is based on hydrolysis and NO₂⁻ measurements.

The GC and NO₂⁻ measurements gave no significantly from zero differing values. However for acetate a substantial blank value was found.

Details of the used techniques are given in the previous reports.

Cost Statement

for the period from 01.05.1991 to 30.04.1992
 Project Title : "Peroxyl acetyl nitrate intercalibration"
 Contract No. : EV 4V-CT 90-0222
 Name of Contractor/
 Associated Contractor (1) : Meteorologie Consult GmbH (2)
 Currency : DM

Categories of Cost (3)	Amount for the period
<u>Direct Costs</u>	
1. Labour (3)	80.498,-
2. Travel and subsistence (4)	12.151,-
- within Western Europe	
- outside Western Europe	
3. Durable equipment	76.150,-
4. Consumables (5)	
5. External assistance	(6)
- Associated Contracts	
- subcontracts/services	
6. Computing	
7. Other items (5)	
<u>Indirect Costs</u>	
8. Overheads recovered on labour	68.274,-
9. Overheads recovered on other direct costs (7)	
10. Fixed contribution at 20 % (8)	
<u>Taxation and Customs Duties</u>	
11. VAT (9)	
<u>Adjustments</u>	
12. Adjustments to costs previously reported (10)	
Total:	237.073,-
46% contribution of Commission:	109.053,-

Contractor's Certificate (11)

We certify that the above costs are derived from the resources employed which were necessary for the work under the contract, that such costs have been incurred and fall within the definition of allowable costs specified in the contract, and that any necessary permissions of the Commission have been obtained.

We certify that any necessary adjustments, for any reason, to costs reported in previous cost statements have been incorporated in the above statement (10)

Date: 11.05.1992

Date:

Name of Project Manager (12) Dr. R. Schmidt

Name of Financial Officer:

Signature of Project Manager:

Signature of Financial Officer:

- (1) Delete as necessary - for Associated Contractor see Art. 3 of Annex II.
- (2) The Associated Contractor must specify the name of the Contractor to which it is associated.
- (3) Separate details are required for each category in accordance with the annexes which follow.
- (4) See Art. 26 of Annex II.
- (5) Separate details are only required with the final cost statement. For consumables, generic descriptions are required only for categories over 10.000 ECU.
- (6) Each Associated Contractor must submit a separate cost statement for its costs, through the Contractor to which it is associated.
- (7) The categories of costs on which such overheads are charged should be identified. If the specification of the amount of the overheads is not practicable, a note to this effect should be included in the cost statement.
- (8) For Contractors/Associated Contractors charging additional costs. The calculation must exclude a contribution on VAT and on any costs of Associated Contracts of the Contractor. See Part E
- (9) See Article 32 of Annex II - only the amount recoverable by the Commission in accordance with Article 32.3.2 to be shown separately. The VAT form must also be completed.
- (10) Not applicable for the first cost statement. Any necessary adjustments, for example to reflect actual rates instead of budgeted rates, must be made in subsequent statements. Details and reasons for any adjustments must be provided.
- (11) The Project Manager and the Financial Officer must sign the certificate.
- (12) The person designated to be in direct charge of the performance of the work - see Article 1.5 of Annex II.

For the period from 01.05.1991 to 30.04.1992

Contract No. : EV 4V - CT 90 - 0222
 Name of Contractor/ : Meteorologie Consult GmbH
 Associated Contractor : -
 Currency : DM

COST CATEGORY : LABOUR AND OVERHEADS

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Category ⁽¹⁾	No. of Man Hours/ Months ⁽²⁾	Labour Rate ⁽³⁾	Overheads added to the Labour) Rate ⁽⁴⁾	Loaded Labour Rate Col. (C) + (D)	Labour Cost Amount Col. (B) • (C)	Overheads Amount Col. (B) • (D)
<u>1991</u>						
Dr. Schmitt	180	62,50	59,50	122,-	11.250,-	10.710,-
1 Wissensch.	136	52,19	69,81	122,-	7.097,84	9.494,16
1 Ingenieur	397	65,08	0,-	65,08	25.839,-	0,-
<u>1992</u>						
Dr. Schmitt	52	65,63	61,37	127,-	3.412,76	3.191,24
1 Wissensch.	170	54,80	55,71	110,51	9.316,-	9.470,70
1 Ingenieur	608	33,69	50,59	84,28	20.483,52	30.758,72
1 Techniker	160	19,37	29,06	48,43	3.099,20	4.649,60
Sub-Totals					80.498,32	68.274,42
Total (labour+overheads)					148.772,74	

- (1) Labour should normally be specified by category, (e.g. engineer, technician, cost department, etc.), clearly identifiable to contractors' labour rates or charging bands. Individuals should be identified by name where they are specified in the contract as key personnel, or when required for the project under Article 36.4.
- (2) Delete as appropriate in accordance with any specifications of the Commission - normally man hours should be used and, where hourly rates for cost reporting purposes have been agreed with the Commission, man hours must be used.
- (3) The labour rate comprises the elements specified in Article 24.1 of Annex II.
- (4) Overheads principles are specified in Article 25 of Annex II. If a percentage addition is added for overheads, the percentage should be specified. If overheads are added to any element other than labour costs, the amount should be shown separately in the cost statement.

ACTIVITY REPORT

STEP PROJECT: PAN INTERCALIBRATION
Contract N° EV4V-CT90-0222

Prepared by P. Ciccioli

CNR-IIA
ITALY

The activity carried out from May 1991 to May 1992 at CNR-IIA has devoted to accomplish the goals described in the Phases: Prep. I, Prep. II, Prep. III, Cal. I, Ev. I. In the Prep. I phase, the existing methods available developed in our Institute (Static gas-phase production, Static liquid-phase production, Dynamic gas-phase production by using permeation tubes in combination with photochemical production and annular denuder methods) were consolidated and critically evaluated. The results were reported at the first seminar held at NILU. According to the results obtained the last 2 methods were considered suitable for PAN calibration. Standard solutions received from NILU according to the schedule planned in the Prep. III phase were analyzed by Ion Chromatography for nitrite ion after aliquots of samples were subjected to alkaline hydrolysis. A comparison was made with standard solutions prepared in our laboratory without any purification. A good agreement was found with the solutions provided by the coordinator indicating that our procedure for preparing PAN does not produce interferences that can hinder its evaluation by Ion Chromatography carried out on the nitrite ion. Large amounts of nitrate found in the hydrolyzed sample prepared in our laboratory were thus attributed to the residues

of HNO₃ used in the reaction. The possible interferences of NPN were evaluated. It was found that this compound does not produce any nitrite by alkaline hydrolysis. GC measurements have shown that PAN and NPN have a quite similar response factors so that NPN solutions can be used either as internal or external standards. An analysis of the response obtained showed that some adsorption of PAN takes place on the column so that the instrument had to be optimized for reducing such effects. Before to start the Ev. I phase we have, therefore, devoted four weeks to find out the modifications needed in order to improve the performances of our PAN analyzer on the basis of the experience gained in the previous phase. The column was shortened and temperatures of the column, valve and liners decreased as close as possible to 30°C. In these conditions the signal was drastically improved so that the ECD was made to work in constant current mode where is linear up to 400 ppb without losing the overall sensitivity. Regularly, large amounts of NPN are injected into the analyzer to check the response and deactivate the column. This is possible because our instrument is equipped with a liquid injector. Because of these problems, the Ev. I phase started only the 21st of February. Since that time, a PAN analyzer has been devoted to the monitoring of PAN in the suburban area of Rome. Data are collected every 30 minutes. The integrator has been set in such a way that chromatogram and integrations numbers are shown. The results are stored in a computer together with meteorological data collected on the site. In March PAN data were collected simultaneously upwind and downwind the city of Rome to detect recirculation effects of

polluted air masses. The use of PAN as a tracer has provided compelling evidence of their occurrence. Apart from short periods when failures occurred in the power, data were collected regularly. A failure due to excess of power after a blackout burned one of the electronic card. During this time a second PAN analyzer was operated for the monitoring. At present time the Ev. I phase has made possible to detect episodes with PAN values as high as 20 ppbv indicating that some increase in PAN is taking place in the suburban area of Rome where maximum values of ca. 10 ppbv were recorded in the past years. During these episodes it has been possible to detect the highest homolog of PAN ever recorded: PBN (Peroxybutyl nitrate). We are now correlating PAN data with solar radiation intensity, wind speed, temperature and relative humidity. During this activity, a PAN analyzer has been completely devoted to the Project, whereas an old home-made instrument is available for field monitoring campaigns. A Ion Chromatograph has been used for quantification of PAN in the solutions provided by the coordinator and is partly devoted to PAN calibration. During some episodes collection of HNO₃ by annular denuders will be also performed. It is our intention to add a unit for calibrating PAN by using NPN as external standard.

The following persons have been also involved into the Project during its various steps.

Dr. Massimo Possanzini	Res. Senior
Dr. Cecinato Angelo	Res. Young
Dr. Virginio Cantuti	Res. Young
E. Brancaleoni	Tech. Senior
V. Di Palo	Tech. Senior
A. Brachetti	Tech.

Cost Statement

for the period from MAY 1991 to MAY 1992
 Project Title : PAN INTERCALIBRATION
 Contract No. : CEE/CNR N° EV4V-CT90-0222
 Name of Contractor/ : CNR-I.I.A.
 Associated Contractor ⁽¹⁾ : to ⁽²⁾
 Currency : ITALIAN LIRES

Categories of Cost ⁽³⁾	Amount for the period
<u>Direct Costs</u>	
1. Labour ⁽³⁾	—
2. Travel and subsistence ⁽⁴⁾	10.274.026
- within Western Europe	
- outside Western Europe	
3. Durable equipment	
4. Consumables ⁽⁵⁾	15.478.316
5. External assistance	
- Associated Contracts	(6)
- subcontracts/services	
6. Computing	
7. Other items ⁽⁵⁾	
<u>Indirect Costs</u>	
8. Overheads recovered on labour	
9. Overheads recovered on other direct costs ⁽⁷⁾	
10. Fixed contribution at 20 % ⁽⁸⁾	5.150.469
<u>Taxation and Customs Duties</u>	
11. VAT ⁽⁹⁾	
<u>Adjustments</u>	
12. Adjustments to costs previously reported ⁽¹⁰⁾	
Total:	30.902.811
100% contribution of Commission:	

Contractor's Certificate ⁽¹¹⁾

We certify that the above costs are derived from the resources employed which were necessary for the work under the contract, that such costs have been incurred and fall within the definition of allowable costs specified in the contract, and that any necessary permissions of the Commission have been obtained.

We certify that any necessary adjustments, for any reason, to costs reported in previous cost statements have been incorporated in the above statement ⁽¹⁰⁾

Date: 15/5/1992

Date: 15/5/1992

Name of Project Manager ⁽¹²⁾
 Dr. Paolo Ciccioli



Name of Financial Officer:
 Dr. Ivo Allegrini

Signature of Project Manager:



Signature of Financial Officer:



- 
- 
- (1) Delete as necessary - for Associated Contractor see Art. 1.5 of Annex II.
 - (2) The Associated Contractor must specify the name of the Contractor to which it is associated.
 - (3) Separate details are required for each category in accordance with the annexes which follow.
 - (4) See Art. 26 of Annex II.
 - (5) Separate details are only required with the final cost statement. For consumables, generic descriptions are required only for categories over 10.000 ECU.
 - (6) Each Associated Contractor must submit a separate cost statement for its costs, through the Contractor to which it is associated.
 - (7) The categories of costs on which such overheads are charged should be identified. If the specification of the amount of the overheads is not practicable, a note to this effect should be included in the cost statement.
 - (8) For Contractors/Associated Contractors charging additional costs. The calculation must exclude a contribution on VAT and on any costs of Associated Contracts of the Contractor. See Part E.
 - (9) See Article 32 of Annex II - only the amount recoverable by the Commission in accordance with Article 32.3.2 to be shown separately. The VAT form must also be completed.
 - (10) Not applicable for the first cost statement. Any necessary adjustments, for example to reflect actual rates instead of budgeted rates, must be made in subsequent statements. Details and reasons for any adjustments must be provided.
 - (11) The Project Manager and the Financial Officer must sign the certificate.
 - (12) The person designated to be in direct charge of the performance of the work - see Article 1.5 of Annex II.

FORM TO BE SUBMITTED IN TRIPLICATE WITH THE COST STATEMENT CALLED FOR IN ARTICLE 5 OF THE CONTRACT TOGETHER WITH SUPPORTING DOCUMENTATION.⁽¹⁾

Contract No : CEE-CNR N° EV4V-CT90-0222

Currency : ITALIAN LIRES

Name of Contractor/ CNR-I.I.A.

Associated Contractor:

VAT statement for the period from MAY 1991 TO MAY 1992

Name of supplier	Invoice No ⁽¹⁾	Amount of invoice		Amount charged in accordance with the contract ⁽²⁾	
		Net amount	VAT	Net amount	VAT
Rivoira	10572	503.350			
Rivoira	55444	381.000			
Rivoira	61364	286.500			
Rivoira	4584	256.000			
Rivoira	4587	124.500			
Rivoira	4586	214.000			
Rivoira	10573	340.000			
TCR Tecora	462	390.000			
Inalco	4454	104.000			
Hewlett Packard	2403591	5.306.280			
Marbaglass	613	2.489.800			
Marbaglass	550	762.550			
Marbaglass	851	215.200			
Petrini A.	21	250.000			
C.Erba. Farmit.	252631	184.000			
C.Erba Farmit.	247981	135.000			
Marbaglass	880	391.200			
Marbaglass	1099	888.500			
Supelchem	4193	382.000			
C.Erba Farmit.	291831	42.000			
C.Erba Farmit.	288541	368.700			
Cortiello M.	00134	39.250			
TCR Tecora	333	754.000			
Centro ASA	362	198.000			
Centro ASA	566	370.000			
Ras	837	56.336			
Elettroservices	1756	46.150			

FORM T⁶⁶ SUBMITTED IN TRIPPLICATE WITH THE COST STATEMENT CALLED FOR IN ARTICLE 5 OF THE CONTRACT TOGETHER WITH SUPPORTING DOCUMENTATION.⁽¹⁾

Contract No: CEE-CNR N° EV4V-CT90-0222 Currency: ITALIAN LIRES
 Name of Contractor/ CNR-I.I.A.
 Associated Contractor:

VAT statement for the period from MAY 1991 TO MAY 1992

Name of supplier	Invoice No ⁽¹⁾	Amount of invoice		Amount charged in accordance with the contract ⁽²⁾	
		Net amount	VAT	Net amount	VAT
Ciccioli mis. 36		375.029			
Ciccioli mis. 657		2.784.265			
Ciccioli mis. 100		1.067.521			
Ciccioli mis. 150		323.528			
Ciccioli mis. 248		3.005.801			
Ciccioli mis. 312		509.032			
Ciccioli mis. 336		553.020			
Ciccioli mis. 358		58.234			
Ciccioli mis. 390		1.214.959			
Cecinato mis. 320		382.638			
TOTALE		25.752.342			

I certify that the above expenditure has been incurred and falls within the definition of allowable costs specified in the Contract. I certify that the amount of V.A.T. has not been directly or indirectly recovered and is not directly or indirectly recoverable and that all actions with respect to V.A.T. recovery specified by the Contract have been taken.

Date: 15/5/1992

Name of Financial Officer: Dr. Ivo Allegrini



Signature:

(1) See Article 32.3.2 of Annex II
 (2) To take account of e.g. the depreciation or the percentage charged to the Contract
 (3) To be reported on the summary page of the cost statement, item "VAT"



MINISTERIO DE SANIDAD Y CONSUMO

INSTITUTO DE SALUD CARLOS III

SUBDIRECCION GENERAL DE CONTROL

REPORT OF ACTIVITIES OF THE CNSA IN THE PAN INTERCALIBRATION PROJECT. MAY 1991- APRIL 1992

1.- SET UP OF PAN ANALYZER INSTRUMENT

An automated PAN analyzer (Carlo Erba, Vega 6000) equipped with a 1m x 1.5 mm glass column packed with 5% Carbowax 600 coated on Cromosorb W, was set up for working conditions by liquid and gaseous calibrations using the standards obtained from TNO.

So the following working conditions: constant current, frequency, voltage and standing current as well as furnace detector and injector temperatures were optimized.

2.- CONTINUOUS SAMPLING

The PAN analyzer located in the "Centro Nacional de Sanidad Ambiental" at Majadahonda, 20 km north of Madrid was previously set up to continuously sampling.

3.- NILU PAN INTERCALIBRATION PROGRAMME

This programme was carried out using PAN standards sent by NILU during December 1991.

The determination of PAN concentrations was made by analysis of nitrite ions



MINISTERIO DE SANIDAD Y CONSUMO

INSTITUTO DE SALUD CARLOS III

SUBDIRECCION GENERAL DE CONTROL

obtained previously from PAN alkaline hydrolysis. The nitrite ions were measured by ion chromatography.

Once the NILU PAN standard concentrations were known, the PAN analyzer was calibrated using different ways:

* **Calibration by liquid injections.**

Diluted solutions of the PAN standards were injected for several times.

* **Calibration by gaseous injections.**

PAN standard solutions were evaporated in a Tedlar bag containing 10 l of synthetic air and injected by means of the loop.

The mixture of the PAN standard and synthetic air contained in the Tedlar bag was injected by a syringe.

4.- LABORATORY SAMPLING PROGRAMME

Atmospheric samples were analyzed by the PAN instrument (described above) in Majadahonda during February 1992

Some technical problems appeared in late February in the PAN analyzer and it was not possible the sampling during March.



MINISTERIO DE SANIDAD Y CONSUMO

INSTITUTO DE SALUD CARLOS III

SUBDIRECCION GENERAL DE CONTROL

5.- FIELD SAMPLING PROGRAMME

During early April PAN was analysed in a field station located 40 km east of Madrid during a research project of "Formation, transport and deposition of photochemical smog within the Madrid area" supported by an external grant from the own C.A.M.

The obtained results are being processed right now, but taking into account these preliminary results, the PAN analyzer will be incorporated in the next national campaigns.

6.- TRAVELS

* **Meeting at NILU**

On 4-6 September 1991, Dr M.T. Bomboi attended the meeting which was held in NILU.

* **Work in Italy**

On early November, Dr. M.T. Bomboi spent one week working with Dr. P. Ciccioli in CNR to optimize the working conditions of the PAN instrument, as both the CNR and the CNSA use the same instrumentations.

Cost Statement

for the period from 1 May 1.991 to 31 April 1.992
 Project Title : PAN Intercalibration
 Contract No. : EV 4V-C190 - 0222
 Name of Contractor/ : CNSA
 Associated Contractor ⁽¹⁾ :
 Currency : Pesetas ⁽²⁾

Categories of Cost ⁽³⁾	Amount for the period
<u>Direct Costs</u>	
1. Labour ⁽³⁾	1.800.000
2. Travel and subsistence ⁽⁴⁾	
- within Western Europe	700.000
- outside Western Europe	
3. Durable equipment	1.400.000
4. Consumables ⁽⁵⁾	500.000
5. External assistance	
- Associated Contracts	⁽⁶⁾
- subcontracts/services	
6. Computing	200.000
7. Other items ⁽⁵⁾	
<u>Indirect Costs</u>	
8. Overheads recovered on labour	
9. Overheads recovered on other direct costs ⁽⁷⁾	
10. Fixed contribution at 20 % ⁽⁸⁾	
<u>Taxation and Customs Duties</u>	
11. VAT ⁽⁹⁾	273.000
<u>Adjustments</u>	
12. Adjustments to costs previously reported ⁽¹⁰⁾	
Total:	4.873.000
50..% contribution of Commission:	

Contractor's Certificate ⁽¹¹⁾

We certify that the above costs are derived from the resources employed which were necessary for the work under the contract, that such costs have been incurred and fall within the definition of allowable costs specified in the contract, and that any necessary permissions of the Commission have been obtained.

We certify that any necessary adjustments, for any reason, to costs reported in previous cost statements have been incorporated in the above statement ⁽¹⁰⁾

Date: 20 May 1992

Date: 20 May 1992

Name of Project Manager ⁽¹²⁾

Name of Financial Officer:

Dra. R. Fernández Pattier

Dr. R. Nájera Morrondo

Signature of Project Manager:

Signature of Financial Officer:

(1) Delete as necessary - for Associated Contractor see Art. 3 of Annex II.

(2) The Associated Contractor must specify the name of the Contractor to which it is associated.

(3) Separate details are required for each category in accordance with the annexes which follow.

(4) See Art. 26 of Annex II.

(5) Separate details are only required with the final cost statement. For consumables, generic descriptions are required only for categories over 10.000 ECU.

(6) Each Associated Contractor must submit a separate cost statement for its costs, through the Contractor to which it is associated.

(7) The categories of costs on which such overheads are charged should be identified. If the specification of the amount of the overheads is not practicable, a note to this effect should be included in the cost statement.

(8) For Contractors/Associated Contractors charging additional costs. The calculation must exclude a contribution on VAT and on any costs of Associated Contracts of the Contractor. See Part E.

(9) See Article 32 of Annex II - only the amount recoverable by the Commission in accordance with Article 32.3.2 to be shown separately. The VAT form must also be completed.

(10) Not applicable for the first cost statement. Any necessary adjustments, for example to reflect actual rates instead of budgeted rates, must be made in subsequent statements. Details and reasons for any adjustments must be provided.

(11) The Project Manager and the Financial Officer must sign the certificate.

(12) The person designated to be in direct charge of the performance of the work - see Article 1.5 of Annex II.

For the period from 1 May 1.991 to 31 April 1.992

Contract No. : EV 4V CT90 - 0222
 Name of Contractor/ : CNSA
 Associated Contractor :
 Currency : Pesetas

COST CATEGORY : LABOUR AND OVERHEADS

(A)	(B)	(C)	(D)	(E)	(F)	(G)
Category ⁽¹⁾	No. of Man Hours/ Months ⁽²⁾	Labour Rate ⁽³⁾	Overheads added to the Labour) Rate ⁽⁴⁾	Loaded Labour Rate Col. (C) + (D)	Labour Cost Amount Col. (B) • (C)	Overheads Amount Col. (B) • (D)
Scientist	50	1.200.000				
Technic.	50	600.000				
Sub-Totals						
Total (labour+overheads)					1.800.000	

- (1) Labour should normally be specified by category, (e.g. engineer, technician, cost department, etc.), clearly identifiable to contractors' labour rates or charging bands. Individuals should be identified by name where they are specified in the contract as key personnel, or when required for the project under Article 36.4.
- (2) Delete as appropriate in accordance with any specifications of the Commission - normally man hours should be used and, where hourly rates for cost reporting purposes have been agreed with the Commission, man hours must be used.
- (3) The labour rate comprises the elements specified in Article 24.1 of Annex II.
- (4) Overheads principles are specified in Article 25 of Annex II. If a percentage addition is added for overheads, the percentage should be specified. If overheads are added to any element other than labour costs, the amount should be shown separately in the cost statement.

For the period from 1 May 1.991 to 31 April 1.992

Contract No. : EV 4V - CP90 - 0222
 Name of Contractor/ : CNSA
 Associated Contractor :

Currency : Pesetas

COST CATEGORY : DURABLE EQUIPMENT

Description	Date of Purchase	Cost	% Allocation to Project ⁽¹⁾	Amount ⁽²⁾
Data-Logger		2.534.560	55%	1.400.000
Total ⁽³⁾				1.400.000

COST CATEGORY : EXTERNAL ASSISTANCE⁽⁴⁾

Supplier ⁽⁵⁾	Amount
Total ⁽³⁾	

COST CATEGORY : COMPUTER COST

Description	Amount
Software	200.000
Total ⁽³⁾	
	200.000

- (1) Based on use of item of equipment for the contract.
- (2) Commission contribution to be reimbursed in a single amount for the contract period. Amount to report is:
Actual cost x depreciations rate (331/3% per year for minor computing equipment; 20% per year for other equipment) x % allocation to project x contract duration from date of purchase - see Article 27 of Annex II.
- (3) If the amount charged includes any addition for overheads or a handling charge, the addition should be specified separately.
- (4) Includes subcontract work but excludes work of Associated Contractors.
- (5) Any relationship of ownership or control between the supplier and the Contractor must be declared.

FORM TO BE SUBMITTED IN TRIPPLICATE WITH THE COST STATEMENT CALLED FOR IN ARTICLE 5 OF THE CONTRACT TOGETHER WITH SUPPORTING DOCUMENTATION.⁽¹⁾

Contract No: EV 4V-CT90 - 0222 Currency: Pesetas
 Name of Contractor/ CNSA
 Associated Contractor:

VAT statement for the period from May to April 1992

Name of supplier	Invoice No ⁽¹⁾	Amount of invoice		Amount charged in accordance with the contract ⁽²⁾	
		Net amount	VAT	Net amount	VAT
Waters		2.263.000	271.560	1.400.000	182.000
Total VAT ⁽³⁾ :					182.000

I certify that the above expenditure has been incurred and falls within the definition of allowable costs specified in the Contract. I certify that the amount of V.A.T. has not been directly or indirectly recovered and is not directly or indirectly recoverable and that all actions with respect to V.A.T. recovery specified by the Contract have been taken.

Date: 20 May 1992

Name of Financial Officer: R. Nájera Morrondo

Signature:



(1) See Article 32.3.2 of Annex II

(2) To take account of e.g. the depreciation or the percentage charged to the Contract

(3) To be reported on the summary page of the cost statement, item "VAT"

NIF: 28/27015-E

Dirección de entrega

Dirección de facturación

CTRO. NAL. SANIDAD AMBIENTAL
CRTA. MAJADAHONDA-POZUELO KM 2
MAJADAHONDA
28220 (MADRID)

MINISTERIO SANIDAD Y CONSUMO
SEC. GRAL. INST. SALUD CARLOS III
CONTRATACION Y SUMINISTROS
SINESIO DELGADO, 4
28029 MADRID

Su pedido nº	Fecha del pedido	Medio de expedición	Nº albarán de entrega	Fecha de exp.
726/91 W	16/01/92	AGENCIA TRANSP.	040481-01	13/04/92

Cantidad pedida	Pend. de entrega	Nº de referencia del producto Designación del producto	Precio unitario	Cantidad facturada	Precio total neto
1		SISTEMA DE CONTROL DE TRATAMIENTOS DE SEÑALES CROMATOGRÁFICOS COMPUESTO POR: JWSP0128M		1	
1		ORDENADOR DIGITAL MVAX WAT023109		1	
1		TARJETA IEEE-488 PARA LAC/E JWSP01N05		1	
		IMPRESORA LASER DEC			
					2.242.970

Condiciones de pago : TRANSFERENCIA

Fecha de vencimiento :

BANCO BILBAC-VIZCAYA
C.C. 019615860 - OFICINA 0927
P. Castellana, 169 - 28046 MADRID

I.V.A. 13%

Dirección de expedición/reclamación :

Millipore Iberica, s.a.

Av. del Llano Castellano, 13-3ª 28034 Madrid - Tel. (91) 729.03.00 - Telex : 23545
Entenza, 28 08015 Barcelona - Tel. (93) 325.96.16 - Telex : 50524

Inscrita en el Registro Mercantil de Madrid al tomo nº 2924 general 2239 de la sección 3ª folio 19 hoja nº 70469, inscripción 1ª. N.I.F. A - 28289247

Millipore Iberica, S. A.
Entenza, 24, Bejos
Teléf. (93) 325 96 16
08015 BARCELONA

Importe total sin impuesto	2.242.970
I.V.A. 13.00	291.580
Neto a pagar	2.534.560

Por favor adjunten esta etiqueta a su pago

Nº cuenta cliente	00574500
Nº de factura	207392
Importe total a pagar	2.534.560

PAN INTERCALIBRATION
Contract EV4V-CT90-0222 (CEC,DGXIIIB/2)

PROGRESS REPORT N°1

(At the end of year 1)

Objectives

The scope of the project is to make an intercalibration of PAN standards with errors within $\pm 10\%$ of the true value, to allow a calibration of PAN Gas Chromatographs within the same range of errors, to measure PAN content in ambient air, to publish results in reviewed journals.

Project methodology

Phase PREP I: Evaluation and description of all methods used in each participating laboratory

Phase PREP II: Acquisition of additional methods needed for intercomparison of results.

Phase PREP III: Trial distribution of PAN standards (Transport at -70°C with local storage at -20°C)

Actual time schedule

These three phases have been done but with a four month delay, respective reports were sent to NILU.

At ISPRA we have encountered a one month delay for the breakdown of a pump and the apparatus has been located to another place with the moving of all analytical service. We start newly with continuous measurements on 11-05-92.

Results obtained

At CCR ISPRA we study and develop three methods for the calibration of PAN standards: Spectrophotometry, Ionic chromatography and Cathodic stripping voltammetry. All these three methods were used after hydrolysis of PAN in diluted alkaline solutions.

Transport of PAN from NILU (Oslo) to Ispra and from Ispra to NILU was successful. We obtained a rather good correlation between results obtained by the three methods. For the concentrated standards of PAN we were lower by 7% than the average concentration found by other laboratories.

For the search of a substitute for PAN for calibration of gas chromatograph some progress must still be made. The first one tested n-Propyl-Nitrate, stable at ambient temperature, shows a peak which is not well separated from the peak of solvent (Hexane in this case) when we use direct injection of diluted liquid standards which is the easiest way. It seems that Iso-Propyl-Nitrate which elutes first should be better in this case.



Yann Libert
Ispra 26-05-92



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		NILU PROSJEKT NR. O-91032	
FORFATTER(E) T. Krognæs		TILGJENGELIGHET * A	
		OPPDRAGSGIVERS REF.	
OPPDRAGSGIVER (NAVN OG ADRESSE) CEC DG XII/B/2 Rue de la Loi 20 B-1049 BRUSSELS			
STIKKORD Peroxyacetyl nitrate Intercalibration Administration			
REFERAT			

TITLE
ABSTRACT Progress reports and cost statements have been prepared by all participants in the STEP PAN intercalibration project, in the form required by the CEC. Delays have been explained, and a revised project schedule is included.

* Kategorier: Åpen - kan bestilles fra NILU A
 Må bestilles gjennom oppdragsgiver B
 Kan ikke utleveres C