

***INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 85/27***

***L-A Castagnola July 16 / August 22, 1990
G. Fournie July 16 / August 3, 1990***



Institut de Recherches sur le Caoutchouc

*Département du Centre de Coopération Internationale
en Recherche Agronomique pour le Développement (CIRAD)
42, rue Scheffer 75116 Paris (France) - Tél. : (1) 47.04.32.15*

Télex : 620871 INFRANCA PARIS

People's Republic of China
Rubber Quality Improvement Project
Ref. NA 85/27
Hainan Island

INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 85/27

L-A Castagnola July 16 / August 22, 1990
G. Fournié July 16 / August 3, 1990

Sponsor : Commission of the European Communities

Consultant : Institut de Recherches sur le Caoutchouc (IRCA)
(Rubber Research Institute)
42, rue Scheffer
75116 PARIS, FRANCE

SOMMAIRE

ACKNOWLEDGEMENTS	1
1. Introduction	2
2. Generalities	
2.1. List of the material to set up	
2.2. Installations visited	3
2.3. Installation operations	
2.4. Report presentation	
3. Apparatus installation	4
3.1. Lot 1	
3.1.1. Lot 1, item 1 : Po and PRI apparatus	
3.1.2. Lot 1, item 2 : mechanical stability apparatus	9
3.1.3. Lot 1, item 3 : colour equipment	10
3.1.4. Lot 1, item 4 : hydraulic press	11
3.1.5. Lot 1, item 5 : stainless steel sieve	12
3.2. Lot 2	
3.2.1. Lot 2, item 1 : Bosch AE Assay balance	
3.2.2. Lot 2, item 2 : Bosch PE 618 balance	21
3.2.3. Lot 2, item 3 : Knick Digital 646 pHmeter	22
3.2.4. Lot 2, item 4 : PN 5207 thermometer	23
3.2.5. Lot 2, item 5 : data logger	
3.2.6. Lot 2, item 6 : thermocouple	24
3.3. Lot 3	25
3.3.1. Lot 3, item 1 : TP600 hydraulic press	
3.3.2. Lot 3, item 2 : magnetic metal detector and conveyor belt	
3.3.3. Lot 3, item 3 : centrifuge separator	26
3.3.4. Lot 3, item 4 : air conditioner	27
3.4. Lot 4	
3.4.1. Lot 4, items 1 to 5 : computer and its accessories	28
4. Recommendations	30
4.1. Installing balances and preparing for an expert mission	
4.2. Housing equipment in non-air conditioned room	31
4.3. Training	
4.4. Translation	32
4.5. Comparative trials	
4.6. Environment	
5. Conclusions	
5.1. Laboratory apparatus, Lots 1 to 3	
5.2. Computer equipment, Lot 4	33

ACKNOWLEDGEMENTS

The consultants would particularly like to thank all of the project supervisors as well as the State Farms for their cooperation. Their efforts enabled us to install the materiel in the best conditions and with a great efficiency. We are also grateful for the warm reception and hospitality shown to us at Beijing, Haikou and at the various plants.

Special thanks go to the following people

- Mr. Zhang Xin Zhen, Project Supervisor
- Mr. Zeng Yu-zhuang, Deputy Director of State Farms Department (in Beijing)
- Mr. Deng Xia Yuan, First Deputy Project Supervisor
- Mr. Huang Xiang Qian, Deputy Director of the Tropical Crops Products Testing Station -
Deputy supervisor of the Project
- Mr. Lin Shi Bin, Senior Engineer of the Industry Division of the Hainan Bureau of State
Farms, Deputy Supervisor of the Project
- Mr. Huang Kefen, Senior Engineer of the Tropical Crop Products Testing Station
- Mr. Wang Zuo Yun, Engineer of the Institute of Rubber Products Testing Station
- Mr. Wen Chen, Technician of the Institute of Rubber Products Testing Station
- Miss Huang Xiuxiang French officer, foreign affairs office, Hainan Provincial People's
government
- Mr. Zheng Ding Fa, English officer, Project member, RPTC
- Mr. Wang Hong Xian, French officer, Project officer, Division of Foreign Economic, Dpt of
State Farms, Ministry of Agriculture

1 Introduction

The target of this mission was to install the material delivered in the framework of the project. About one hundred of laboratory devices have been set up at the IRPT in Haikou and in the ten state farms concerned by the project and located in the Hainan Island. A computer and its peripheral equipments have been installed at the IRPT in Haikou.

2 Generalities

2.1 List of the material to set up

Designation	lot	item	nb total	nb in IRPT	nb in state farms
Wallace plastimeter	1	1	13	3	10
Wallace steam generator	1	1	13	3	10
Wallace PRI oven	1	1	13	3	10
Mechanical stability apparatus	1	2	4	2	2
Color equipmemt	1	3	1	1	
Press Fontjine TP 400	1	4	1	1	
Stainless steel sieve (20 m ²)	1	5	1	1	
Balance Bosch AE 200	2	1	12	2	10
Balance Bosch PE 618	2	2	12	2	10
PH Meter Knick	2	3	11		10
Thermometer AOIP PN 5207	2	4	2	2	
Data Logger AOIP	2	5	2	2	
Thermocouple type T	2	6	1	2	
Press Fontjine TP 600	3	1	1	1	
Metal detector LOCK	3	2	1		1
Conveyor belt	3	2	1		1
Centrifuge Separator	3	3	1	1	
Air conditioner	3	4	12	2	10
Micro computer	4	1	1	1	
Software	4	1	1	1	
Consumable	4	2	1	1	
Printer	4	3	1	1	
Consumable	4	4	1	1	
Inverter	4	5	1	1	

That is to say 105 articles (sieve, thermocouple, consumable articles non included), 16 sorts of laboratory devices and computers.

The order in which the equipment is listed corresponds to lot and item order, which is used for the documents in this report.

2.2. Installations visited

These were the Institute of Rubber Products Testing (IRPT), the ten State Farms involved in the project and the Bayi State Farm, which was not part of the project but was chosen for installation of a metal detector.

The 11 state farms visited are listed below in chronological order of our visits, and the order is retained throughout the report.

List of state farms visited :

1	Xi Lian,	5	Bayi,	9	Xin Zhong,
2	Xi Liu,	6	Xi Hua,	10	Dong Xing,
3	Xi Qing,	7	Xi Da,	11	Dong Hong.
4	Xi Pei,	8	Dong Ping,		

The following equipment was installed at each of the farms (except Bayi):

1 Plastimeter,	1 Balance AE 200,	1 air Conditioner.
1 Steam generator,	1 Balance PE 618,	
1 PRI Oven,	1 Ph meter,	

In addition to this material, Xi Lian and Dong Xing farms, which produce centrifugated latex, were equipped with a mechanical stability apparatus. The other equipment was installed at IRPT in Haikou.

2.3. Installation operations

Generally speaking, apparatus installation comprises the following stages :

- check the external appearance of the packing,
- unpack,
- note serial numbers,
- read operating instructions thoroughly,
- check installation conditions (voltage, environment, etc.),
- check the equipment visually,
- check the inventory of components and spare parts for each apparatus,
- power, respecting preparation times (balances, ovens),
- check the apparatus is functioning normally,
- calibration, adjustment,
- if apparatus does not function normally, repair it if possible,
- train staff to use equipment and make maintenance recommendations.

2.4. Report presentation

The comments in section 3 give details of the operations and difficulties encountered when installing each apparatus.

To make the report easier to read and use, the order in which the apparatus are described does not follow the chronological order of the visits, but that of the lots and items (see paragraph 2.1.). For each type of apparatus, the chronological order of the visits is used (see paragraph 2.2.).

This classification corresponds exactly to the inventory of apparatus installed, entitled "Inventory following state farms order", given in annex 3.

The serial numbers of the apparatus are given in these inventories, and are only used in the text to identify apparatus which posed problems.

Chronological information is given in the mission programme, annex 1.

The following information is given for each type of apparatus

- a brief description of the apparatus,
- installation operations,
- an inventory of the components delivered with the apparatus and spare parts,
- difficulties and anomalies encountered.

3. Apparatus installation

3.1. LOT 1

3.1.1. *LOT 1, ITEM 1: PO and PRI apparatus*

3.1.1.1. Plastimeter

3.1.1.1.1. Description of the apparatus

We give below a brief reminder of the operating principle of this apparatus (see ISO Standard 2007 1981 (F))

"Rapid compression of a test piece in the form of a disk between two parallel platens, so as to attain a fixed thickness of 1 mm. Compression is maintained for 15 seconds, to allow the test piece to reach a stable temperature close to that of the platens. A constant pressure is applied to the test piece for 15 seconds, at the end of which its thickness is taken as a measure of its plasticity.

The two parallel platens are heated to 100° C by a steam generator.

The top platen is integral with a structure that slides vertically so as to bring the contact surface of the top platen to within 1 mm of the bottom platen.

The bottom platen is integral with a very accurately guided slide, whose displacement is measured by an optical system. After maintaining the 1 mm thickness for 15 seconds, a force of 100 N is applied to the slide by a calibrated horizontal spring, transmitted via a lever in the form of an angle iron, articulated on balance type knife-edges.

The spring force is released by a "trigger", controlled by an electromagnet, which acts upon the lever.

The apparatus electronics consist of

- A power supply board (PCB WM 1200.4),
- A timer board, controlling the 15 second spring trigger and displacement measurement at 30 seconds (Timer PCB WM 1200.3); the time is displayed by liquid crystals,
- A displacement readoff board (PCB WM 1200.1),
- A displacement conversion and display board (PCB WM 1200.2); displacement is displayed by diodes.

The apparatus is equipped with a pressure gauge for controlling steam pressure (low pressure).

3.1.1.1.2. Installation operations carried out

- Fitting of a Chinese standard plug on the apparatus (supplied without a plug),
- connection of the plastimeter to the steam generator,
- apparatus calibration once platens had reached required temperature:
 - * adjustment of compression thickness to 1 mm,
 - * adjustment of application force to 100 N.
- on about half of the plastimeters, the spring did not trigger after 15 seconds. The spindle held back by the cam (or trigger) was often rusty and the electromagnet was unable to overcome the friction between the cam and the spindle; it was necessary to clean, grease and adjust the spindle, after which all the equipment was in proper working order,
- adjustment of borer cutter,
- testing of equipment on samples prepared at each plantation (no comparative trial),
- initial training of a laboratory technician in Po and PRI measurement.

3.1.1.1.3. Inventory

Each apparatus is delivered with the following

- 2 top platens, one larger in diameter and the other smaller in diameter than the standard diameter,
- 1 pin-wrench for calibration of the initial 1 mm setting,
- 1 silicone rubber steam tube,
- 1 standard 100 N weight, comprising the weight fitted with a handle, 3 legs, a hexagonal Allen wrench to tighten the legs,
- an electrical power cable,
- a borer for sample cutting,
- tweezers for paper handling,
- a packet of cigarette papers,
- operating instructions.

List of spare parts delivered with each apparatus :

- | | |
|-------------------------------|-----------|
| - 1 micro switch, V4T7 | |
| - 1 top platen | 138-7-1 |
| - 1 top platen adjuster | 138-7-3 |
| - 1 top platen clamp screw | 138-7-4 |
| - 1 bottom platen | 138-7-2 |
| - 1 bottom platen holder | 138-7-5 |
| - 1 meter of steam tubing | |
| - 1 diaphragm | 277-3-10 |
| - 1 sponge rubber ring | 277-3-11 |
| - 1 neon lamp, 250 V, 125 V | 277-3-5 |
| - 2 fuses, 400 mA, anti-surge | 277-9-3 |
| - 2 fuses, 100 mA, anti-surge | |
| - 2 fuses, 500 mA, anti-surge | |
| - 1 reading head PCB | WM 1200-1 |

- 1 replacement set of display LEDs
- for VM 1200-2
- 1 replacement push-button switch for
- VM 1200-2
- 1 Timer C/W LCD display PCB
- WM 1200-3
- 1 DC module
- WM 1200-4

WM 1200-3

WM 1200-4

Spare parts for the borer cutter :

- 1 cutter blade
- 10 soft washers

3.1.1.1.4. Installation problems

PLASTIMETER C89040/2, XI LIAN

The visual appearance of the timer liquid crystal display was very mediocre. The board was replaced by that supplied with the spare parts. The removed board will have to be returned to the manufacturer for display replacement.

Comment : An attachment hole was missing on the spare board and had to be drilled.

PLASTIMETER C89040/7, XI LIU

The slide integral with the bottom platen rubs slightly. The resistance caused by this friction is particularly noticeable during calibration, when the balance between the weight and the spring allow free slide translation. This resistance causes the bottom platen to "stick" slightly when in the lower position.

This slight friction probably does not alter the working order of the equipment, but calibration was less accurate than on the other apparatuses, with greater hysteresis around the slide balance point.

PLASTIMETER C89018/17, XI HUA

On this apparatus, the maximum spring tension (screw fully tightened) does not enable weight balancing. The hypothesis of too light a weight was ruled out after trying the weight on a calibrated MK2 plastimeter belonging to the laboratory.

Either the spring is too weak, or the mechanical assembly does not provide adequate tension.

Nonetheless, it was possible to calibrate the plastimeter after lengthening the adjustment travel by blocking the housing for the end of the screw with a plug, giving an extra 3 mm of travel. The spring loop stop is now at the bottom of the support slit, i.e. no further tension is possible without changing a part.

In this extreme position, the distance between the two tension spindles of the spring is 165 mm; this measurement can be used to determine whether the spring is faulty.

Luckily, calibration was correct in this position.

Hence, it will be necessary to replace either the spring, or the spring retention part, mounted on a vertical rod, ensuring the link between the spring and the frame via a fork, a spindle and the screw (see diagram).

PLASTIMETER C89010/1 DONG PING

The pressure gauge does not work on this apparatus and should be replaced.

PLASTIMETER C89016/16 DONG XING

One of the standard weight legs does not fit right; one leg is not exactly parallel with the others, as the housing has a parallelism fault.

The weight was left as it was, since the defect has no affect on calibration conditions.

3.1.1.2. Steam generator

3.1.1.2.1. Description of the apparatus

This is simply a boiler for production of the steam that keeps the plastimeter platens at 100°C.

The filler cap is weighted and simply placed over the orifice, thereby serving as a safety valve. A pulse regulator (Simmerstat) controls the electrical resistance. A safety device cuts the power supply if there is insufficient water; if the safety device triggers, the reset button must be pressed. The water level is visible in a sight glass.

3.1.1.2.2. Installation operations carried out

- fitting of a Chinese plug,
- filling with distilled water,
- steam link-up and installation of a condensation collection receptacle.

3.1.1.2.3. Inventory

Spare parts

- 1 Simmerstat controller,
- 1 cut-out thermostat,
- 1 sight glass,
- Seals (complete set).

3.1.1.2.4. Installation problems

No problems as far as equipment is concerned.

A complete set of spare parts is missing for the steam generator (C89027/6) installed at DONG PING.

3.1.1.3. PRI oven

3.1.1.3.1. Description of the apparatus

The Wallace oven is intended for accelerated ageing of the samples and is designed to meet ISO Standard 2930-1981 (F).

Extract from the standard :

- regulation of shelf temperature so that it varies no more than 0.2°C over a period of 30 min.
- oven and tray reach test temperature, to within 1°C, within a maximum of 2 min after the tray has been placed in the oven.
- atmosphere is renewed 10 times per hour.

The PRI (plasticity retention index) is equal to 100 times the ratio between the rapid plasticity index of an aged test sample and the rapid plasticity index of a non-aged test sample.

The Wallace oven has 4 independent compartments. A timer controls each compartment separately. A microswitch, which is triggered when the compartment draw is closed, starts the countdown; the operator is alerted 20 sec before the end of the 30 min period by a beep signal and the compartment indicator light changes from green to amber.

The apparatus has 2 PCBs, one for temperature regulation, the other for time control. A PT100 platinum probe, independent of that in the regulation system, enables temperature checks to be made. Air renewal is ensured by a diaphragm pump. A safety sensor cuts the power supply at 150°C.

3.1.1.3.2. Installation operations

- Fitting of a plug (apparatus delivered without a plug),
- start-up,
- checking that timers and compartments were in proper working order,
- checking for correct heat regulation; the regulator indicator light should flash about 2 hours after switching on; given the time taken to reach heat equilibrium, we only checked the temperature at the platinum probe output on an oven installed at IRPT.

3.1.1.3.3. Inventory

Spare parts :

- 2 pump diaphragms,
- 4 pump valves,
- 4 pump filters,
- 2 thermistors,
- 1 calibration sensor,
- 1 overheat sensor,
- 2 limit switches,
- 2 tri-colour LEDs,

- 1 neon mains,
- 1 neon heater,
- 1 voltage regulator,
- 1 triac,
- 2 fuses,
- 200 aluminium foil dishes.

3.1.1.3.4. Installation Problems

None.

3.1.2. *LOT 1, ITEM 2: Mechanical stability apparatus*

3.1.2.1. Description of the apparatus

The apparatus is used to measure the mechanical stability of latex concentrate. It is based on the principle of coagulating latex by mechanical stirring. The latex is stirred by a metal paddle integral with a shaft turning rapidly in the latex tank. The paddle is driven directly by a carbon brush motor rotating at 14,000 rpm. The speed of rotation is controlled electronically by a PCB in the base of the apparatus. Three LEDs light up when the speed is too low, satisfactory and too high respectively. A knob can be used to correct the speed.

There are two switches, one for the motor and one for the lamp. Previous models had a manual control system governed by a resonating spring frequency meter.

3.1.2.2. Installation operations

- components assembled - stand, lamp, etc.;
- motor started up and checks made to ensure it was functioning correctly and not overheating ;
- as the installations concerned were familiar with the apparatus, no staff training was given.

3.1.2.3. Inventory

Each apparatus is delivered with :

- two beakers ;
- one paddle height setting piece ;
- operating instructions ;

and the following spare parts :

- 4 motor brushes ;
- 1 fuse ceramic type ;
- 1 electronic board.

3.1.2.4. Problems encountered

Two apparatus were installed at IRPT in Haikou and the other two on Xi Lian and Dong Xing State Farms.

MECHANICAL STABILITY APPARATUS, HAIKOU

The aluminium plate or front command panel, fitted with the LEDs and the potentiometer, was badly dented, probably during transport. This did not appear to affect functioning. The plate was removed, knocked back into shape and refitted.

MECHANICAL STABILITY APPARATUS, DONG XING

One of the four rubber feet on this apparatus was damaged due to being partly torn off and folded during transport. A solution was found on site.

Comments :

- the electronic boards for all four apparatus were delivered with the last apparatus installed, at Dong Xing ;
- the last apparatus was delivered with 7 beakers ;
- the serial numbers for all 4 apparatus were the same, and therefore do not identify each apparatus ; individual numbers were not found.

3.1.3. LOT 1, ITEM 3: Colour equipment

3.1.3.1. Description of the apparatus

The apparatus is designed to compare the colour of rubber discs with standard discs on plates.

3.1.3.2. Installation operations

- inventory of equipment and checks on its condition.

3.1.3.3. Inventory

- one Lovibond 2000 viewer ;
- two standard plates ;
- two wooden sample holders ;
- instructions (1 page).

3.1.3.4. Problems encountered

No real problems, except that it was not clear how the sample holders should fit into the viewer. In fact, it appeared that the grooves in the sample chamber were not designed for this type of sample holder. It is nevertheless possible to view entirely effectively by holding the sample holder during the operation.

3.1.4. LOT 1, ITEM 4: hydraulic press

This paragraph looks at installation operations for the two Fontijne presses, the TP 400 from Lot 1 and the TP 600 from Lot 3, Item 3. Paragraph 3.3.1. LOT 3, ITEM 3 refers to this paragraph.

3.1.4.1. Description of the apparatus

TP 400 press : a standard bench press with heated platens. For this project, the press is to be used to prepare raw rubber samples for the Lovibond colour comparison test.

TP 600 press : this differs from the TP 400 in the following ways:

- larger platens, higher heating capacity, greater pressure due to higher nominal oil pressure;
- timing mechanism with 6 time ranges, enabling pressure time to be set at between 0.2 seconds and 60 hours ;
- choice of maximum and minimum pressure values using movable needles on the manometer; the pressure is maintained between the two values during the time selected by the timing mechanism, regardless of the flow of the object pressed ;
- the TP 600 has a gas extraction cycle selector, indicating the number of cycles already carried out and the number remaining. The cycles can be cancelled by selecting 0. Cycle length can be controlled using the potentiometer on the corresponding PCB.

The press is to be used to vulcanize samples.

It is worth noting that the project's two presses, manufactured by Fontijne, are of exceptional quality, in terms both of design (ease of access for maintenance, practical layout, etc.) and manufacture.

The characteristics of the two presses are as follows

Model N° :	TP 400	TP 600
Serial N° :	96.057.09	96.058.09
	89/TPB246	89/TPC241
Fontijne order N° :	000.96.057	000.96.058
Year of manufacture :	1989	1989
Platen size :	320 X 320	400 X 400
Daylight :	200 mm	200 mm
Electric load per platen	3.15 kW	5 kW
Max temp	300 degrees C	300 degrees C
Cylinder diameter :	φ 160 mm	φ 160 mm
stroke :	200 mm	200 mm
Hydraulic pressure :	200 bar	300 bar
Max press force :	400 kN	600 kN
Motor pump rating	0.55 kW	0.55 kW
Output : I p :	15 dm ³ /min	15 dm ³ /min
H p :	0.46 dm ³ /min	0.46 dm ³ /min
Mains supply voltage :	3x380V+N+Grd	3x380V+N+Grd
Total power consumption:	7.5 kVA	7.5 kVA
Mass/weight :	475 kg	725 kg

3.1.4.2. Installation operations

- oil sump filled ;
- press connected to electricity supply ;
- heating platens tested cold and hot ;
- each function tested for the TP 600 press ;
- oral maintenance recommendations given based on instruction sheet.

3.1.4.3. Inventory

The two presses were each delivered with the following equipment and spare parts:

TP400	Réf.	Réf. TP600	Réf.
2 oil cans		idem	
1 notice for TP400		1 notice for TP600	
5 platen resistors	3701011	7 platen resistors	3701015
2 platen resistors	3701012	2 platen resistors	3701016
joints :			
1 guiding strip	8400062	idem	
1 dirt wiper	4391040	idem	
1 O. ring	4343063	idem	
1 rod seal (2 pieces)	4320980	idem	
1 piston seal (2 pieces)	4320990	idem	
1 plug in relay	3341002	idem	
1 fuse	3332001	idem	
2 contactors	3206001	idem	
1 oil filter	4243010	idem	

3.1.4.4. Problems encountered

As expected, there were no problems with this equipment.

On account of their weight and handling difficulties, the presses were tested at the point of delivery (an unprepared room on the ground floor) and not in their final positions. As a result, it took quite a long time to install temporary electrical wiring.

3.1.5. LOT 1, ITEM 5 : stainless steel sieve

The sieve was delivered. No comments.

3.2. LOT 2

3.2.1. LOT 2, ITEM 1: BOSCH AE 200 ASSAY BALANCE

3.2.1.1. Description

The balances are accurate to 1/10 of a milligramme. As with all precision balances, the weighing surface and the object being weighed are protected from external effects by a glass chamber (sliding side and top panels).

Due to the weighing system used, i.e. the weight of the object is measured by a quartz crystal, each balance should be calibrated according to the earth's speed of rotation at the place where it is installed. This type of balance has an internal standard weight and an entirely automatic calibration procedure.

Characteristics :

Brand: BOSCH

Address: Gebrüder Bosch - D-7455 Jungingen - P.O.B. 32 - Germany. Tel 07477/1085/86

3.2.1.2. Installation operations

We have tested the balances with a standard weight; the same chinese made standard 100 g weight taken in IRPT was always used. The correction given by the calibration sheet is + 0.385 mg. So the exactly weight would be 99.999615 g but it's impossible for our consultant to confirm this value. Nevertheless it was possible to compare the balances together. This standard weight was carefully carried in the whole visited states farms.

In each laboratory we have followed this test procedure

- the balance was carefully put out of its box, installed on a reinforced concrete tipped bench and at a place without draught ;
- the rubber protect cap was removed, the pan put on and the level made ;
- the current tension was checked and the balance supplied in electricity through a small chinese made tension stabiliser when it was necessary ;
- the balance was put on and we have waited for one hour or more before to calibrate the balance ;
- the balance was calibrated ;
- we have after measured five times or more the standard weight; between two measures we have waiting for the display to come again to 0.0000; if it's impossible to reach zero value even after several integration times, a lateral panel was smoothly open and shut in order to create a slightly vibration; if the zero is not yet reached, we tared before the next measure ; several times the complete operation was driven again after a new calibration ; the standard weight was always taken with its tongs and put on a very cleaned surface between two measures ;
- when the measure is unstable, the balance was put on the P1 integration time (the longer integration time) and the measure are repeated again with this new parameter ;

3.2.1.3. Inventaire

Balance : the balance, platen, platen hub cap, feeder, cover, 2 notices containing each a guarantee contract : one in English and one in French.

Packing : the packing must be kept and used for all transport, we thought it was useful to draw up an inventory :

- metallic nippers to maintain the damper
- damper in rubber which is positioning on the axis of the platen after the latter has been set

- tissue paper for the filling inside the room
- large gummed paper for packing to maintain the shutters closed and to close boards
- 2 polystyrene shells containing the balance
- inside board, containing the box made of the two shells
- wood straw for filling between the two boards
- outside board

3.2.1.4. Problems encountered

Most of assay balances have many defaults : accuracy, stability and reproducibility. One of them, installed at IRPT HAIKOU, has concurrently the three defaults (serial number 2009051), another installed in XI PEI state farm, does not work at all (serial number 2009047) and the last balance checked (serial number 2009041) gives a 0.3 g too low result . Only few of them seem to give complete satisfaction.

The results of the measures are the following :

3.2.1.4.1. Serial number 2009051, HAIKOU

- Five weighing several hours after to put the two following balances on :

1	99.9984
2	99.9982
3	99.9988
4	99.9993
5	99.9987

average : 99.99948

max gap : 0.0006

- The balance is very instable in charge and out of charge. Out of charge, the "g" symbol on the display (which appears when the stability is reached), disappears between 4 and 7 time in a mn, and without doing anything on the balance. During these instability periods, the display have commonly gaps of 0.8 to 1.0 mg and exceptional gaps to 2.8 mg. It is the same problem with the 100 g standard weight on the platen.

3.2.1.4.2. Serial number 2009050, HAIKOU

1	100.0005
2	100.0001
3	100.0006
4	100.0007
5	100.0001

average : 100.00040

max gap : 0.0006

- The reproducibility is not very good, the difference with the 2009051 balance is 0.9 mg. No problem of stability.

3.2.1.4.3. Serial number 2009046, XI LIAN

- Ten weighing two hours after to put the balance on :

1	100.0014	return to 0.0006	tare
2	100.0014	0.0000	tare
3	100.0018	0.0000	tare
4	100.0021	0.0005	tare
5	100.0020	0.0005	tare
6	100.0020	0.0000	tare
7	100.0021	0.0002	tare
8	100.0019	0.0002	tare
9	100.0021	0.0003	tare
10	100.0018	0.0000	

average : 100.00186 max gap : 0.0007

- Five weighing eight hours after put the balance on :

1	100.0043
2	100.0040
3	100.0044
4	100.0043
5	100.0041

average : 100.00422 max gap : 0.0004

- After an other calibration :

1	100.0005
2	100.0005
3	99.9999
4	99.9999
5	100.0001

average : 100.00045 max gap : 0.0006

- Why a difference of 2 mg between 2 hours and 8 hours of runing and why a difference of 4 mg between two calibrations (without moving the balance) ?

- The platen seem very out of center.

3.2.1.4.4. Serial number 2009049, XI LIU

- Five weighing 1h 15mn after to put the balance on

1	99.9987	return to	0.0000
2	99.9988		0.0000
3	99.9987		0.0000
4	99.9987		0.0000
5	99.9987		0.0000

average : 99.99872 max gap : 0.0001

- After a new calibration :

1	99.9996	return to	0.0000
2	99.9997		0.0000
3	99.9998		0.0000
4	99.9996		0.0000
5	99.9997		0.0000

average : 99.99968 max gap : 0.0002

- It is the better balance of the four last ones.

- 1 mg between two calibrations

3.2.1.4.5. Serial number 2009048, XI QING

- The electrical tension was very fluctuated but the balance has been tested in very good conditions of electricity supplies with at first an adjusting transformer to obtain 220 and a tension stabilizer. The tension was measured in continue during the weighing operation.

- Five weighing 1h 10mn after to put the balance on :

1	100.0023	return to	0.0000
2	100.0024		0.0000
3	100.0023		0.0000
4	100.0022		0.0000
5	100.0022		0.0000

average : 100.00228 max gap : 0.0002

- after an other calibration

1	100.0021	return to	0.0000
2	100.0023		0.0000
3	100.0021		0.0000
4	100.0023		0.0000
5	100.0024		0.0000

average : 100.00224 max gap : 0.0003

- New serial of weighing with the balance plugged directly on the network. Large fluctuations of tension probably because the factory was near and the intermittant charge of the machines created break down of tension.

1	100.0020	return to	0.0000
2	100.0020		0.0000
3	100.0021		0.0000
4	100.0020		0.0000
5	100.0019		0.0000
6	100.0022		0.0006 tare
7	100.0020		0.0000
8	100.0023		0.0001 tare

9	100.0023	0.0000
10	100.0025	0.0000

average : 100.00223 max gap : 0.0006

- The fluctuation of the tension probably affects the characteristics of the balance but does not explain the default of reproducibility met on the other balances which are tested with tension stabilizer.

3.2.1.4.6. Serial number 2009047, XI PEI

- This balance doesn't work : the display doesn't light. The tension is checked up again : 225v; The fuse is controlled. Our consultant opened the back of the balance in order to control if a plug of the electronic pannel is put off, he saw nothing.

We could hear the light sound of a contact relay when the swith the balance was put on. The balance was meticulous packed in this box.

3.2.1.4.7. Serial number 2009040, XI HUA

- Five weighing 1h 25 mn after to put the balance on :

1	99.9982	return to 0.0009 important instability, tare
2	99.9985	0.0000
3	99.9991	0.0005 tare
4	99.9990	0.0000
5	99.9983	0.0001 instability

average : 99.99862 max gap : 0.0009

- After an other calibration :

1	99.9989	return to	0.0000 instabl. second display 95
2	99.9989		0.0000
3	99.9987		0.0000
4	99.9989		0.0000
5	99.9991/89/94/90/92 etc serial of measure and instability periods; return to 0.0000		

- The integration time in put on P1

1	99.9982/84 ret. to	0.0000
2	99.9980/83	0.0000
3	99.9979/82	0.0011 tare
4	99.9983/86	0.0000
5	99.9983/86	0.0000
6	99.9972/70	0.0000
7	99.9973/77	0.0000
8	99.9978/86	0.0006 tare
9	99.9966/71	0.0000
10	99.9978/76	0.0000

average lecture 1 : 99.99774 max gap lecture 1 : 0.0016

average lecture 2 : 99.99801 max gap lecture 2 : 0.0016

- high default of instability and reproducibility

3.2.1.4.8. Serial number 2009045, XI DA

- Five weighing 1h 30mn after to put the balance on :

1	100.0010	return to	0.0000
2	100.0005		0.0000
3	100.0008		0.0000
4	100.0004		0.0000
5	100.0003		0.0000

average : 100.00060 max gap : 0.0007

- After an other calibration :

1	100.0008	return to	0.0000
2	100.0006		0.0000
3	100.0007		0.0000
4	100.0006		0.0000
5	100.0004		0.0000

average : 100.00062 max gap : 0.0004

- After a third calibration :

1	100.0004	return to	0.0000
2	100.0006		0.0000
3	100.0006		0.0000
4	100.0005		0.0000
5	100.0003		0.0000

average : 100.00048 max gap : 0.0003

3.2.1.4.9. Serial number 2009042, DONG PING

- Very high instability out of charge, five weighing 1h 10 mn after to put the balance on :

1	100.0002	return to	0.0000
2	100.0001		0.0000 instability
3	99.9998		0.0000
4	100.0006		0.0000
5	100.0008		0.0000

Instability

1 99.9983

measures stopped : high default of reproductibility and stability

average : 100.00030 max gap : 0.0010

3.2.1.4.10. Serial number 2009043, XING ZHONG

- Ten weighing 4 hours after to put the balance on :

1	100.0014	return to	0.0000
2	100.0013		0.0000
3	100.0014		0.0000
4	100.0014		0.0000
5	100.0014		0.0000
6	100.0017		0.0005 instable, tare
7	100.0017		0.0000
8	100.0015		0.0013 ? tare
9	100.0001		0.0000
10	100.0003		0.0009 tare
11	100.0013		0.0013 ? no tared
12	100.0015		

average (first 10) : 100.00222 max gap : 0.0018

- default of stability, reproductibility

3.2.1.4.11. Serial number 2009044, DONG XING

- Ten weighing 1h 15mn after to put the balance on ; integration time on P1 :

1	100.0010	return to	0.0002 tare
2	100.0004		0.0000
3	100.0007		0.0000
4	100.0005		0.0000
5	100.0006		0.0000
7	100.0003		0.0000
8	100.0004		0.0015 tare
9	100.0004		0.0000
10	100.0004		0.0000

average : 100.00047 max gap : 0.0007

- After an other calibration :

1	100.0008	return to	0.0000
2	100.0007		0.0000
3	100.0007		0.0000
4	100.0010		0.0000
5	100.0009		0.0000

average : 100.00082 max gap : 0.0003

3.2.1.4.12. Serial number 2009041, DONG HONG, tested in HAIKOU

- Ten weighing one hour after to put the balance on

1	99.7870	return to	0.0003 tare
2	99.7868		0.0000
3	99.7872		0.0000
4	99.7872		0.0000
5	99.7867		0.0004 tare
6	99.7868		0.0000
7	99.7874		0.0000
8	99.7873		0.0001 tare
9	99.7866		0.0000
10	99.7872		0.0000

average : 99.78702

max gap : 0.0008

- The balance gives a wrong value : 0.213 g under the theoretical value of the standard weight !

3.2.1.4.13. Recapitulation and allocation table

Allocation	Serial	average number	max gap first cal.	first cal.
IRPT HAIKOU	2009051	99.99948	0.0006	
IRPT HAIKOU	2009050	100.00040	0.0006	
XI LIAN	2009046	100.00186	0.0007	
XI LIU	2009049	99.99872	0.0001	
XI QING	2009048	100.00228	0.0002	
XI PEI	2009047	it doesn't work		
XI HUA	2009040	99.99862	0.0009	
XI DA	2009045	100.00060	0.0007	
DONG PING	2009042	100.00030	0.0010	
XIN ZHONG	2009043	100.00222	0.0018	
DONG XING	2009044	100.00047	0.0007	
DONG HONG	2009041	99.78702	0.0008	

3.2.1.4.14. Installation conditions

We would like to point out here that the laboratories in which the balances were installed did not always satisfy the necessary environmental requirements for them to function at maximum efficiency.

However, certain balances, installed under good conditions, were faulty, and some, although installed under less satisfactory conditions, worked effectively.

There are, therefore, certain real problems with the balances, although these were probably exacerbated by installation conditions.

The following are the main environmental problems encountered

- non-air conditioned laboratories: the air conditioners were unpacked while our consultant was there, but could not be installed as the walls had not yet been prepared. Only one laboratory was air conditioned, but a broken window and the draughts caused by ill-fitting windows almost cancelled out the effects of the air conditioning (Xi Hua). The air conditioning was also switched off to obtain a more homogeneous atmosphere and fewer air currents.
- draughts : in fact, we made a particular effort to find installation positions as well sheltered from draughts as possible, although this was difficult due to the lack of electric sockets, hence of possible positions (sometimes only two sockets per laboratory). The balances were sometimes moved to more sheltered positions, and the test procedure was repeated. In one laboratory, several broken windows made it impossible to find a sheltered position (Xing Zhong).
- electric current : we were generally able to obtain a voltage within the limits of tolerance given by the manufacturer. In some cases, we were unable to obtain a stable voltage.

3.2.1.4.15. Conclusions about the balances

On account of these conditions, we suggest repeating the balance tests under better installation conditions (see proposals in paragraphs 4.1.1. and 4.1.2.).

As most of the problems encountered cannot be put down to installation conditions, it is essential that the manufacturer (expert) or one of its representatives visit the site to set the equipment, replace faulty components or entirely replace the apparatus. This would involve most of the balances.

3.2.2. LOT 2, ITEM 2: BOSCH PE 618 Balance

3.2.2.1. Description

This model is an all-purpose balance, with a range of up to 2,000g and accurate to 0.1g. It has several functions, including percentages, weighing live animals (i.e. moving) by automatically calculating the mean of several measurements, etc. As with precision balances, they have to be calibrated. The manufacturer recommends a standard 2,000g weight which we did not have (supplied as an optional extra). As a result, the balances were calibrated using a standard 100g weight.

3.2.2.2. Installation operations

- unpacked carefully ;
- weighing surface fitted and levelled ;
- apparatus plugged in. It is necessary to wait at least 1hour before testing.
- standard 100g weight weighed and balance calibrated using adjustment screw until display read 100.0g; weight was weighed and balance adjusted several times until display read 100.0 at least 5 times in succession and returned to 0.0 each time the weight was removed.

3.2.2.3. Inventory

Balance, power cord, weighing surface (2 sections), cover, adjusting screwdriver, instructions.

3.2.2.4. Problems encountered

No problems with this model.

3.2.3. LOT 2, ITEM 3: KNICK DIGITAL 646 pH meter

3.2.3.1. Description

This apparatus is simple, functional and easy to operate. It has an on-off switch, a liquid crystal display (LCD), a three-way switch (pH-0-mV), two sockets for two types of plug, an adjustment knob for calibration using a neutral buffer (pH7), an adjustment knob for calibration using an acid (pH4.01) or basic (pH10) buffer (mV/pH(20°), a knob to adjust the temperature of the liquid to be measured, a 1mV digital output.

The apparatus enables direct read-off of the pH or voltage supplied by the electrode, and only runs off mains electricity.

3.2.3.2. Installation operations

- unpacking ;
- electrode fitted to clamp stand ;
- attempts made to find small containers suitable for calibration buffers (generally small porcelain dishes designed for ash calcination) ;
- apparatus plugged in (no time lapse between plugging in and use) ;
- calibration: buffer temperature measurements, subsequent adjustments, calibration with pH7 and pH4.0 buffers until correct values obtained. When changing buffers, the electrode was rinsed in distilled water and then with the relevant buffer, as were the dishes;
- electrode soaked in KCl ;
- checks on KCl level in plastic beakers fitted to the other two electrodes, topped up if necessary ;
- electrodes stored vertically, with beaker upright to prevent KCl leaking.

Our consultant did not see the Haikou apparatus, and it will be checked during a future mission.

3.2.3.3. Inventory

The pH meter, instructions, 3 electrodes, one bottle of pH7 buffer, one bottle of pH4.01 buffer, one bottle of electrode storage liquid (KCl).

3.2.3.4. Problems encountered

No particular problems with installing pH meters.

One electrode prevented correct calibration (Xi Pei Farm). The electrode should have been soaked in a KCl bath for 24 hours to determine its exact condition.

With certain apparatus, the initial calibration was satisfactory, but with others, it was necessary to re-calibrate 4 times, as pH7 calibration altered the pH4 calibration and vice versa.

No further action is necessary.

3.2.4. LOT 2, ITEM 4: PN 5207 thermometer

3.2.4.1. Description

PN 5207 is a high precision calibration thermometer used to measure temperatures and simulate accurately resistance thermometer sensors with high resolution.

3.2.4.2. Installation operations

As the thermometer was supplied without a probe, we tested it with a platinum probe supplied with a Wallace oven (replacement control probe). The test consisted in checking the temperature inside one of the oven chambers.

Of the two thermometers, serial number 09056389 was tested. The other will be tested during a future mission.

3.2.4.3. Inventory

Thermometer, instructions.

3.2.4.4. Problems encountered

None.

3.2.5. LOT 2, ITEM 5: data logger

3.2.5.1. Description

The data logger can measure 20 signals with a scanning programmed system. The number of measured signals is only 10 when platinum resistor probes are used.

Its main characteristics are the following

- capacity of 20 channels
- measures of
 - * DC voltages and standardized signals;
 - * temperatures by means of thermocouples and 100 Ohms at 0° degrees C platinum resistor probe;
 - * physical quantities with suitable sensors and calibration
- the values measured are compared to limits to be chosen and programmed beforehand ;
- scanning speed between 3.4 channels per second and 16 channels per second depending on the ranges.

The microprocessor data logger is programmable via a built-in keyboard. The programmable parameters are the following :

- choice of the type of signal :

- for each channel it is possible to choose :
 - * a direct voltage measure with 4 scales : 20 mV, 200 mV, 2 V, 20 V;
 - * or a standardized signal 4-20 mA current with the 4 ranges of voltage: 20 mV, 200 mV, 2 V, 20 V;
 - * or a measured temperature thermocouple, for following thermocouples : K (nickel-chromium/nickel-aluminium); T (copper:copper-nickel); J (iron/copper-nickel);
 - * or a 100 ohm measured temperature platinum resistor probe , with 3 wires or 4 wires (optional).
- for each channel and each type of measurement, choice of upper and lower limits with alarm when the measurement is out of this range ;
- for the standardized signals 4-20 mA only, choice of the calibration with upper and lower values and choice of the position of decimal point on the display;
- programming of the chosen channel for scanning and printer output ;
- setting the timer ;
- programming of the scanning time ;

With an optional interface it is possible to connect the data Logger to a computer.

3.2.5.2. Installation operations

- start-up ;
- instructions read carefully ;
- 1st test with platinum probe ;
- 2nd test with 3 sensors to demonstrate the possibilities of the apparatus: 1 platinum probe, one K-type and one T-type thermocouple ;
- engineer training.

3.2.5.3. Inventory

Apparatus and instructions (no sensor delivered with apparatus).

3.2.5.4. Problems encountered

No installation problems.

Of the two apparatus delivered, only serial number 58252072066 was fully tested. The other (58252 072066) was merely plugged in and switched on.

3.2.6. LOT 2, ITEM 6: thermocouple

The thermocouple coil was received and a sensor made to test the data logger.

Nothing to add.

3.3. LOT 3

3.3.1. *LOT 3, ITEM 1: TP 600 hydraulic press*

See paragraph 3.1.4.

3.3.2. *LOT 3, ITEM 2 : magnetic metal detector and conveyor belt*

3.3.2.1. Description

The Lock magnetic detector is a compact parallelipipedic apparatus with a large enough window to enable a standard rubber bale to pass through. The apparatus was delivered fully assembled on a conveyor belt, fitted with an audio alarm. The detector comprises a power unit fitted to the conveyor belt and a control detection unit. The apparatus has two settings: a sensitive setting and a compensatory setting used for objects containing a large proportion of water. This latter setting is not used on natural rubber in dry form, since its water content is negligible (max. 0.5%). The apparatus should be switched on two minutes before use. During this time, the "defect" light on the measuring unit flickers, which is normal. The belt moto-reductor is permanently lubricated.

When a metallic particle is detected in a bale, the belt stops and the alarm sounds. Pressing the "on" button enables the bale to be removed from the belt. The alarm can be switched off.

3.3.2.2. Installation operations

- unpacking ;
- apparatus plugged in and switched on ;
- tests, sensitivity setting ;
- some operating instructions given to senior staff in charge.

3.3.2.3. Inventory

Unit delivered fully assembled, comprising

- metal frame in compliance with Lock's recommendations to prevent magnetic interference ;
- conveyor belt comprising continuous, seamless belt and two rollers ;
- one moto-reductor ;
- magnetic detector: 9/SP/100B6/9R/220 type ;
- control detection unit, integral with the detector, No.78496 ;
- electrical control box (No. 015831) including magnetic detector power unit (No. 78770) and belt and alarm control switches ;
- alarm fitted to the back of the control box.

Spare parts :

- 1 power unit (No. 79602) ;
- 1 detection unit (No. 74512) ;

- 1 complete moto-reductor ;
- 1 belt ;
- 1 conveyor roller.

3.3.2.4. Problems encountered

No problems with the equipment, which worked well right from the first test.

There are two comments on the installation site and the detector's place in the processing line.

Installation site :

The unit chosen to install the magnetic detector was Bayi Farm. As this is not one of the sites in the project, our consultant immediately asked for the reasons for this decision.

The following justification was given

- Bayi Farm is the only site with an adequate technological environment to be able to install and integrate the apparatus ;

- as the magnetic detector is only used in countries producing very high quality rubber, it was logical to install it at a farm producing rubber of good technological quality;

- Bayi Farm has the best structures on the island and is used as a training and demonstration centre. Installing the detector in the factory will enable each student to familiarize himself with the apparatus and its usefulness.

The detector's place in the processing line :

The detector and conveyor belt will be fitted into the processing line, which does not currently have a conveyor belt.

At least one loading table and one reception table the same height as the belt will be needed or, better still, an automatic system enabling bale transfer from the press to the detector.

3.3.3. LOT 3, ITEM 3: CENTRIFUGE SEPARATOR

3.3.3.1. Description

The Westfalia laboratory centrifuge separator is a smaller version of the well-known industrial separators. It is equipped with 20 paddles (around 100 to 120 for industrial models). An asynchron induction motor, specially designed for start-up under heavy loads, enables the separator rotor to be driven directly, without a gear coupling. The nominal speed of 12,250 rpm is reached in around 30 seconds.

3.3.3.2. Installation operations

- instructions read carefully ;
- parts assembled ;
- gearshaft oiled ;
- water feeder pipe connected ;

- apparatus connected to electricity supply ;
- bridging of two pairs of terminals designed to be connected to switches, one controlled by a float (level of liquid to be centrifuged), the other by a knock-off button. These two accessories are not supplied with the apparatus ;
- machine levelled ;
- test with water.

3.3.3.4. Problems encountered

No problem with equipment during test, as centrifuge was only fed with water.

The centrifuge was tested under the same conditions as the presses and in the same room, i.e. in a temporary position.

IRPT wished to keep the centrifuge for tests on latex brought in from local farms.

It would appear necessary to install the apparatus at Xi Lian Farm, partly to be able to use fresh field latex under the same conditions as for industrial production, partly to be able to analyze the samples produced on site.

3.3.4. LOT 3, ITEM 4: air conditioner

3.3.4.1. Description

Conventional window-mounted air conditioner with 2,000W electric heating resistor, two-speed fan, integrated thermostat.

3.3.4.2. Installation operations

- unpacking ;
- apparatus placed on bench and switched on ;
- various functions tested (fan speed, cold, heat) ;
- temperature checks on cooled air.

3.3.4.3. Inventory

Air conditioner supplied with French standard sealed plug, fascia (knobs, aluminium plate, etc.), fastenings (brackets, screws), fitting instructions.

3.3.4.4. Problems encountered

No problems with equipment supplied.

It was not possible to test the air conditioners in position, as there were no windows in the walls.

Air conditioner U7433 0600, delivered to Dong Ping, made a high-pitched noise when the compressor was working. On investigation, this proved to be due to the cladding vibrating. The problem was pinpointed and remedied.

Air conditioner U7433 0606, delivered to Dong Xing, was slightly dented, almost certainly during transport.

No further action needed.

3.4. LOT 4

3.4.1. *LOT 4, ITEMS 1 to 5: computer and its accessories*

3.4.1.1. Description of the equipment

The equipment, which was unpacked by the consultant, comprises an IBM PS/2 microcomputer and accessories: a wide-carriage printer, software and inverter.

Detailed descriptions :

Microcomputer

processor	80286
frequency	10 Mega Hertz
main storage	1 Megabyte
read only memory	64 Kbytes
mass storage	1 floppy disk, drive 3"1/2
hard disk	20 Megabytes
interface	serial : type RS 232 C parallel : type Centronics
time stamp and backup memory	by battery
speaker	yes
mouse	yes
display	color graphic high resolution EGA board
keyboard	Qwerty 102 keys
power supply	220/240 V 5 % 50/60 Hz
operating system	MS DOS 3.2

Printer

printing mode	bidirectional matrix 24 printing pins
printing speed	draft - 400 cps minimum letter - 130 cps minimum
character font	exchangeable
buffer storage	8 Kbytes minimum
printing width	136 columns at 10 cpi
amount copy	4 minimum
paper drive	type-in-semi-automatic sheet by sheet with burst mode
interface	RS 232 C
sound level	< 55 dB
power supply	220/240 V 10 % 50/60 Hz

Inverter for the microcomputer

rated power	300 VA
input	220/240 V 10 % 50/60 Hz 5 %

output	220/240 V 5 % 50/60 Hz 1 %
electric battery	range 10 min minimum
overload	100 % during 100 ms
operating temp.	35° C

3.4.1.2. Installation operations

- microcomputer installed and switched on, operating system and software loaded;
- user menu installed ;
- Mr. Wen Chen and Mrs. He Xiao Ding trained to use WORD4, DBASE 3 and LOTUS 123 software.

Comments : it is regrettable that the Chinese engineers, although their overall ability is high, are hindered by poor knowledge of English and a lack of basic computer knowledge. As a result, the training given hardly progressed beyond the "beginner" stage for the three software systems concerned.

3.4.1.3. Inventory

ITEM 1 - CPU and screen
 - software: MS DOS 3.3
 GW BASIC
 Lotus 123 Version 2
 Word 4
 DBase 3+
 Stat G
 Langage C

ITEM 2 - 100 3¼" floppy disks

ITEM 3 - printer
 - continuous form feeder
 - cut sheet feeder

ITEM 4 - 4 boxes containing 10,000 sheets in all
 - 4 ribbon cassettes

ITEM 5 - one inverter.

Spare parts :

- one spare SONY MFD - FRU P/N 72 x 8523 disk drive
- one CPU 8086 circuit board.

3.4.1.4. Problems encountered

The spare parts supplied with the equipment are not the same as those fitted: the spare disk drive does not have the same connectors and the replacement board is based on an 8086 microprocessor, not an 80286 like the PS 2 delivered (see photograph of equipment, annex 4).

The Commercial Inspection Service, which is in charge of checking the quality of imported equipment, confirmed the non-compatibility of the spare parts.

SFI, who supplied the equipment, were contacted when we returned to France and asked to despatch spare parts compatible with the unit supplied. The parts should be delivered at the time of the next project mission.

4. Recommendations

4.1. Installing balances and preparing for an expert mission

4.1.1. Conditions necessary for balance installation

The balance should be installed :

- on a stable support protected from knocks ;
- sheltered from draughts ;
- sheltered and well away from air conditioner outlets ;
- in a room with no temperature and humidity variations, which is not possible in a hot, humid climate unless air conditioning is used permanently ;
- out of direct sunlight (curtains have to be fitted at windows) ;
- connected to an electricity supply of between 210 and 230V, with no significant current fluctuations, meaning that the laboratories visited have to use a voltage regulator;
- protected from dust ;
- relatively out of the way, to prevent the balance being moved inadvertently.

4.1.2. Grouping balances at IRPT

In the event of a mission by a balance expert, the ideal solution would be for him to visit each site. If this were to prove impossible, all the balances could be brought to IRPT, in which case a specific procedure should be followed.

In any event, the conditions for installation given in the previous section should be respected.

Procedure :

- balances collected by a vehicle and an IRPT employee entirely familiar with how to pack the balances ;
- transfer to IRPT of all the available packages (2 IRPT balances + 1 from Dong Hong, i.e. 3 packages available) to compensate for lost packages ;
- at each site, balances should be packed carefully, according to the following procedure:

remove power cord ;
 remove plate and fascia strip ;
 fit rubber damper and strap ;
 pack chamber with tissue paper ;
 fix glass panels with wide adhesive tape ;
 place balance in polystyrene shells ;
 fit shells together in inside box and stick with adhesive tape ;
 wrap all parts to be placed between the two boxes (weighing surface, fascia, cord, instructions, etc.) ;
 carefully fill gap between boxes with wood wool, so that inside box is well centred in outside box ;
 close box with adhesive paper ;
 write State Farm name on box.

- once balances are all installed at IRPT taking the above precautions, set balance up and calibrate using standard weights.

4.2. Housing equipment in non-air conditioned room

If electronic material is to be used or stored in a non-air conditioned room in a tropical climate (hot and humid), the following steps should be taken

4.2.1. *Apparatus in working order*

- Switch on the apparatus from time to time, preferably each day so that it heats up and dries out humidity. This is essential if the machine is not being used.

4.2.2. *Apparatus not in working order and awaiting repair*

- Place Silicagel inside apparatus, ensuring that its colour is visible from the outside (transparent container with gauze top), wrap apparatus in transparent polythene bag, as watertight as possible (bale bag) ;

- change Silicagel when necessary.

4.2.3. *Storing electronic spare parts*

- ditto paragraph 2 or dessicator or drying cupboard.

4.3. Training

4.3.1. *Laboratory apparatus*

Operators were trained in Côte d'Ivoire, notably on PO and PRI measurement apparatus. During our stay, other employees were working in the laboratories. It goes without saying that the laboratory technicians in charge of analyses should be perfectly familiar with test procedures, which necessitates a few days' training and cannot be ensured by the brief training given during the mission.

Further operator training is needed for the pH meter and its calibration.

Information on thermocouples, platinum probes and signal processing would be very useful when using the Data Logger.

4.3.2. *Software*

Software training calls for a good deal of personal effort on the part of the operator, using the manuals. The initial training given merely provided the necessary basic elements to explain the principle of the software. This personal work is all the more important in that the software supplied has to be used to process specification results.

4.4. Translation

4.4.1. *Translation difficulties*

The mission came up against problems with translating technical terms in the computer field. For technical assistance missions to be more effective, it would be a good idea for our partners to turn the translation problems encountered to good use and acquire the relevant natural rubber technology and, more particularly, computer and data processing vocabulary.

4.4.2. *Translating instructions*

We recommend having the instructions for each piece of apparatus translated into Chinese as soon as possible and distributing copies to each installation.

4.5. Comparative trials

A routine comparative trial network should be set up to cross-check PO and PRI measurements between the state farms and the Institute.

4.6. Environment

On account of the accuracy of the apparatus and the fact that most of them contain electronic components, it is necessary to make the following environmental improvements:

- systematically install air conditioners ;
- improve airtightness of door and window frames ;
- install either general voltage regulator or individual regulators for each apparatus containing electronic components ;
- as far as possible, prepare floors to prevent dust accumulation (paint, plastic floor covering, tiles) ;
- install an adequate number of sockets.

5. Conclusions

5.1. Laboratory apparatus, Lots 1 to 3

The most important problem concerns the Bosch AE 200 precision balances. If these apparatus are to work effectively, an effort will have to be made on the part of the units involved to provide the best possible conditions for installation and on the part of the manufacturer who will either have to send a specialist or recall most of the apparatus.

The few difficulties encountered with the plastimeters should be solved merely by replacing the faulty parts.

Efforts should be made to improve the laboratory environment, since the effective working and the useful life of the apparatus depend on it.

Training would be advisable in the following fields: PO and PRI (internal training, since operators have already been trained in Côte d'Ivoire), using and calibrating pH meters, temperature measurement probes (thermocouple, platinum probe, etc.) and electric signal measurement.

5.2. Computer equipment, Lot 4

The spare parts for the computer are not compatible. The supplier was contacted as soon as the consultant returned to France and the necessary steps were taken. The software was installed.

As far as staff training is concerned, some problems were encountered with translating technical computer terms.

It is essential that the training given be followed up with personal efforts on the part of the operators, based on software manuals.

ANNEX 1 MISSION PROGRAMME

INSTALLATION OF THE EQUIPMENT CEE-CHINA PROJECT NA 87/25

JULY 1990

16, Monday Paris

- Preparation of the mission (Mr Sainte-Beuve, Touron, Fournié, Castagnola).

17, Tuesday Paris - Frankfort - Beijing

- Preparation of the mission, departure from Paris to Beijing via Frankfort (Mr Castagnola, Fournié).

18, Wednesday Beijing

- Arrival in Beijing, greeting with Mr Wang Hong Xian ;
the meeting with officials CEE was not possible, the representant was not in Beijing in this period.

19, Thursday Beijing

- Preparation of the mission with the French officer.

20, Friday Beijing

- Dinner with official representants of the project
 - * Mr Zeng Yu-zhuang, Deputy Director of State Farms Department
 - * Miss Yuan Hang Ping, Director of the Division of Foreign Economic,
Department of State Farms
 - * Mr Changnian Xu, Deputy Director of Tropicals Crop division
 - * Mr Li Zhe Ming, Deputy Director of the European Division of Foreign
Affairs of State Farms
 - * Mr Wang Hong-qian, French officer

21, Saturday Beijing

- Departure from Beijing to Haikou.

22, Sunday Haikou

- Arrival in Haikou at 2 h a.m, greeting with Mrs Huang Xiang Qian and Zheng Ding Fa.
- Dinner with officials :
 - * Mr Zhang Xin Zhen, Project Supervisor
 - * Mr Deng Xia Yuan, First Deputy Project Supervisor
 - * Miss Huang Xiuxiang French officerMiss Huang is in charge to replace M. Wang for three days

23, Monday Haikou

- Discussion about the visit of the State Farm with Haikou Bureau; preparation of the planning of visit with
 - * Mr Huang Xiang Qian ;
 - * Mr Zheng Ding Fa ;
- Beginning of the installation of plastimeters, computer and inverter in IRPT.

24, Tuesday Haikou

- Installation of Wallace plastimeters and ovens; training on the calibration procedure; formation of Mr Wang Zuo Yun ;
- installation of the AOIP thermometer with a spare parts platinum probe of a Wallace oven, test of the micro computer, verification of the software language, installation of the printer.

25, Wednesday Haikou

- First work on AOIP DATA LOGGER ;
- test of the two FONTIJNE press ;
- meeting with the Commercial Inspection Service ;

26, Thursday Haikou

- AOIP DATA LOGGER; telex to AOIP for complementary explanation ;
- beginning of testing balances ;
- training on LOTUS 123 and IMPRESS (GF) ;
- Arrival of Mr Wang from Beijing.

27, Friday Haikou

- Test of balances ; many problems ;
- test of WESTFALIA centrifugal separator ;
- installation of KLAXON mechanical stability apparatus ;
- training about D BASE 3 and statistical software ;

28, Saturday Haikou

- AOIP DATA LOGGER : on this apparatus ; Formation of Mr Huang Kefen on Data Logger;
- training about the use of the microprocesseur ;

29, Sunday Haikou

- Departure of Mr Fournié from Haikou
- report writing ;

30, Monday Haikou - Xi Lian

- Departure to Xi Lian state farm
- these persons accompanied the consultant during the first states farms visite :

- * Mr Lin Shi Bin Senior Engineer of the Industry Division of the Hainan Bureau of State Farms, Deputy Supervisor of the Project Engineer of the Institute of Rubber Products Testing Station
- * Mr Wang Zuo Yun,
- * Mr Zheng Ding Fa, English , Project member, RPTC
- * Mr Wang Hong-qian, French officer

- Xi Lian officials :
 - * Mrs Li Lan guei, Factory Director

31, Tuesday Xi Lian

- Installation of the laboratory equipment in Xi Lian ;
- visit of the factory, discussion about the dryer with Mr Lin Shi Bin ;
- departure of Mr Fournié from Hong Kong.

AUGUST 1990

1, Wednesday Xi Liu

- Arrival of Mr Fournié in Paris ;
- Arrival of the mission in Xi Liu ;
- Xi Liu officials :
 - * Mr Zhou Delin Director of the State Farm
 - * Mr Huang Kong Ze Deputy director of the State Farm
 - * Mr He He Yi Factory Director
 - * Mr Zhang Wen Xiong Factory responsable
- installation of the laboratory equipment in Xi Liu ;
- visit of the factory, discussion about the dryer with Mr Lin Shi Bin ;

2, Thursday Xi Qing

- Writing the report of Mr Fournié ;
- Xi Qing officials :
 - * Mr Jiang Yi Shen Director economist of the State Farm
 - * Mr Wei Shuei Qing Deputy Director of the State Farm
 - * Mr Xu Chan Sueng Director of the Factory
- installation of the laboratory equipment in Xi Qing ;

3, Friday Xi Pei

- Writing the report of Mr Fournié ;
- Xi Pei officials :
 - * Mr Zheng Guo Huei, Director of the Factory
 - * Mr Wang Sui Xuen, Deputy Director of the Factory
- installation of the laboratory equipment in Xi Pei.

4, Saturday Bayi

- The magnetic detector has been installed in this farm for many reasons explained in the report.
- Bayi officials :
 - * Mr Huang Wen Fang Deputy Director of the State Farm

- * Zhang Yie Tang Chief of the Industrial Division of the State Farm
- * Mr Zen Li Zhang Director of the Factory
- * Mr He Zie Xiong Engineer of the Industrial Division
- Installation of the magnetic detector.

5, Sunday Xi Hua, Kunlun

- Xi Hua officials :
 - * Hong Shu Wen, Deputy Director of the State Farm
 - * Cheng Minjeng, Chief of Industrial Division
- installation of the laboratory equipment in Xi Hua
- transfert in Kunlun State Farm (out of project) for the night ;
- officials met in Kunlun :
 - * Mr Zheng Kai Ke, Deputy Director of the State Farm
 - * Mr Wang Zuan Zao, Director of the Factory
- Visit of the factory.

6, Monday Xi Da

- officials met in Xi Da :
 - * Mr Li Yu Zhu, Deputy Director of the Farm
 - * Mr Yiang Shi Qieng Director of the Industrial Division of the Farm
 - * Mr Xu Yu Fu, Director of the Factory
- installation of the laboratory equipment in Xi Da :
- Come back to Haikou

7, Tuesday Haikou

- report : Inventory of the installed equipment with serial number, allocation and comment about installation ;
- program for the three next days : visit of three or four others State Farm concerning by the project

8, Wednesday Haikou - Dong Ping

- Departure to Dong Ping state farm
- these persons accompanied the consultant during the second states farms visite:
 - * Mr Wang Zuo Yun, Engineer of the Institute of Rubber Products Testing Station
 - * Mr Zheng Ding Fa, English , Project member, RPTC
- officials met in Dong Ping :
 - * Mr Wu Shin Zai Deputy Director of the State Farm
 - * Mr Chai Xing Guang Director of rubber processing Factory
 - * Mr Wang Hong Jao Deputy Director of the Factory
- installation of the laboratory equipment in Dong Ping.

9, Thursday Xing Zhong

Officials met in Xing Zhong

- * Chen Zeqing Deputy Director of the State Farm
- * Wang Hui Qian Director of rubber processing factory of the State Farm

- installation of the laboratory equipment in Xing Zhong.

10, Friday Dong Xing - Dong Hong

- officials met in Dong Xing :

- * Yang Ke Ping Deputy Director
- * Huang Zheng Yun Director Engineer
- * Fong xi an Engineer

- installation of the laboratory equipment in Dong Xing.

- official met in Dong Hong

- * Mai Ji Tan Deputy Director of the State Farm
- * Cheng Wen En Director of rubber processing factory
- * Li Qiong Mei Deputy Director of the factory

- installation of the laboratory equipment :

- * We have not checked the equipment on this farm because the laboratory was not yet build.

11, Saturday Haikou

- Checking the last equipment no checked at the begining of the mission ;
- writing the report about the balances.

12, Sunday Haikou - Hong Kong

- Departure from Haikou

13, Monday Hong Kong

- Contact with Siemssen and co, Trading limited 505 Silvercord Tower 1, Kowloon, Hong Kong, phone 3698234

14, Tuesday Hong Kong

- writing report

15, Wednesday Hong Kong - Paris

- arrival in Paris ;

16, Tuesday to 17, Friday Paris

- writing of the report ;

20, Monday to 22, Wenesday Paris

- writing of the report ;

22, Wenesday, Paris

- last day and end of the mission

ANNEX 2
INVENTORY FOLLOWING LOTS AND ITEMS ORDER
INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 87/25

LOT	ITM	ALLOCATION	SERIAL NUMBER	DATE OF VISIT	COMMENT
** PLASTIMETER					
1	1	HAIKOU	C89016/20	07/24/90	
1	1	HAIKOU	C89040/3	07/24/90	
1	1	HAIKOU	C89040/8	08/11/90	no tested
1	1	XI LIAN	C89040/2	07/31/90	
1	1	XI LIU	C89040/7	08/31/90	light friction
1	1	XI QING	C89040/5	08/02/90	
1	1	XI PEI	C89040/6	08/03/90	
1	1	XI HUA	C89018/17	08/05/90	Spring too weak, calibration impossible
1	1	XI DA	C89040/4	08/06/90	
1	1	DONG PING	C89010/1	08/08/90	steam pressure gauge out of service
1	1	XIN ZHONG	C89040/19	08/09/90	
1	1	DONG XING	C89016/16	08/10/90	default in a leg of calibration weight
1	1	DONG HONG	C89040/18	08/10/90	no tested
** STEAM GENERATOR					
1	1	HAIKOU	C89027/8	07/24/90	
1	1	HAIKOU	C89027/5	07/24/90	
1	1	HAIKOU	C89027/13	08/11/90	no tested
1	1	XI LIAN	C89027/7	07/31/90	
1	1	XI LIU	C89027/12	08/01/90	
1	1	XI QING	C89027/10	07/31/90	
1	1	XI PEI	C89027/11	08/03/90	
1	1	XI HUA	C89027/2	08/05/90	
1	1	XI DA	C89027/9	08/06/90	
1	1	DONG PING	C89027/6	08/08/90	no spare parts
1	1	XIN ZHONG	C89027/4	08/09/90	
1	1	DONG XING	C89027/1	08/10/90	
1	1	DONG HONG	C89027/3	08/10/90	no tested
** PRI OVEN					
1	1	HAIKOU	C89041/9	07/24/90	
1	1	HAIKOU	C89041/6	07/24/90	
1	1	HAIKOU	C89041/8	08/11/90	no tested
1	1	XI LIAN	C89041/8	07/31/90	
1	1	XI LIU	C89041/13	12/08/90	
1	1	XI QING	C89041/11	08/02/90	
1	1	XI PEI	C89041/12	08/03/90	
1	1	XI HUA	C89041/3	08/05/90	
1	1	XI DA	C89041/10	08/06/90	
1	1	DONG PING	C89041/7	08/08/90	
1	1	XIN ZHONG	C89041/5	08/09/90	
1	1	DONG XING	C89041/2	08/10/90	
1	1	DONG HONG	C89041/4	08/10/90	no tested
** MECHANICAL STABILITY					
1	2	HAIKOU	57096	07/27/90	straighten of the front switch pannel
1	2	HAIKOU	57096	07/27/90	four apparatus have same serial num !
1	2	XI LIAN	57096	07/31/90	
1	2	DONG XING	57096	08/10/90	one rubber foot dammagded
** COLOR EQUIPMENT					
1	3	HAIKOU	without	07/27/90	

ANNEX 2
INVENTORY FOLLOWING LOTS AND ITEMS ORDER
INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 87/25

LOT	ITM	ALLOCATION	SERIAL NUMBER	DATE OF VISIT	COMMENT
** HYDRAULIC PRESS TP400					
1	4	HAIKOU	96-057-09- 89/TPB246	07/25/90	
** STAINLESS STEEL SIEVE					
1	5	HAIKOU		07/25/90	
** BALANCE AE 200					
2	1	HAIKOU	2009051	07/27/90	defaults: stabil., accur., reprodu.
2	1	HAIKOU	2009050	07/27/90	defaults: accuracy, reproducibility
2	1	XI LIAN	2009046	07/31/90	default : reproducibility
2	1	XI LIU	2009049	08/01/90	default : reproducibility
2	1	XI QING	2009048	08/02/90	better than the others
2	1	XI PEI	2009047	08/03/90	no working
2	1	XI HUA	2009040	08/05/90	defaults: stability, reproducibility
2	1	XI DA	2009045	08/06/90	better than the others
2	1	DONG PING	2009042	08/08/90	defaults: stability, reproducibility
2	1	XIN ZHONG	2009043	08/09/90	defaults: stability, reproducibility
2	1	DONG XING	2009044	08/10/90	defaults: stability, reproducibility
2	1	DONG HONG	2009041	08/10/90	difference of 3 mg
** BALANCE PE 618					
2	2	HAIKOU	189394	08/11/90	
2	2	HAIKOU	189398	08/11/90	
2	2	XI LIAN	189396	07/31/90	
2	2	XI LIU	189392	08/01/90	
2	2	XI QING	189408	08/02/90	
2	2	XI PEI	189406	08/03/90	
2	2	XI HUA	189399	08/05/90	
2	2	XI DA	189395	08/06/90	
2	2	DONG PING	189391	08/08/90	
2	2	XIN ZHONG	189393	08/09/90	
2	2	DONG XING	189397	08/10/90	
2	2	DONG HONG	no checked	08/10/90	
** PH METER					
2	3	HAIKOU	no checked	/ /	no checked
2	3	XI LIAN	620943	07/31/90	
2	3	XI LIU	647355	08/01/90	
2	3	XI QING	647357	08/02/90	
2	3	XI PEI	564483	08/03/90	first electrode calibration impossible
2	3	XI HUA	620955	08/05/90	long time to obtain right calibration
2	3	XI DA	606399	08/06/90	
2	3	DONG PING	647341	08/08/90	4 buffer mesures to calibrate
2	3	XIN ZHONG	647356	08/09/90	
2	3	DONG XING	620982	08/10/90	
2	3	DONG HONG	630953	08/10/90	
** THERMOMETER PN 5207					
2	4	HAIKOU	09056389	07/24/90	
2	4	HAIKOU	09055989	08/11/90	no tested

ANNEX 2
INVENTORY FOLLOWING LOTS AND ITEMS ORDER
INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 87/25

LOT	ITM	ALLOCATION	SERIAL NUMBER	DATE OF VISIT	COMMENT
** DATA LOGGER					
2	5	HAIKOU	58252 072067	08/11/90	
2	5	HAIKOU	58252 072066	07/26/90	just put on, no tested
** THERMOCOUPLE					
2	6	HAIKOU	without	07/28/90	
** HYDRAULIC PRESS TP600					
3	1	HAIKOU	96-058-09- 89/TPC241	07/25/90	
** MAGNETIC METAL DETECTOR					
3	2	BAYI	80689	08/04/90	
** CONVEYOR BELT					
3	2	BAYI		08/04/90	
** CENTRIFUGE SEPARATOR					
3	3	HAIKOU	1697 724	07/27/90	
** AIR CONDITIONER					
3	4	HAIKOU	U7433 0605	08/11/90	
3	4	HAIKOU	U7433 0598	08/11/90	
3	4	XI LIAN	U7433 0601	07/31/90	
3	4	XI LIU	U7473 0603	08/01/90	
3	4	XI QING	U7433 0609	08/02/90	
3	4	XI PEI	U7433 0602	08/03/90	
3	4	XI HUA	U7433 0599	08/05/90	
3	4	XI DA	U7433 0608	08/06/90	
3	4	DONG PING	U7433 0600	08/08/90	
3	4	XIN ZHONG	U7433 0607	08/09/90	
3	4	DONG XING	U7433 0606	08/10/90	light crash deformation
3	4	DONG HONG	no checked	08/10/90	
** MICROCOMPUTER					
4	1	HAIKOU	55-8115056	07/23/90	not the right spare parts
** SOFTWARE					
4	1	HAIKOU		07/23/90	
** CONSUMABLE FLOPPY DISK					
4	2	HAIKOU		07/23/90	
** PRINTER					
4	3	HAIKOU		07/23/90	
** CONSUMABLE PAPER					
4	4	HAIKOU		07/23/90	
** INVERTER					
4	5	HAIKOU		07/23/90	

ANNEX 3
INVENTORY FOLLOWING STATE FARMS ORDER
INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 87/25

DESIGNATION	LOT	ITEM	SERIAL NUMBER	DATE OF VISIT	COMMENT
** ALLOCATION HAIKOU					
PLASTIMETER	1	1	C89016/20	07/24/90	
PLASTIMETER	1	1	C89040/3	07/24/90	
PLASTIMETER	1	1	C89040/8	08/11/90	no tested
STEAM GENERATOR	1	1	C89027/8	07/24/90	
STEAM GENERATOR	1	1	C89027/5	07/24/90	
STEAM GENERATOR	1	1	C89027/13	08/11/90	no tested
PRI OVEN	1	1	C89041/9	07/24/90	
PRI OVEN	1	1	C89041/6	07/24/90	
PRI OVEN	1	1	C89041/8	08/11/90	no tested
MECHANICAL STABILITY	1	2	57096	07/27/90	straighten of the front switch pannel
MECHANICAL STABILITY	1	2	57096	07/27/90	four apparatus have same serial num !
COLOR EQUIPMENT	1	3	without	07/27/90	
HYDRAULIC PRESS TP400	1	4	96-057-09- 89/TPB246	07/25/90	
STAINLESS STEEL SIEVE	1	5		07/25/90	
BALANCE AE 200	2	1	2009051	07/27/90	defaults: stabil., accur., reprodu.
BALANCE AE 200	2	1	2009050	07/27/90	defaults: accuracy, reproducibility
BALANCE PE 618	2	2	189394	08/11/90	
BALANCE PE 618	2	2	189398	08/11/90	
PH METER	2	3	no checked	/ /	no checked
THERMOMETER PN 5207	2	4	09056389	07/24/90	
THERMOMETER PN 5207	2	4	09055989	08/11/90	no tested
DATA LOGGER	2	5	58252 072067	08/11/90	
DATA LOGGER	2	5	58252 072066	07/26/90	just put on, no tested
THERMOCOUPLE	2	6	without	07/28/90	
HYDRAULIC PRESS TP600	3	1	96-058-09- 89/TPC241	07/25/90	
CENTRIFUGE SEPARATOR	3	3	1697 724	07/27/90	
AIR CONDITIONER	3	4	U7433 0605	08/11/90	
AIR CONDITIONER	3	4	U7433 0598	08/11/90	
MICROCOMPUTER	4	1	55-8115056	07/23/90	not the right spare parts
SOFTWARE	4	1		07/23/90	
CONSUMABLE FLOPPY DISK	4	2		07/23/90	
PRINTER	4	3		07/23/90	
CONSUMABLE PAPER	4	4		07/23/90	
INVERTER	4	5		07/23/90	
** ALLOCATION XI LIAN					
PLASTIMETER	1	1	C89040/2	07/31/90	
STEAM GENERATOR	1	1	C89027/7	07/31/90	
PRI OVEN	1	1	C89041/8	07/31/90	
MECHANICAL STABILITY	1	2	57096	07/31/90	
BALANCE AE 200	2	1	2009046	07/31/90	default reproducibility

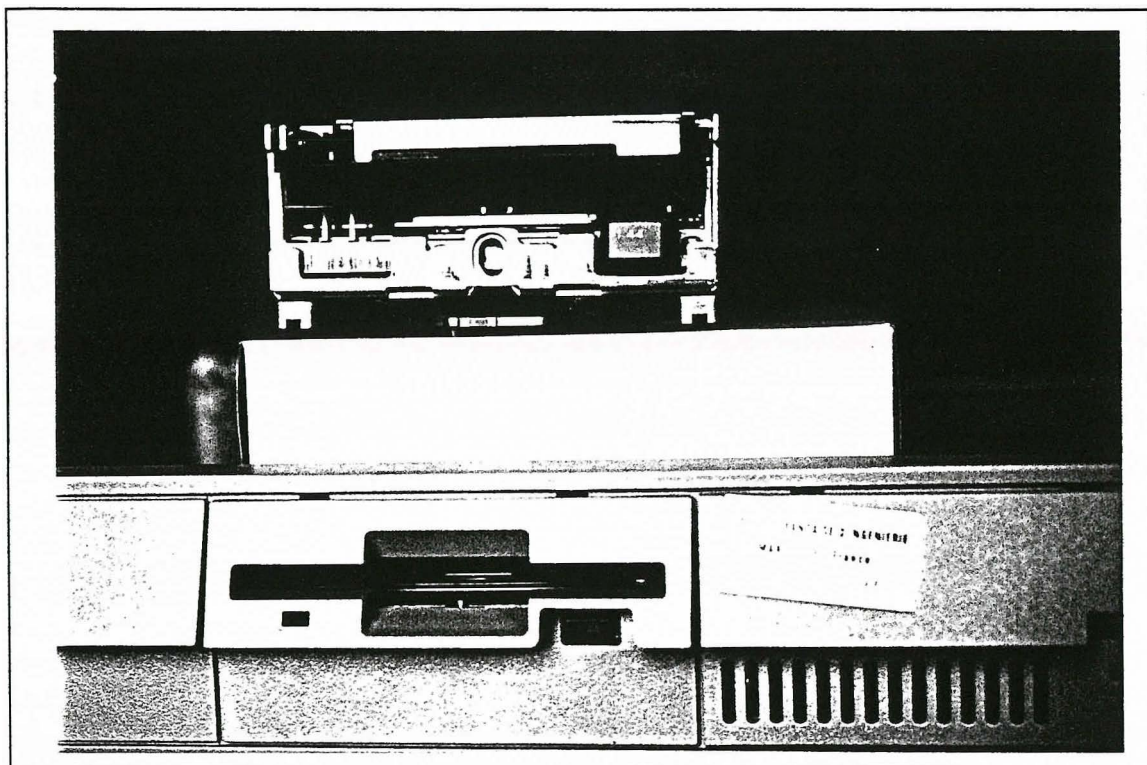
ANNEX 3
INVENTORY FOLLOWING STATE FARMS ORDER
INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 87/25

DESIGNATION	LOT	ITEM	SERIAL NUMBER	DATE OF VISIT	COMMENT
BALANCE PE 618	2	2	189396	07/31/90	
PH METER	2	3	620943	07/31/90	
AIR CONDITIONER	3	4	U7433 0601	07/31/90	
** ALLOCATION : XI LIU					
PLASTIMETER	1	1	C89040/7	08/31/90	light friction
STEAM GENERATOR	1	1	C89027/12	08/01/90	
PRI OVEN	1	1	C89041/13	12/08/90	
BALANCE AE 200	2	1	2009049	08/01/90	default reproducibility
BALANCE PE 618	2	2	189392	08/01/90	
PH METER	2	3	647355	08/01/90	
AIR CONDITIONER	3	4	U7473 0603	08/01/90	
** ALLOCATION : XI QING					
PLASTIMETER	1	1	C89040/5	08/02/90	
STEAM GENERATOR	1	1	C89027/10	07/31/90	
PRI OVEN	1	1	C89041/11	08/02/90	
BALANCE AE 200	2	1	2009048	08/02/90	better than the others
BALANCE PE 618	2	2	189408	08/02/90	
PH METER	2	3	647357	08/02/90	
AIR CONDITIONER	3	4	U7433 0609	08/02/90	
** ALLOCATION : XI PEI					
PLASTIMETER	1	1	C89040/6	08/03/90	
STEAM GENERATOR	1	1	C89027/11	08/03/90	
PRI OVEN	1	1	C89041/12	08/03/90	
BALANCE AE 200	2	1	2009047	08/03/90	no working
BALANCE PE 618	2	2	189406	08/03/90	
PH METER	2	3	564483	08/03/90	first electrode calibration impossible
AIR CONDITIONER	3	4	U7433 0602	08/03/90	
** ALLOCATION : BAYI					
MAGNETIC METAL DETECTOR	3	2	80689	08/04/90	
CONVEYOR BELT	3	2		08/04/90	
** ALLOCATION : XI HUA					
PLASTIMETER	1	1	C89018/17	08/05/90	Spring too weak, calibration impossible
STEAM GENERATOR	1	1	C89027/2	08/05/90	
PRI OVEN	1	1	C89041/3	08/05/90	
BALANCE AE 200	2	1	2009040	08/05/90	defaults: stability, reproducibility
BALANCE PE 618	2	2	189399	08/05/90	
PH METER	2	3	620955	08/05/90	long time to obtain right calibration
AIR CONDITIONER	3	4	U7433 0599	08/05/90	
** ALLOCATION : XI DA					
PLASTIMETER	1	1	C89040/4	08/06/90	
STEAM GENERATOR	1	1	C89027/9	08/06/90	
PRI OVEN	1	1	C89041/10	08/06/90	
BALANCE AE 200	2	1	2009045	08/06/90	better than the others
BALANCE PE 618	2	2	189395	08/06/90	
PH METER	2	3	606399	08/06/90	
AIR CONDITIONER	3	4	U7433 0608	08/06/90	

ANNEX 3
INVENTORY FOLLOWING STATE FARMS ORDER
INSTALLATION OF THE EQUIPMENT
CEE-CHINA PROJECT NA 87/25

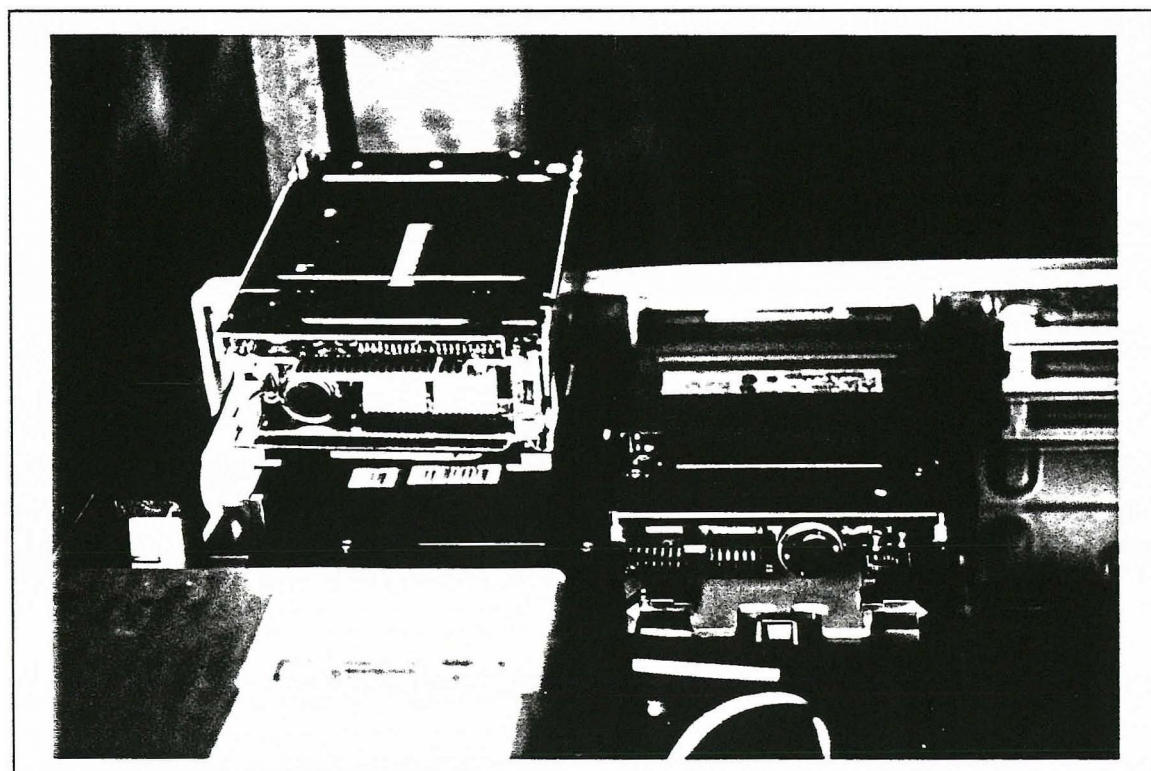
DESIGNATION	LOT	ITEM	SERIAL NUMBER	DATE OF VISIT	COMMENT
** ALLOCATION : DONG PING					
PLASTIMETER	1	1	C89010/1	08/08/90	steam pressure gauge out of service
STEAM GENERATOR	1	1	C89027/6	08/08/90	no spare parts
PRI OVEN	1	1	C89041/7	08/08/90	
BALANCE AE 200	2	1	2009042	08/08/90	defaults: stability, reproducibility
BALANCE PE 618	2	2	189391	08/08/90	
PH METER	2	3	647341	08/08/90	4 buffer mesures to calibrate
AIR CONDITIONER	3	4	U7433 0600	08/08/90	
** ALLOCATION : XIN ZHONG					
PLASTIMETER	1	1	C89040/19	08/09/90	
STEAM GENERATOR	1	1	C89027/4	08/09/90	
PRI OVEN	1	1	C89041/5	08/09/90	
BALANCE AE 200	2	1	2009043	08/09/90	defaults: stability, reproducibility
BALANCE PE 618	2	2	189393	08/09/90	
PH METER	2	3	647356	08/09/90	
AIR CONDITIONER	3	4	U7433 0607	08/09/90	
** ALLOCATION : DONG XING					
PLASTIMETER	1	1	C89016/16	08/10/90	default in a leg of calibration weight
STEAM GENERATOR	1	1	C89027/1	08/10/90	
PRI OVEN	1	1	C89041/2	08/10/90	
MECHANICAL	1	2	57096	08/10/90	one rubber foot dammagded
STABILITY					
BALANCE AE 200	2	1	2009044	08/10/90	defaults: stability, reproducibility
BALANCE PE 618	2	2	189397	08/10/90	
PH METER	2	3	620982	08/10/90	
AIR CONDITIONER	3	4	U7433 0606	08/10/90	light crash deformation
** ALLOCATION : DONG HONG					
PLASTIMETER	1	1	C89040/18	08/10/90	no tested
STEAM GENERATOR	1	1	C89027/3	08/10/90	no tested
PRI OVEN	1	1	C89041/4	08/10/90	no tested
BALANCE AE 200	2	1	2009041	08/10/90	difference of 3 mg
BALANCE PE 618	2	2	no checked	08/10/90	
PH METER	2	3	630953	08/10/90	
AIR CONDITIONER	3	4	no checked	08/10/90	

ANNEX 4 PHOTOS OF COMPUTER



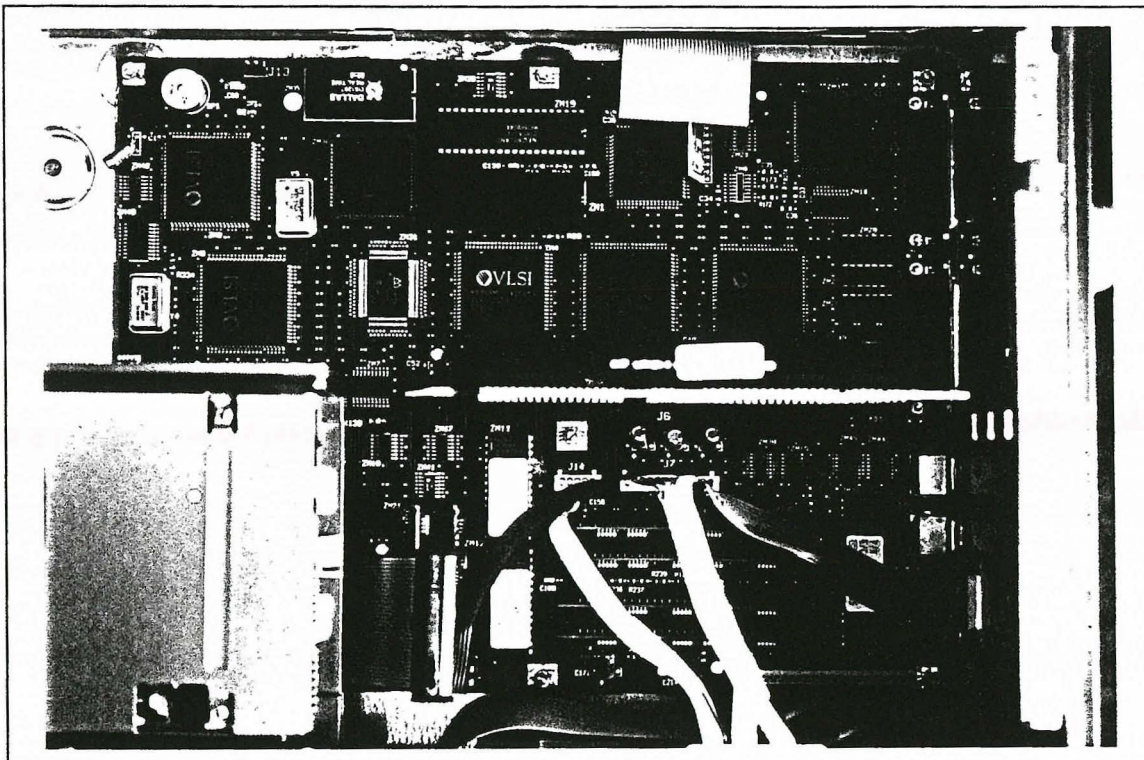
Lecteurs de disquettes face avant

Noter la différence de position de la lampe témoin de fonctionnement ainsi que la différence de taille des boutons d'éjection de la disquette.



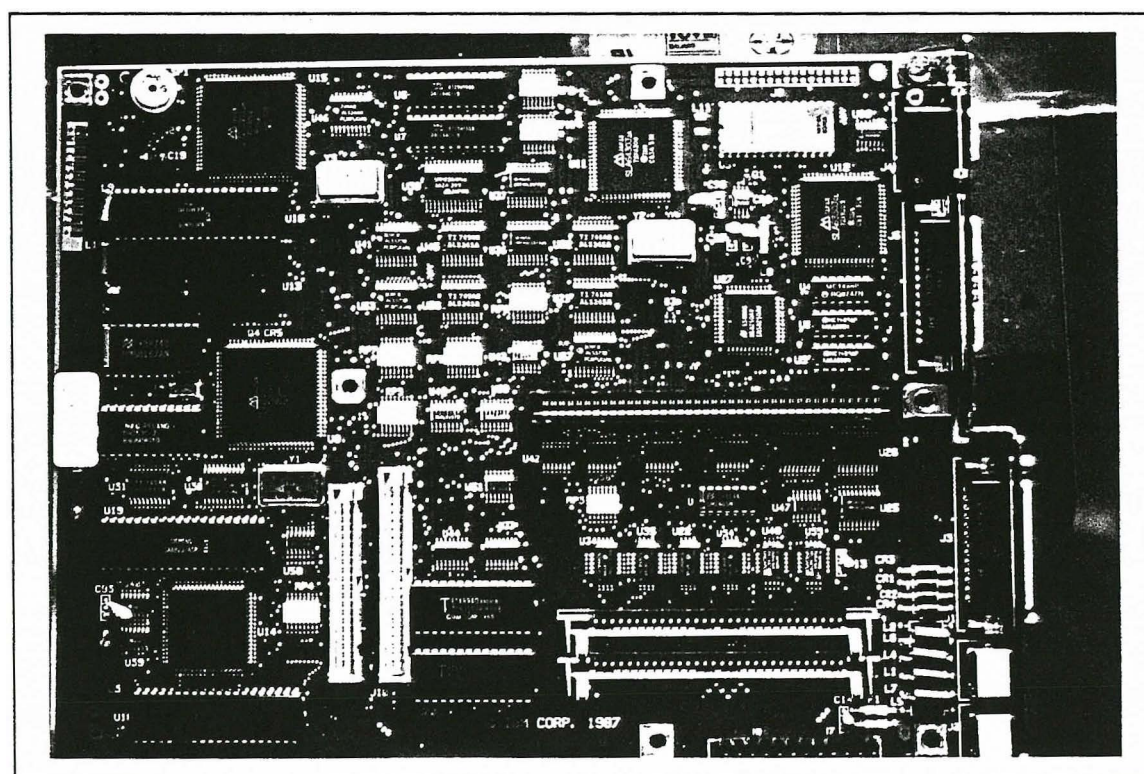
Lecteurs de disquettes face arrière

Noter la différence de connectique.



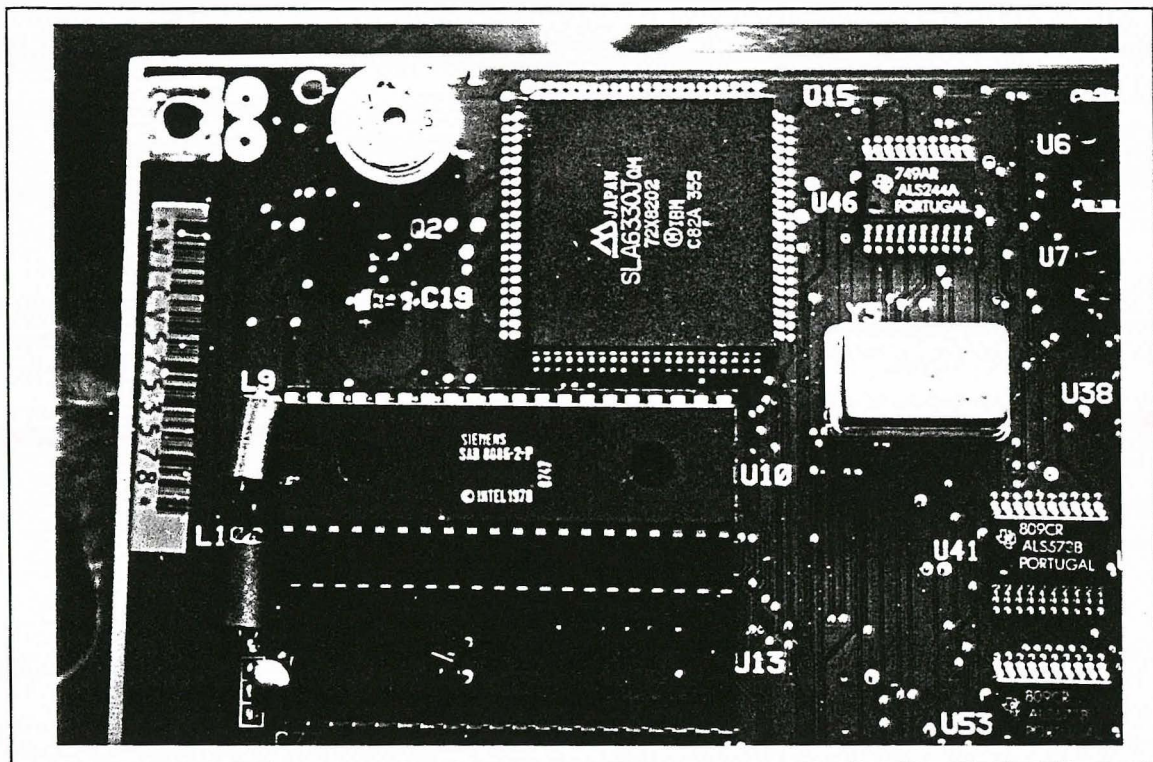
Carte VLSI carte installée

Le carte du PS/2 est basée sur un 80286 (en haut à gauche).



Carte VLSI - Carte de secours

Cette carte est basée sur un 8086 (en haut à gauche).



Carte VLSI - Carte de secours

Le processeur est un 8086.

Annexe - Descriptif du matériel

PS/2 model 30/286
Type 8530-H21
S/NB 55-8115056

Lecteur de disquettes installé:
MITSUBISHI
MF355C-599MA
P/N 72X6068

Lecteur de rechange:
SONY
MFD-77W
FRU P/N 72X8523

Carte CPU installée:
Equipée d'un 80286

Carte CPU de rechange:
Equipée d'un 8086

Imprimante: NEC PINWRITER P9XL
Feuille à feuille: 4523 Sheet Feeder
Tracteur à listing: 4502 Bidirectional Forms Tractor