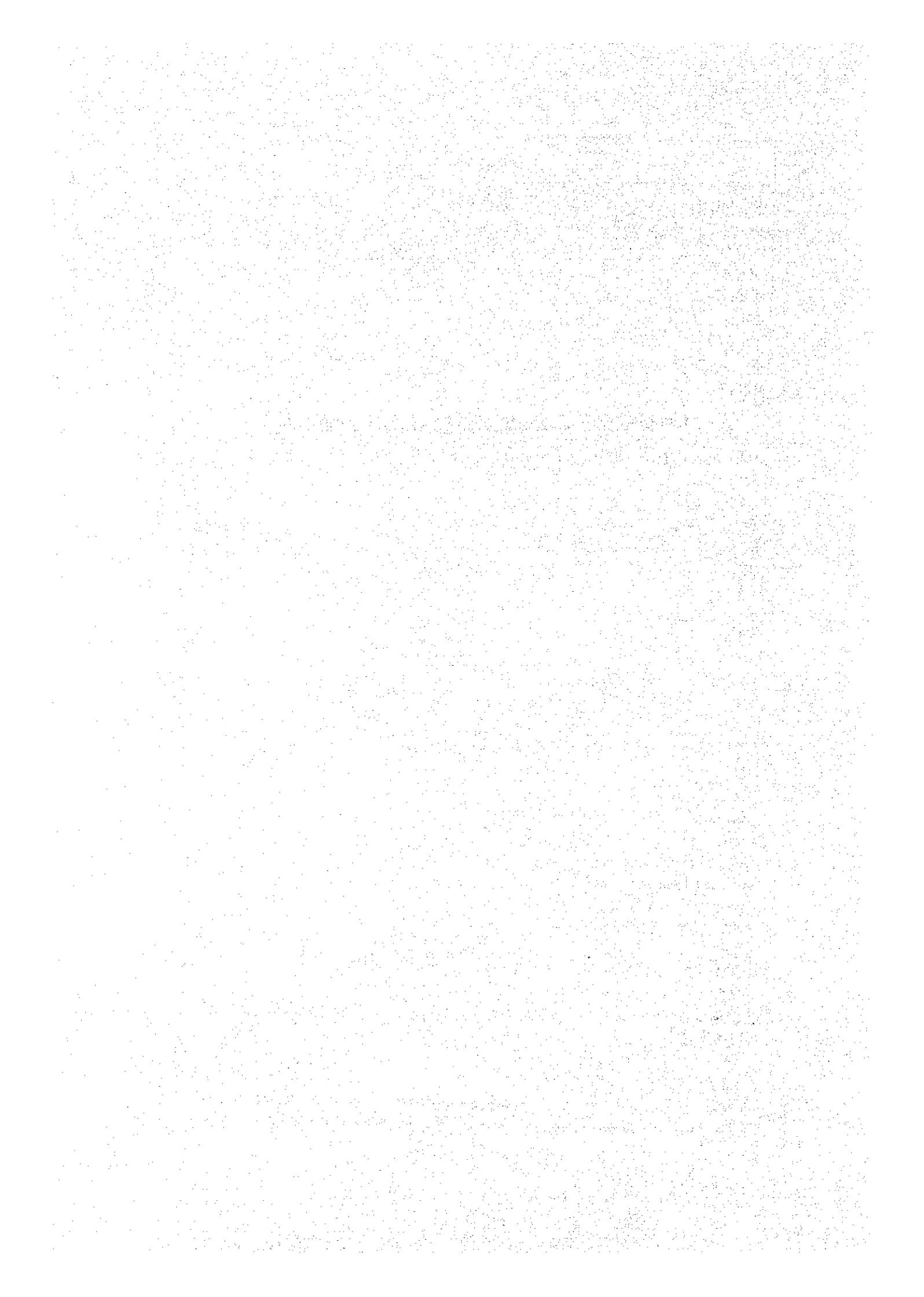


② プロジェクト活動実績に係るデータ(1980-1990)



**AFTER CARE PROGRAM**

**PROJECT PRODUCTION OF BIOLOGICALS**

**SUB-PROJECTS MEASLES AND**

**POLIOMYELITIS**

**I. DATA OF THE PROJECT ACTIVITIES  
FROM 1980 TO 1990**



## AFTER CARE PROGRAM

### 1. HISTORICAL DATA

#### Measles Vaccine

In August 13, 1980, after some preliminary meetings, was signed the Record of Discussion on Technical Cooperation for Biological Production, to endure for three years and to be progressed at the Institute of Technology on Immunobiologicals/Bio-Manguinhos/FIOCRUZ, with the technical support from Japanese Research Institutions.

The signers were the Head of the Implementation Team, organized by the Japanese International Cooperation Agency/JICA, from the Japanese Government and the President of the Oswaldo Cruz Foundation/FIOCRUZ and this document deals with the technology transfer for the production and quality control of Measles and Poliomyelitis Vaccines.

By means of an agreement between the parts, the following main measures were adopted, aiming the Project implementation:

#### A. By the Oswaldo Cruz Foundation/FIOCRUZ/Ministry of Health:

- A.1 - To prepare laboratories, in accordance with the required technical standards for the proposed Project;
- A.2 - To provide technical staff and administrative members;
- A.3 - To supply of equipments and other materials, within the necessities of the Project;
- A.4 - Installation of laboratories, basic infrastructure and others facilities (electrical power, water, gas, steam, air under pressure, etc.);
- A.5 - Logistic support and participation in the field trial for evaluation of the vaccine prepared with BIKEN CAM-70 strain.

#### B. By the Japanese Government:

- B.1 - Provision of Japanese experts;
- B.2 - Technical participation on the laboratories design and assembly;

- B.3 - Training of Brazilian technical staff members in Japan;
- B.4 - Supplying of equipments and others items not produced in Brazil;
- B.5 - Provision of the BIKEN CAM-70 strain, to prepare the Measles vaccine in Brazil;
- B.6 - Participation in the field trial evaluation of the Measles vaccine prepared with BIKEN CAM-70 strain;
- B.7 - Advisering and training of Brazilian staff by Japanese experts.

The follow up and advising of the activities related to the Project were in charge of a coordination committee with assignement for to elaborate the annual working plan, to keep the authorities related to the Project informed about its proceedings and development and finally, to evaluate the general evolution of the Project.

The first evaluation occurred during a meeting at the Ministry of Health - Brasilia, in April 26 and 27, 1982 and it was referred to period between August, 1980 and April, 1982.

The participants concluded, in the consensus, that the Project had a satisfactory development.

All the studies that led to the elaboration of the laboratories plans had the total participation of the Japanese experts involved on the Project, including the selection of the equipments and others materials essentials for its development.

Some items which were not produced in Brazil were supplied by the Japanese Government through JICA - The Brazilian goods were also supplied by FIOCRUZ.

Along the three years of the Project validity, 23 Japanese experts developed technical activities at Rio-Manguinhos/FIOCRUZ, at different areas, as personnel training in related laboratory technics; personnel training in preventive and corrective equipment maintenance; personnel training in equipment operation; freeze-drying of the Measles vaccine, general supervision of the production and quality control of the Measles and Polio vaccines.

Japanese experts, together with the Brazilian technical group, collaborated decisively on the Measles and Poliomyelitis production and laboratory plans, besides the Freeze-drying Center design and assembly. The training of the Brazilian staff responsible for operation and maintenance of the equipment was done in parallel to the first runnings of the machinery.

#### Supply of BIKEN CAM-70 Strain

The arrival of the BIKEN CAM-70 strain occurred when the methodology for virus suspension production were almost completely established at the "Pilot Laboratory". This made possible, a little later, the experimental production of 5.000 doses of Measles vaccine, one presentation. Some amount of this production was used for the field trial with the first Measles vaccine produced in Brazil.

340 children between 6 and 12 months old were vaccinated in the States of Pernambuco and Para, in the period of November 3 and December 17, 1982 and from the same children a venous blood sample was taken one month later.

The studies with the blood samples were performed at Evandro Chagas Institut/IEC, in Belem and the results showed high seroconversion rate, in comparison with the results obtained with the blood samples collected before vaccination and a low rate of adverse reactions.

The financial resources used in this Project reached the global value of US\$ 6,157,869.00. The Brazilian counterpart, including materials needed for the 1983 production Programme, were of the order of US\$ 4,865,138.00, representing around 79% of the global value used in the Project.

The financial resources applied by Japanese government, through JICA, represented 21% of the global value used in the Project.

The expenditures with travel and per diem of Japanese experts and Brazilian staff members trained in Japan were covered by Japanese Government and were not included in this global value.

The Project of Production of Biologicals had generated 148 direct employes and the maintenance of more than 500 indirect employes distributed within the different industries like glassware, rubber stoppers, suppliers of drugs, culture media, production of SPF eggs and others.

On the other hand, the amount of Measles vaccine produced in consequence of this Project provided the necessities of the National Program of Immunization/PNI. However, we believe that the most important and relevant aspect of the implementation of this brazilian/japanese project, has been the strenghtening of the immunobiologicals sector in our country.

The Measles Vaccine Laboratory, which had been planned for a production of ten millions doses of vaccine per year is producing more than twenty millions doses year, using even the same equipment and installations.

## Poliomyelitis Vaccine

As part of the basic agreement on the Technical Cooperation between Brazil and Japan Governments, the Poliomyelitis Project had established goals to be full filled during a four years period.

At first, technical support was applied to organize a pilot Laboratory for Poliomyelitis in Bio-Manguinhos, and set up the National Quality Control for the Trivalent Oral Poliomyelitis Vaccine (TOPV) imported from different sources, which had been used in the National Program of Immunization/PNI/Ministry of Health.

Personnel training of brazilian professionals in Japan and technical assistance by japanese experts in Brazil were the suitable tools to reach that target.

In 1983 the Laboratory of Poliomyelitis/Bio-Manguinhos was completely settled and the official responsibility for the National Control of TOPV was transferred to the INCQS. It was very important point, once the newer laboratory had turned its objectives to the Japanese TOPV Production Technology transference, which had done upon two basic points:

- The execution and control of the whole process to produce the final virus suspension, and
- Blending-filling Japanese Technology applied in TOPV production and its implication.

Three of our staff members went to Japan, where they received special training aiming technology and process control for the production of concentrated virus suspension, using monkey kidney cells culture, as substrate for viral replication.

Neurovirulence, as a fundamental activity for most of viral vaccines, was treated with special care, so the brazilian specialist in this field was submitted to a longer than usual training period.

The introduction of the Japanese Technology in Brazil was made applying the just acquired knowledge to produce kidney cells primary culture, using rabbits and Rhesus monkeys.

In a second step, we used this know-how to process kidneys of Brazilian monkeys (*Cebus apella*) sent us from the Amazon region by Evandro Chagas Institute/IEC, and assayed the replication of Poliovirus in this cell substrate.

The TOFV blending-filling activities begun in 1984, with the direct involvement of Japanese experts and Brazilian staff, inside an experimental program.

In July 13 to 22, 1983, the Japanese Evaluation Survey Team, organized by the Japan International Cooperation Agency/JICA visited the Federative Republic of Brazil and after a serie of discussions with the Brazilian Authorities, agreed to recommend to their respective governments to take the necessary measures for extending the duration of the Japanese Technical Cooperation for the Measles and Poliomyelitis Vaccines Projects.

## AFTER CARE PROGRAM

### 2. MEASLES AND POLIOMYELITIS EPIDEMIOLOGY

#### 2.1 - Measles Epidemiology

The incidence rates of Measles in the last ten years in Brazil has varied from 40 to 100 cases per 100.000 in habitants.

The vaccination coverage in children from 9 month to 4 years old in the last ten years presents in average of 50%.

As the number of cases notified represents only about 10% of the estimated number of Measles cases, the impact of the vaccination can not be easily interpreted.

However, taking in account the data from São Paulo State one can observe the benefits caused by the vaccination. Until 1986 São Paulo State experimented ciclycal outbreaks of Measles.

In 1987 the vaccination program was better implemented being able to reach a coverage rate children from 9 month to 14 years old of 92%. Also that program introduced a second dose at the 18 month after the birth. From 6.000 cases notified in 1986 the notification dropped to only 393 cases.

Also there was a dramatical difference among the numbers of has hospitalized cases of measles from 2.829 in 1986 to only 47 in 1990.

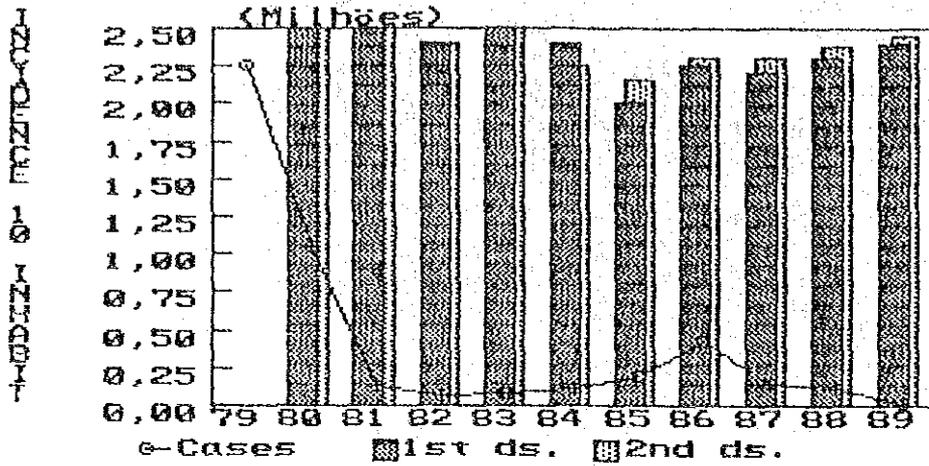
#### 2.2 - Poliomyelitis Epidemiology

In the last decade the average of vaccination coverage was over 90%. As the result there was a significant reduction in the incidence rate of paralytic cases of Polio.

In 1979 the incidence rate was 2,3/100.000 from 1980 to 1988 this rate has been under 0,25/100.000. In the South Region of Brazil none isolation of "wild" virus has been done since 1986.

In the last 5 years only one isolation was identified as "wild" in north and northeast part of the country, showing that the vaccine strain has replaced the "wild" type in the nature.

POLIO INCIDENCE AND VACINATION RATE



## AFTER CARE PROGRAM

### 3. PRODUCTION AND QUALITY CONTROL DATA OF THE SUBPROJECT MEASLES

Since 1983 Bio-Manguinhos has produced 822 batches of Measles vaccine which represents 111.176.634 doses in 1,5 (72%) and 20 (18%) doses presentation.

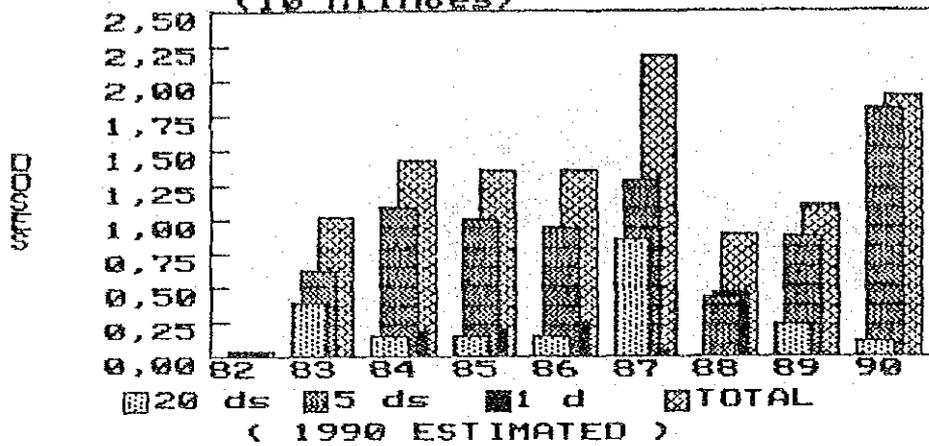
The production is carried out according to the program proposed by the Ministry of Health. As one can observe most of the batches produced were in 5 doses presentation.

Only in 1988 the five doses presentation was produced in smaller quantities than 1 dose presentation, which corresponds the year with the highest number of batches produced.

Among this produced batches only 4% were rejected in the Quality Control. The sterility was the most important factor for rejection (47%) followed by process breakdown (30%) and vaccine potency (23%).

MEASLES PRODUCTION - 1982 TO 1990

(10 Milhões)



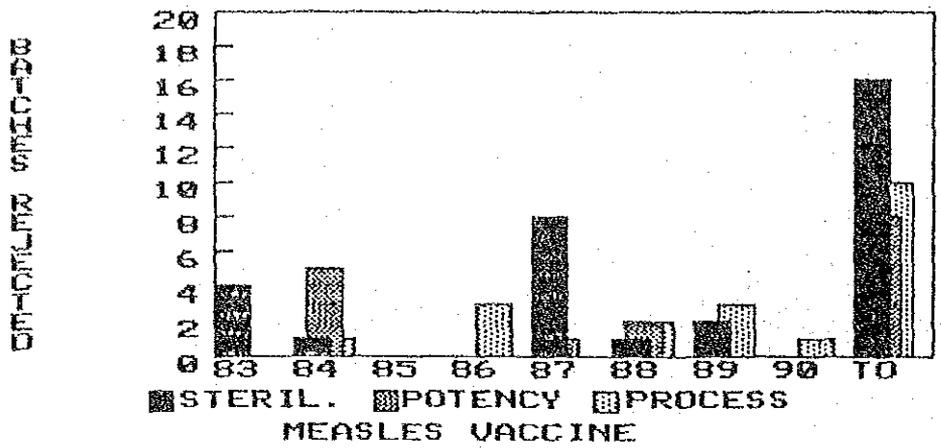
## AFTER CARE PROGRAM

### QUALITY CONTROL DATA ON MEASLES VACCINE ( 1983 - 90 )

YEAR	PRODUCED BATCHES	REJECTED BATCHES	%	CAUSE
1983	74	04	5,40	STERILITY
1984	134	07	5,22	01 STERILITY / 05 POTENCY / 01 PROCESS
1985	101	-	-	-
1986	128	03	2,34	PROCESS
1987	111	09	8,11	08 STERILITY / 01 POTENCY
1988	147	05	3,40	01 STERILITY / 02 POTENCY / 02 PROCESS
1989	64	05	7,81	02 STERILITY / 03 PROCESS
1990 (*)	63	01	1,59	PROCESS
TOTAL	022	34	4,14	

(\*) ESTIMATED

CAUSES OF REJECTION IN QUALITY CONTROL



## AFTER CARE PROGRAM

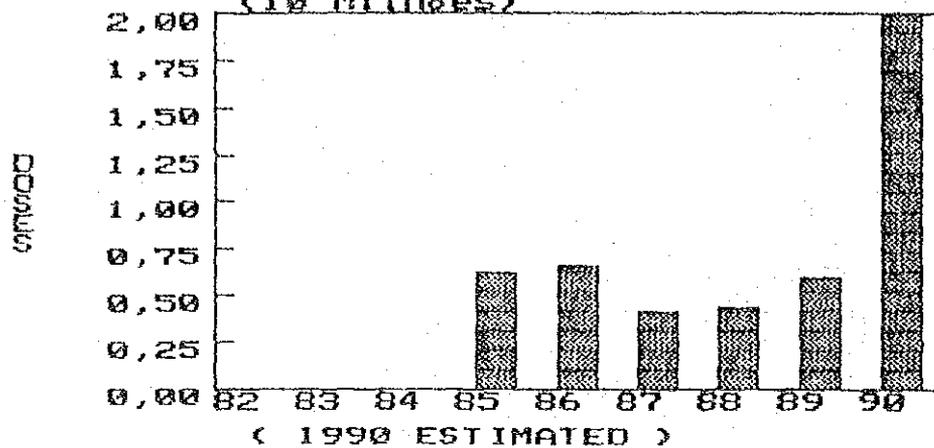
### 4. PRODUCTION AND QUALITY CONTROL DATA OF THE SUBPROJECT POLIOMYELITIS

Forty nine lots of polio vaccine were produced since 1984 from imported concentrated bulks. This number of batches corresponds to 26 million doses.

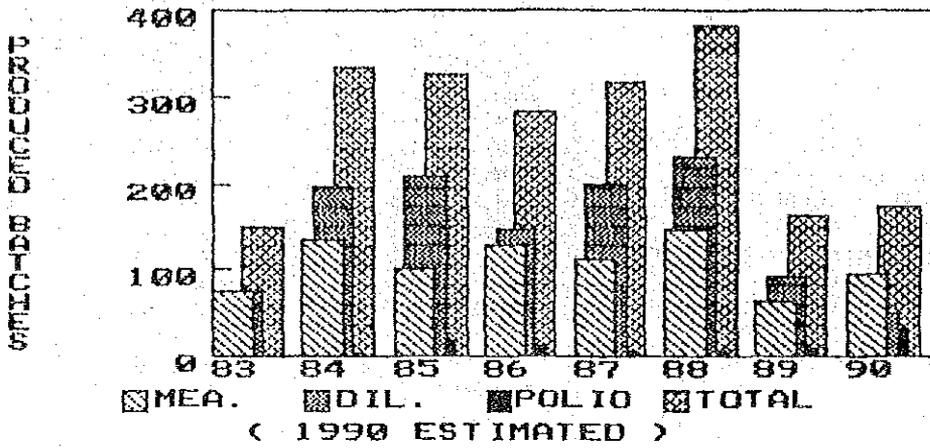
In one occasion a monovalent type III vaccine was formulated and two lots of trivalent with type III in higher concentration were prepared according to request from Ministry of Health.

All lots were approved by the Quality Control.

POLIO PRODUCTION (20 DS) 1982 TO 1990  
(10 Millions)



MEASLES+POLIO+DIL. PRODUCTION-BATCHES



## AFTER CARE PROGRAM

### 5.1.A - STAFF INVOLVED TO THE SUBPROJECT MEASLES (PRODUCTION)

NUMBER	NAME	POST	WEEKLY WORKING LOAD HOURS	DATE OF ADMISSION
001	DALTON FRANÇA BROGLIATO	TECHNOLOGIST IV	40 HOURS	11/08/81
002	MARIZA CRISTINA LIMA DE ARAUJO	TECHNOLOGIST III	40 HOURS	21/08/81
003	MARCOS DA SILVA FREIRE	TECHNOLOGIST III	40 HOURS	03/08/84
004	AMARI ALVES PEREIRA	TECHNOLOGIST II	40 HOURS	12/08/81
005	MARCIO VALERIO M. PINTO VALENTE	TECHNOLOGIST II	40 HOURS	07/04/87
006	CELI MOREIRA	TECHNICIAN III	40 HOURS	25/09/81
007	MARIA EUNICE SANTOS ANTUNES	TECHNICIAN III	40 HOURS	16/09/82
008	RAFAEL GUIMARAES DA SILVA	TECHNICIAN III	40 HOURS	21/07/87
009	TEREZINHA ELISA S. DE BRITO	TECHNICIAN III	40 HOURS	03/03/80
010	MILSON ALVES DE PAULA	TECHNICIAN III	40 HOURS	01/11/84
011	MARIA EMILIA DOS REIS P. COELHO	TECHNICIAN III	40 HOURS	07/04/87
012	VALDENAR ALVES DE PAULA	TECHNICIAN III	40 HOURS	12/08/81
013	HELENA VIEIRA DE ANDRADE	TECHNICIAN III	40 HOURS	14/12/81
014	VALERIA BASTOS DE MELO	TECHNICIAN III	40 HOURS	20/09/82
015	JORGE AUGUSTO PAULO DA SILVA	TECHNICIAN II	40 HOURS	03/11/83
016	MARCOS ANTONIO GOMES	TECHNICIAN II	40 HOURS	06/04/87
017	VANDERLEI VIEIRA DA MOTA	TECHNICIAN II	40 HOURS	17/10/77
018	VERA LUCIA ANTUNES BEUG	TECHNICIAN II	40 HOURS	06/05/87
019	LENI BARBOSA DE PAULA	TECHNICIAN I	40 HOURS	02/12/73
020	LILIA ALVES DE PAULA	TECHNICIAN I	40 HOURS	06/04/87
021	MARIA JOSE MOREIRA DA COSTA	TECHNICIAN I	40 HOURS	03/12/73

## AFTER CARE PROGRAM

### 5.1.B - STAFF INVOLVED TO THE SUBPROJECT POLIOMYELITIS (PRODUCTION / QUALITY CONTROL)

NUMBER	NAME	POST	WEEKLY WORKING LOAD HOURS	DATE OF ADMISSION
001	MARIA DA LUZ F. LEAL	TECHNOLOGIST IV	40 HOURS	11/06/81
002	LUIZ ANTONIO DA CUNHA	TECHNOLOGIST III	40 HOURS	15/02/82
003	CARLOS HUBERTO MARQUES	TECHNOLOGIST II	40 HOURS	25/03/83
004	MARI HELENA O. DE CARVALHO	TECHNOLOGIST II	40 HOURS	20/11/81
005	MARCIA MASSIMO PEREIRA	TECHNICIAN III	40 HOURS	20/09/82
006	SOLANGE APARECIDA F. SOARES	TECHNICIAN III	40 HOURS	31/05/84
007	MARCIA MARIA ARAUJO PIMENTA	TECHNICIAN III	40 HOURS	19/03/82
008	MARIA DA PENHA T. P. XAVIER	TECHNICIAN III	40 HOURS	07/07/89

## AFTER CARE PROGRAM

### 5.1.C - STAFF INVOLVED TO THE SUBPROJECTS MEASLES AND POLIOMYELITIS QUALITY CONTROL

NUMBER	NAME	POST	WEEKLY WORKING LOAD HOURS	DATE OF ADMISSION
<u>PHYSICAL CHEMICAL CONTROL</u>				
001	MARCO ANTONIO F. DA COSTA	TECHNOLOGIST IV	20 HOURS	10/05/76
002	PAULO ROBERTO DE CARVALHO	TECHNOLOGIST III	20 HOURS	01/06/76
003	ANA LUCIA MARTINS DE LUNA	TECHNOLOGIST II	20 HOURS	06/03/87
004	ELIEZE CABRAL RAPOSO	TECHNOLOGIST II	20 HOURS	10/05/76
005	LAFAIETE PRIMO SOARES	TECHNOLOGIST III	20 HOURS	09/09/81
006	MARIA DOLORES M. MENDONÇA	TECHNOLOGIST II	20 HOURS	17/03/80
007	MARTA VICTOR DE UZEDA BARBOSA	TECHNOLOGIST I	20 HOURS	06/04/87
008	WILSON ANGELO DA SILVA	TECHNICIAN II	20 HOURS	02/10/66
<u>BIOLOGICAL CONTROL</u>				
001	CEZAR AUGUSTO DE ALMEIDA REZENDE	TECHNOLOGIST III	20 HOURS	10/08/81
002	AIRTON JARBAS PEREIRA	TECHNICIAN II	20 HOURS	05/03/87
003	FLAVIO COELHO BARBOSA	TECHNICIAN III	20 HOURS	10/05/76
004	GERALDO DE OLIVEIRA DIAS	TECHNOLOGIST IV	20 HOURS	01/01/79
005	PEDRO JORGE DE OLIVEIRA CORREA	TECHNOLOGIST II	20 HOURS	03/07/78
006	ARY BARROSO	TECHNICIAN III	20 HOURS	16/07/62
007	CLAUDIO LADISLAW DE ARAUJO	TECHNICIAN III	20 HOURS	14/12/81
008	CLOVIS PASCARRELLI SOUZA	TECHNOLOGIST III	20 HOURS	25/03/83
009	JAIRO HERODIO CAETANO	TECHNICIAN II	20 HOURS	19/07/85
010	JORGE DE BRITO FERREIRA	AUX. TECHNICIAN	20 HOURS	07/07/89
011	RENATO SERGIO MARCHEVSKY	TECHNOLOGIST IV	20 HOURS	08/03/82
012	JOSE MARIANO DA SILVA	TECHNICIAN III	20 HOURS	04/01/84
<u>MICROBIOLOGICAL CONTROL</u>				
001	MARIA LUCILIA PESSOA LOUREIRO	TECHNOLOGIST IV	40 HOURS	09/10/79
002	DARCY AKEMI HOKAMA	TECHNOLOGIST III	40 HOURS	11/08/81
003	LUIZ OCTAVIO BARROSO PEREIRA	TECHNOLOGIST III	40 HOURS	21/01/82
004	SUELY SOARES DUARTE	TECHNOLOGIST III	40 HOURS	09/10/79
005	JORGE MOREIRA BAPTISTA	TECHNOLOGIST II	40 HOURS	03/07/78
006	EVANILCE FERREIRA	TECHNOLOGIST II	40 HOURS	11/08/81
007	MARIZA SEGUEIRA DA SILVA	TECHNOLOGIST II	40 HOURS	04/05/82
008	RICARDO DE CARVALHO	TECHNOLOGIST II	40 HOURS	03/07/78
009	WILMA DA CONCEIÇÃO D. MOUTINHO	TECHNOLOGIST II	40 HOURS	25/03/83
010	ELIANE COUTINHO DO N. BRITTO	TECHNOLOGIST I	40 HOURS	21/07/87
011	JOSE ALVES HERÓDIO	TECHNOLOGIST I	40 HOURS	02/01/63
012	LUIZ CLAUDIO MOTA DE OLIVEIRA	TECHNICIAN III	40 HOURS	14/12/81
013	GILCLEIA OLIVEIRA DE FARIA	TECHNICIAN II	40 HOURS	30/10/86
014	HELY TEIXEIRA DE CASTRO	AUX. TECH. W.C. PROD.	40 HOURS	15/09/82

**AFTER CARE PROGRAM**

**5.1.D - STAFF INVOLVED TO THE SUBPROJECTS MEASLES AND POLIOMYELITIS**

(FILLING, FREEZE-DRYING AND DILUENT PRODUCTION)

NUMBER	NAME	POST	WEEKLY WORKING LOAD HOURS	DATE OF ADMISSION
001	LUIZ ALBERTO PEREIRA	TECHNOLOGIST IV	40 HOURS	14/02/81
002	MARIA BEATRIZ S. C. DE OLIVEIRA	TECHNOLOGIST III	40 HOURS	24/03/82
003	HAIR DIAS PAIM BAUMGRATZ	TECHNOLOGIST II	40 HOURS	24/03/82
004	ISABELLA MAHJUD MAJUF	TECHNOLOGIST I	40 HOURS	01/06/89
005	MARCO ALBERTO MEDEIROS	TECHNOLOGIST I	40 HOURS	25/09/84
006	SERGIO DIAS DE OLIVEIRA	TECHNOLOGIST I	40 HOURS	22/06/82
007	ELIZABETH C. DOS P. RODRIGUES	TECHNOLOGIST I	40 HOURS	04/10/82
008	FRANCISCO ANTONIO DA SILVA NETO	TECHNOLOGIST I	40 HOURS	20/04/66
009	ARY DO CARMO	TECHNICIAN III	40 HOURS	17/03/90
010	ROSANE CANDIDO BARBOSA	TECHNICIAN III	40 HOURS	24/01/83
011	BENEDITO COUTO DA SILVA	TECHNICIAN III	40 HOURS	23/04/84
012	CARLOS ALBERTO PEREIRA	TECHNICIAN III	40 HOURS	21/11/79
013	JORGE LUIZ DOS SANTOS GONCALVES	TECHNICIAN III	40 HOURS	16/03/82
014	PEREGRINO CARVALHO DE OLIVEIRA	TECHNICIAN III	40 HOURS	23/04/82
015	EDSON RIBEIRO GOMES	TECHNICIAN III	40 HOURS	03/01/68
016	MARCOS ANDRE SOARES	TECHNICIAN III	40 HOURS	09/04/87
007	HILCEIA ROSA DE BRITO	TECHNICIAN III	40 HOURS	02/12/73
018	LUIZ CLAUDIO TEIXEIRA	TECHNICIAN II	40 HOURS	01/04/87
019	REGINA VALENTIM DE SOUZA	TECHNICIAN II	40 HOURS	21/04/87
020	VALDEICE FRANCISCO	TECHNICIAN II	40 HOURS	21/04/87
021	FERNANDO SOUZA CRUZ	TECHNICIAN II	40 HOURS	19/12/84
022	MARCELO DO ESPIRITO SANTO	TECHNICIAN II	40 HOURS	13/04/87
023	ROBERTO FONTELLA BARROS	TECHNICIAN II	40 HOURS	01/11/84
024	JOAO ROGEL DO NASCIMENTO	TECHNICIAN II	40 HOURS	02/04/87
025	PEDRO MARQUES DE ALMEIDA	TECHNICIAN II	40 HOURS	17/01/77
026	VANILDO DE OLIVEIRA CORREA	TECHNICIAN II	40 HOURS	01/04/87
027	MARIA IRENE FIRMIANO DOS SANTOS	TECHNICIAN II	40 HOURS	01/04/63
028	ODETE NUNES DA SILVA	TECHNICIAN II	40 HOURS	03/12/73

## AFTER CARE PROGRAM

### 5.1.E - STAFF GIVING SUPPORT TO THE ACTIVITIES OF THE SUBPROJECTS MEASLES AND POLIOMYELITIS

NUMBER	NAME	POST	WEEKLY WORKING LOAD HOURS	DATE OF ADMISSION
<u>DIRECTION</u>				
001	OTAVIO FRANCISCO P. DE OLIVA	TECNOLOGIST U	10 HOURS	05/05/80
002	JOAO LUIZ S.T.D.B. QUENTAL	TECNOLOGIST IV	10 HOURS	21/07/87
003	LEILA DA SILVA DEZERRA	ASS. ADMINISTRATION I	10 HOURS	07/07/89
004	CICERO BATISTA	AUX. ADMINISTRATION	10 HOURS	01/12/65
<u>ADMINISTRATION MANAGER</u>				
001	ARTUR ROBERTO COITO	MANAGER IV	20 HOURS	09/06/76
002	GILCELIA DA SILVA MARQUES	MANAGER III	20 HOURS	03/12/86
003	ANDREA DE OLIVA GOOD LIMA	ANAL. ESPEC. III	20 HOURS	01/04/82
004	TEOTONIO GOMES DE LIMA	ANAL. SISTEMA II	20 HOURS	11/12/86
005	WAGNER MICHEL	MANAGER II	20 HOURS	03/12/86
006	CECILIA IRENE N. CHIRCHILLA	ANAL. ESPEC. II	20 HOURS	01/06/89
007	LUCIANA BALAN	ASS. ADMINISTRATION I	20 HOURS	07/07/89
008	LUIZ ANTONIO DE CAMPOS ARAUJO	ANAL. ESPEC. II	20 HOURS	05/07/89
009	LUIZ HENRIQUE POLVERARI FARIAS	PROG. COMPUTADOR II	20 HOURS	07/07/89
010	MARCEL MARTINS MELLO	PROG. COMPUTADOR II	20 HOURS	09/01/84
011	ELIANA TEIXEIRA PEREIRA	ASS. ADMINISTRATION I	20 HOURS	21/07/87
012	LIANE LIMA DO NASCIMENTO	ASS. ADMINISTRATION I	20 HOURS	03/03/86
013	MARIA DE FATIMA ERNANDEZ	ASS. ADMINISTRATION I	20 HOURS	01/07/82
014	MARIA DE LOURDES F.M. MACHADO	ANALISTA ESPEC. II	20 HOURS	01/06/89
015	FATIMA VELLOSO DINIZ DA SILVA	ASS. ADMINISTRATION	20 HOURS	10/02/78
016	MARCIA DOS SANTOS DA SILVA	ASS. ADMINISTRATION	20 HOURS	07/07/89
<u>TECHNICAL MAINTENANCE</u>				
001	CARLOS ALBERTO M. HOQUEIRA	ENGENHEIRO IV	30 HOURS	16/07/76
002	HENRIQUE JOSE NICOLAU	ENGENHEIRO III	30 HOURS	15/03/82
003	ERNESTO MONTEIRO BRITO NETO	MANAGER III	30 HOURS	01/01/77
004	EDGAR FERREIRA FILHO	TEC. MAN. SERV. OP. III	30 HOURS	08/12/82
005	CICERO ALVES DE ALMEIDA	TEC. MAN. SERV. OP. III	30 HOURS	02/02/76
006	JORVET JAVARIJO	TEC. MAN. SERV. OP. III	30 HOURS	21/07/87
007	HELSON NIHO DA ROCHA	TEC. MAN. SERV. OP. II	30 HOURS	21/07/87
008	ADILSON ALVARES RODRIGUES	TEC. MAN. SERV. OP. III	30 HOURS	05/11/84
009	DAVID DE SOUZA SILVA	TEC. MAN. SERV. OP. III	30 HOURS	20/10/86
010	ETERELDE LOPES GOMES	TEC. MAN. SERV. OP. III	30 HOURS	01/04/87
011	IURI CALDEIRA MACHADO	MEST. MAN. SERV. OPER.	30 HOURS	06/06/73
012	JOSE CLAUDIO DE SOUZA	ASSIST. MANAGER	30 HOURS	01/12/77
013	REGINALDO ARAUJO LIMA	TEC. MAN. SERV. OP. III	30 HOURS	24/11/82
014	REINATO DAS DORES CARVALHO	TEC. MAN. SERV. OP. III	30 HOURS	01/04/87

AFTER CARE PROGRAM

S.1.F - STAFF GIVING SUPPORT TO THE ACTIVITIES OF THE SUBPROJECTS MEASLES AND POLIOMYELITIS

NUMBER	NAME	POST	WEEKLY WORKING LOAD HOURS	DATE OF ADMISSION
<u>STORAGE AND DISPATCH OF</u> <u>BIOLOGICAL PRODUCTS</u>				
001	DEIUSE DE SOUZA MILAGRES	ASS. OF ADMINISTRATION II	30 HOURS	05/11/86
002	ADALBERTO FRANCISCO DE CARVALHO	ASS. OF ADMINISTRATION I	30 HOURS	07/07/89
003	AIDIL DE OLIVEIRA MORAES	TECHNICIAN II	30 HOURS	03/05/85
004	ANA CRISTINA SANTOS DE SOUZA	TECHNICIAN I	30 HOURS	07/07/89
005	CARLOS SENEZ PIREIRO	TECHNICIAN III	30 HOURS	03/07/78
006	CLARA SOARES VIGA	TECHNICIAN II	30 HOURS	07/11/86
007	DORALICE PEREIRA DE LIMA	TECHNICIAN II	30 HOURS	01/02/83
008	ELAINE DO CARMO PASCHOA	TECHNICIAN II	30 HOURS	05/12/86
009	IONE SOARES	TECHNICIAN II	30 HOURS	07/11/86
010	JOAO LUIZ FERREDES QUEIROZ	TECHNICIAN I	30 HOURS	07/07/89
011	JURACY BORGES LOPES	TECHNICIAN II	30 HOURS	04/10/66
012	MARIA DA PEIRA MORAES DE OLIVEIRA	TECHNICIAN II	30 HOURS	22/07/85
013	OCTAVIO LOPES	TECHNICIAN I	30 HOURS	01/03/71
014	ROBERTO LUIZ VIGGIANI	TECHNICIAN II	30 HOURS	12/09/84
015	SANDRA PASCHOA	TECHNICIAN II	30 HOURS	09/11/79
016	SOLANGE MARTINS PATROCINIO	TECHNICIAN II	30 HOURS	16/01/85
017	YARA DE FATIMA DE O. HORNEN	TECHNICIAN I	30 HOURS	07/07/89
<u>SUPPLY SECTOR</u>				
001	CARLOS ALBERTO F. RIBEIRO	MANAGER III	10 HOURS	01/06/89
002	JAMIL FERREIRA TORQUATO	ASS. ADMINISTRATION II	10 HOURS	22/07/85
003	CRISTIANE DE MATOS ABRANTES	ASS. ADMINISTRATION I	10 HOURS	07/07/86
004	ADOLFO CORREA SOBRINHO	AUX. ADMINISTRATION	10 HOURS	22/07/85
005	JOEL PEREIRA	AUX. ADMINISTRATION	10 HOURS	01/03/71
006	RONALDO TEIXEIRA BATISTA	ASS. ADMINISTRATION I	10 HOURS	07/07/86

## AFTER CARE PROGRAM

### 5.2 - BRAZILIAN STAFF TRAINED IN JAPAN

NAME	PERIOD	AREA
JOAO BAPTISTA RISI JUNIOR	01/04/80 to 15/04/80	Measles and Poliomyelitis
AKIRA HOMMA	31/03/80 to 12/04/80	Measles and Poliomyelitis
HERMANN G. SCHATZMAYR	19/10/80 to 25/11/80	Poliomyelitis
GUILARDO MARTINS ALVES	13/11/80 to 21/11/80	Measles and Poliomyelitis
JOSE RODRIGUES COURA	13/11/80 to 29/11/80	Measles and Poliomyelitis
INA FERRAZ DE CAMARGO	18/09/80 to 12/05/81	Measles-Production and Quality Control
MARIA LUCILIA P. LOUREIRO	22/01/81 to 14/05/81	Measles - Quality Control
DARCY AKEMI HOKAMA	22/01/81 to 24/07/81 23/09/89 to 18/12/89	Measles - Quality Control Measles-Quality Control Recicle
MARIA DA LUZ F. LEAL	18/04/81 to 13/07/81 21/09/84 to 23/12/84	Poliomyelitis-Quality Control Poliomyelitis- Production and Quality Control
JOSE ROBERTO S. CHAVES	05/12/82 to 04/06/82	Measles-Production and Quality Control
DALTON FRANCA BROGLIATO	05/02/82 to 04/06/82	Measles-Production and Quality Control
JORGE A. ZEPEDA BERNUDEZ	19/08/82 to 10/09/82	Measles and Poliomyelitis
LUIZ ANTONIO DA CUNHA	22/09/82 to 10/01/83	Poliomyelitis - Production
RENATO SERGIO MARCHEVSKY	08/02/83 to 26/11/83	Poliomyelitis- Quality Control; Neurovirulence
LUIZ ALBERTO PEREIRA	01/09/83 to 17/12/83	Measles - Production; Filling and Freeze-Drying
ANTONIO VIEIRA	10/11/83 to 09/12/83	Poliomyelitis - Production
FERNANDO JOSE C. LOPES	21/02/84 to 24/06/84	Poliomyelitis - Production and Quality Control of Laboratory Animals
JOSE FONSECA DA CUNHA	31/08/84 to 01/10/84	Measles and Poliomyelitis
RITA DE CASSIA E. BENEDETTI	01/09/88 to 19/12/88	Measles - Quality Control
JOAO LUIZ DE S.T.D.B. QUEENTAL	14/11/88 to 18/12/88	Quality Assurance
TOTAL: 20		

## AFTER CARE PROGRAM

### 5.3 - JAPANESE EXPERTS PARTICIPATED IN THE DEVELOPMENT OF THE PROJECT IN BRAZIL

NAME	PERIOD	AREA
SHIGERARU UEDA	06/09/80 to 21/10/80 27/11/82 to 22/12/82	Measles
TAKEO KONOBE	06/09/80 to 23/12/80 25/04/82 to 27/04/82	Measles
AKIHISA TAKAMIZANA	11/10/80 to 23/12/80	Measles
ISAO YOSHIOKA	10/09/80 to 18/10/80	Polioyelitis
AKIRA SISHIDO	10/09/80 to 17/10/80	Polioyelitis
YUTAKA DOI	21/07/81 to 20/09/81 11/09/82 to 06/12/82 28/04/84 to 18/08/84	Polioyelitis
RYUJI TSUNODA	15/12/81 to 17/01/82	Measles
YOSHIKOTO IWATA	01/12/81 to 17/01/82	Measles
HANORU SUZUKI	05/12/81 to 17/01/82	Measles
TOHOYUKI MIYAKE	01/12/81 to 13/03/82	Measles
TERUMASA OTSUKA	23/07/81 to 18/08/84	Measles
NISHASI OKADA	15/06/82 to 15/11/82 04/06/83 to 31/08/83 21/04/84 to 18/08/84	Measles
OSAMU TAHISHITA	15/06/83 to 15/11/83	Measles
NICHIAKI TAKAHASHI	26/10/80 to 15/11/82	Measles
HIDEO GODA	27/11/82 to 22/01/83	Measles
YOSHIHISA KOIZUMI	15/06/82 to 24/07/82	Measles
HIDEYUKI GANOTO	09/04/83 to 11/06/83	Measles
KIICHI ITOTANI	09/04/83 to 11/06/83	Measles
HIROSHI YARINIZU	24/09/83 to 21/12/83	Polioyelitis
KUHIKI KOYAMA	15/10/83 to 11/01/84	Measles
KAZUO SAITO	21/04/84 to 25/07/84	Polioyelitis
TOYAKAZU ISHIKAWA	28/04/84 to 18/08/84	Measles
SHINOBU ABE	12/05/84 to 18/08/84	Polioyelitis
TOTAL	23	

AFTER CARE PROGRAM

6 - LABORATORY FACILITIES

INVOLVED AREA	HR. OF EMPLOYEES	TOTAL AREA	ESTIMATED COST (EM US\$)	USED % FOR MEASLES AND POLIOMYELITIS VACCINE
MEASLES VIRUS SUSPENSION AND CULTURE MEDIA LABORATORY	21	929 M <sup>2</sup>	1,207,700.00	100
POLIOMYELITIS DILUTION, BLENDING AND FILLING LABORATORY	08	585 M <sup>2</sup>	760,600.00	100
FINAL PROCESSING - LABELING/PACKING LABORATORY	17	566 M <sup>2</sup>	623,150.00	85
MICROBIOLOGICAL CONTROL LABORATORY	14	340 M <sup>2</sup>	374,000.00	60
FILLING AND FREEZE - DRYING LABORATORY	28	1,110 M <sup>2</sup>	1,443,000.00	80
PHYSICAL - CHEMICAL CONTROL LABORATORY	08	115 M <sup>2</sup>	149,500.00	20
ANIMAL EXPERIMENTATION LABORATORY	12	680 M <sup>2</sup>	748,000.00	40
MAINTENANCE SERVICE HOUSE	14	200 M <sup>2</sup>	180,000.00	60
STOREKEEP HOUSE	06	1,680 M <sup>2</sup>	1,848,000.00	45
TOTAL	174	--	7,333,950.00	--

## AFTER CARE PROGRAM

### 7.1 - LIST OF MATERIALS RECEIVED THROUGH JICA FOR MEASLES SUBPROJECT

ITEM	SPECIFICATION	QUANT.
01	PRESSURE VESSEL (DV-40) 40 L	03 us.
02	PRESSURE VESSEL (HILLIPORE) 20 L	02 "
03	PLASTIC HOUSING (TOYO)	06 "
04	FILTER CARTRIDGE (PALL)	82 "
05	FILTER CARTRIDGE (YUASA)	120 "
06	FILTER DISK	312 "
07	NISHIMAKI DISPENSER (200 ML)	50 "
08	NISHIMAKI DISPENSER (100 ML)	50 "
09	TAKOBEN VALVE	300 "
10	LUNCH BOX FOR RUBBER STOPPER	150 "
11	ROUX BOTTLE (1000 ML)	2700 "
12	FREEZING BOTTLE (600 ML)	800 "
13	DIGESTION BOTTLE (500 ML)	100 "
14	GLASS BOTTLE (1000 ML)	25 "
15	GLASS BOTTLE (500 ML)	30 "
16	GLASS BOTTLE (100 ML)	500 "
17	GLASS BOTTLE (50 ML)	1200 "
18	GLASS BOTTLE (20 ML)	1200 "
19	GLASS BOTTLE (10 ML)	1200 "
20	TISSUE CULTURE BOTTLE 2 OZ	700 "
21	TISSUE CULTURE BOTTLE 4 OZ	800 "
22	TISSUE CULTURE BOTTLE (SQUARE)	300 "
23	SCREW VIAL (2 ML)	1200 "
24	GLASS BEAKER	50 "
25	GLASS FUNNEL	50 "
26	FLASK	30 "
27	LEIGHTON TUBE	200 "
28	KOHAGOME PIPETTE	800 "
29	COTTON FILTER	200 "
30	STAINLESS BOTTLE (5 L)	550 "

## AFTER CARE PROGRAM

### 7.1 - LIST OF MATERIALS RECEIVED THROUGH JICA FOR HEASLES SUBPROJECT

ITEM	ESPECIFICATION	QUANT.
31	STAINLESS BOTTLE (500 ML)	500 us.
32	STAINLESS CAP	1000 "
33	RUBBER STOPPER N 11	5100 "
34	RUBBER STOPPER N 15	750 "
35	RUBBER STOPPER N 25	
36	RUBBER STOPPER N 30	725 "
37	RUBBER STOPPER FOR 1 DOSE VIAL	100.000"
38	AMPOULE (1 ML)	1100 us.
39	NYLON MESH	40 N
40	MISO KOSHI	30 us.
41	SILICONE TUBE 8 X 18 MM	10 N
42	SILICONE TUBE 15 X 25 MM	10 N
43	RUBBER TUBE 4,5 X 10 MM	500 N
44	RUBBER TUBE 8 X 14 MM	500 N
45	RUBBER TUBE 19 X 40 MM	50 N
46	HYPODERMIC SYRINGE (0,25 ML)	50 us.
47	NEEDLE FOR SYRINGE	40 DOZ
48	DROPPER 0,025 ML, 0,05 ML	100 us.
49	MICROPIPETTE (P-200) WITH TIPS	02 "
50	SILICONE STOPPER FOR STERILITY TEST (I-19)	1300 "
51	SLIDE GLASS	1000 "
52	COVER GLASS	2000 "
53	FREEZING CONTAINER (FC-1)	50 "
54	PLASTIC DISH Ø 35 MM	1000 "
55	PLASTIC DISH Ø 60 MM	5000 "
56	PLASTIC DISH Ø 100 MM	4500 "
57	MICROPLATE FLAT BOTTON (96 WELLS)	2000 "
58	SEALING TAPE FOR MICROPLATE	3000 "
59	MICROPLATE U BOTTON 96 WELLS	2000 "
60	MICROPLATE V BOTTON 96 WELLS	1000 "
61	MICROPLATE 24 WELLS	1000 "
62	MICROPLATE 6 WELLS	1000 "
63	T. G. C. MEDIUM (300 G)	13 PKG
64	G. P. MEDIUM (300 G)	17 PKG

## AFTER CARE PROGRAM

### 2.1 - LIST OF MATERIALS RECEIVED THROUGH JICA FOR MEASLES SUBPROJECT

ITEM	ESPECIFICATION	QUANT.
65	G. P. AGAR (300 G)	22 PKG
66	PPLO BROTH (1 LB)	10 "
67	YEAST EXTRACT (1 LB)	03 "
68	MEM (POWDER) (100 G)	351 "
69	GELYSATE PEPTONE ( 1 LB)	1333 "
70	L-ARGININE (500 G)	24 "
71	SACCHAROSE (500 G)	10 "
72	SODIUM BICARBONATE (500 G)	15 "
73	TRYPSIN (1:250) (1 LB)	02 "
74	L-GLUTAMINE (25 G)	104 "
75	KANAMYCIN (1 G)	2000 vials
76	ERYTHROMYCIN (300 G)	630 "
77	HIBITEN (500 G)	30 bot.
78	DETERGENT IMPACT (50 KG)	01 "
79	EMBILON (5 L)	06 "
80	POLY-L-LYSIN (100 MG)	01 PKG
81	GELATIN (1 LB)	10 "
82	BACTO AGAR (1 LB)	7 "
83	AGAR NOBLE (1 LB)	01 "
84	TRYPTOSE PHOSPHATE BROTH (1 LB)	02 "
85	POLYBREN (10 G)	02 "
86	CALF SERUM (500 ML)	40 bot.
87	HORSE SERUM (500 ML)	10 "
88	MEASLES SEED VIRUS (CAN-70)	8 L
89	ANTIGEN AND ANTI-SERUM FOR AVIAN DISEASES	
	- RSU (RAV - 1) (AMPOULE)	125 us.
	- RSU (RAV - 2)	125 "
	- RAV - 1	83 "
	- RAV - 2	62 "
	- REOV	105 "
	- ILTV	105 "
	- HDV	125 "
	- REV	125 "
	- IBDV	105 "

## AFTER CARE PROGRAM

### 7.1 - LIST OF MATERIALS RECEIVED THROUGH JICA FOR MEASLES SUBPROJECT

ITEM	ESPECIFICATION	QUANT.
	- IBU	105 US.
	- NIF	105 US.
	- APIF	105 US.
	- HDU	50 US.
	- HG	10 US.
	- SP	10 US.
	- HG	10 US.
	- MS	10 US.
	- BVD	04 US.
90	ANTI MEASLES SERUM	100 ML
91	ANTI GS SERUM	90 ML
92	PLATE WASHER	02 SET
93	STANDARD WHEIGHT ELECTRONIC BALANCE	01 US.
94	RUBBER STOPPER DIAMETER FOR 53 MM	200 US.
95	RUBBER STOPPER DIAMETER FOR 42 MM	50 US.
96	THERMOMETER RECORD PAPER FOR EBARA FREEZER	20 BOXES
97	THERMOMETER RECORD PAPER FOR REVCO FREEZER	10 BOXES
98	THERMOMETER RECORD PAPER FOR MINI RECORD NR. 168	10 BOXES
99	GLASS CYLINDER 3030	05 US.
100	ACCESSORY AUTO-DISPENSER 3066	03 SET
101	SEALING TAPE BLACK - 50 M/M	100 US.
102	SEALING TAPE WHITE 19 M/M	100 US.
103	SEALING TAPE RADE 19 M/M	100 US.
104	MAGIC PEN BLACK	100 US.
105	YELLOW TIP C-2D	1000 US.
106	DRAIN DISK FILTER 293 M/M	50 PKG
107	MEDIUM 199	50.5 KG
108	ANTI-RABBIT SERUM	10 VIAL
109	MYCOPLASMA ANTIGEN	20 AMP.
110	G-GLOBULIN	3 VIALS
111	MUMPS ANTIGEN	5 VIALS
112	RUBELLA ANTIGEN	5 VIALS
113	MEASLES ANTIGEN	20 VIALS
114	MEASLES MZM	10 KG
115	PARTS FOR STERILIZING MACHINE	5 SET

## AFTER CARE PROGRAM

### 7.1 - LIST OF MATERIALS RECEIVED THROUGH JICA FOR MEASLES SUBPROJECT

ITEM	ESPECIFICATION	QUANT.
116	PARTS FOR CO <sub>2</sub> INCUBATOR	1 SET
117	PALL FILTER (AB3HXPP)	5 PKG
118	PALL FILTER (SLK7002BPP)	10 PKG
119	PALL FILTER (SLK7002AXPK5)	10 PKG
120	COUPLING SET FOR TANK	5 SETS
121	TISSUE CULTURE DISH (10 CM)	20 BOXES
122	INDICATION LABEL	40 BOXES
123	GLASS BOTTLE (20 l)	5 US.
124	ATTACHMENT PARTS SET FOR FILLING MACHINE	1 SET
125	PISTON CYLINDER FOR FILLING MACHINE	50 SETS
126	RUBBER STOPPER	500 US.
127	STAINLESS BOTTLE (.05 l)	300 US.
128	BELT FOR FILLING MACHINE	1 SET
129	THERMOMETER	2 US.
130	PARTS FOR DISPENSER	22 US.
131	PISTON CYLINDER	50 US.
132	STOPPER VALVE FOR WASHING MACHINE	1 UN.
133	TEXT BOOK	1 UN.
134	O-RING FOR TAMP	3 US.
135	TISSUE CULTURE DISH	9 BOXES
136	MICROPLATE	5 BOXES
137	O-RING FOR MILLIPORE	12 US.
138	DISPENSER	3 SETS
139	EQUIPMENTS FOR ANIMAL CONTROL	5 SETS
140	ANTI-SERUM FOR MEASLES CONTROL	1 VIAL
141	ANTIGEN FOR MEASLES CONTROL	5 VIAL
142	AGAR AND BROTH MEDIUM STERILITY TEST	14 PKG

## AFTER CARE PROGRAM

### 7.1 - LIST OF EQUIPMENTS RECEIVED THROUGH JICA FOR HEASLES SUBPROJECT

ITEM	SPECIFICATION	QUANTITY	USE *	CONDITION **
01	HIGH VOLUME REVERSE OSMOSIS SYSTEM (MILLI-RO 250)	01	1	A
02	ULTRAPURE WATER PRODUCTION SYSTEM (SUPER Q)	01	1	B
03	ULTRASONIC APPARATUS (KAIJO)	02	2	B
04	ULTRASONIC APPARATUS (SKURA)	01	2	B
05	HELPEX WASHING MACHINE (S-12)	01	1	B
06	FREEZE DRYER (EDWARDS)	01	1	A
07	WATER SUPPLY SYSTEM (SANKYO)	01	1	B
08	AUTOMATIC FILLING SYSTEM (KT)	01	1	B
09	AUTOMATIC VIAL WASHER (GILOHY) AND	01	1	A
10	AUTOMATIC STERILIZING TUNNEL	01	1	A
11	VACCINE STORAGE TANK (600 l)	01	3	A
12	MEDIUM PREPARATION TANK (450 l)	04	1	B
13	AUTOCLAVE (S-90N)	03	1	B
14	REFRIGERATED CENTRIFUGE (J-6BP)	05	1	A
15	DEEP FREEZER (REUCO) ULT - 12100	07	1	B
16	DEEP FREEZER (EBARA)	06	SEE OBS	SEE OBS
17	CO <sub>2</sub> INCUBATOR (LMA-121)	03	1	B
18	MICROSCOPE WITH OPTIONAL ACCESSORIES	07	1	A
19	FLUORESCENCE MICROSCOPE	01	2	A
20	ULTRA-PRECISE WATER BATH (IKEMOTO)	01	1	B
21	MOISTURE CONTENT DETERMINATION APPARATUS	02	1	A
22	H <sub>2</sub> TANK (S-20) 230 l	02	1	A
23	N <sub>2</sub> TANK (Dal LLC-35)	01	1	A
24	FILTER HOLDER (PALL)	09	1	A
25	FILTER HOLDER (MILLIPORE)	06	1	A
26	ELECTRIC BALANCE (ED-2000), WITH ACCESSORIES	02	3	A
27	COMPRESSOR (HITACHI)	02	1	B
28	PIPETTE WASHER	05	1	B
29	AUTOMATIC DISPENSER (HIRASAKA) FH-300 M	04	2	A
30	ULTRA FILTRATION APPARATUS (TOYO)	04	1	D
31	MIXER FOR 150 l TANK (30D-C)	02	1	B
32	MAGNETIC STIRRER (M-41)	09	2	A
33	VIBRATION MIXER (S-5H)	03	2	A
34	HOMOGENIZER (MURAHAKA)	02	1	B
35	UV STERILIZER	03	1	B
36	WATER BATH (TAIYO)	02	2	A
37	ULTRA FILTER (UK-50, UK-200)	10	3	A
38	DISPENSERS JS-10 10 ml	10	1	A
39	DISPENSERS JS-10 P	03	2	B
40	DISPENSERS JS-5 5 ml	10	1	B
41	DISPENSERS JS-4 P	03	1	B
42	DISPENSERS JS-1 1 ml	10	1	B
43	DISPENSERS JS-1 P	03	1	B
44	ULTRA-SONIC WASHER	01 SET	1	B
45	PERSONAL COMPUTER SET	01 SET	1	D

\* 1 = FULL 2 = REGULAR 3 = LOW

\*\* A = GOOD B = REGULAR C = BAD D = OUT OF USE

OBS: 05 UNITS FULL USED / CONDITION C - 01 UNIT CONDITION D

AFTER CARE PROGRAM

7.1 - LIST OF MATERIAL RECEIVED THROUGH JICA FOR POLIOMYELITIS SUBPROJECT

ITEM	ESPECIFICATION	QUANTITY
01	ROUX BOTTLE ( 500 ML)	200 US.
02	ROUX BOTTLE (1000 ML)	800 "
03	BORING TOOL FOR BINDER	02 "
04	BINDER	08 "
05	PACHING PAPER	100 SETS
06	TEST TUBE	5000 US.
07	FORCEPS	25 "
08	STAINLESS PIPE	45 "
09	PRESSURE GAUGE	02 "
10	WATER BATH SPARE PARTS	01 SET
11	THERMOMETER	12 US.
12	PRESSURE VESSEL (DV-60 ST)	01 UNIT
13	PORTABLE CART	01 "
14	SUPER WORKSHOP KIT	01 "
15	TUBE	40 US.
16	RUBBER STOPPER (NR. 1, 2, 8, 11)	18540 "
17	GLASS BOTTLE	15 "
18	PARTS FOR FILTRATION	15 "
19	FILTER	09 BOXES
20	CORNWALL DISPENSER 1 ML WITH OPTIONAL ACCESSORIES	02 US.
21	CORNWALL DISPENSER 2 ML WITH OPTIONAL ACCESSORIES	10 "
22	CORNWALL DISPENSER 5 ML WITH OPTIONAL ACCESSORIES	06 "
23	CORNWALL DISPENSER 10 ML WITH OPTIONAL ACCESSORIES	06 "
24	AUTOPSY INSTRUMENT	01 "
25	FORCEPS A-1 25 CM	05 "
26	FORCEPS A-1 20 CM	05 "

## AFTER CARE PROGRAM

### 7.1 - LIST OF MATERIAL RECEIVED THROUGH JICA FOR POLIOMYELITIS SUBPROJECT

ITEM	ESPECIFICATION	QUANTITY
27	FORCEPS A-2 19 CM	10 US.
28	FORCEPS A-24 17 CM	10 "
29	FORCEPS C-1 18 CM	10 "
30	FORCEPS C-3 18 CM	10 "
31	SCISSORS B-12 11 CM	10 "
32	SCISSORS B-1 14.5 CMEN)	10 "
33	SCISSORS B-3 14.3 CM	10 "
34	SCISSORS B-5 14.5 CM	10 "
35	KNIFE HANDLE D-12 HQ 4	20 "
36	KNIFE BLADE D-14 HQ 22	10 "
37	KNIFE BLADE D-14 HQ 23	10 "
38	DROPPER 0.025 ML	50 "
39	DROPPER 0.05 ML	50 "
40	SAFETY PIPETTER (HQ 1190)	03 "
41	BURNER	01 "
42	FILTER G, S	160 "
43	FILTER AP 32142	200 "
44	FILTER AP 25142	100 "
45	FILTER AN 19142	100 "
46	FILTER AN 06142	100 "
47	FILTER NA 03142	100 "
48	FILTER FH 22 (142 CM)	100 "
49	ROUX BOTTLE (1500 ML)	300 "
50	ROUX BOTTLE (800 ML)	300 "
51	DME	03 PKG
52	NUTRIENT AGAR	03 PKG

AFTER CARE PROGRAM

7.1 - LIST OF MATERIAL RECEIVED THROUGH JICA FOR POLIOMYELITIS SUBPROJECT

ITEM	ESPECIFICATION	QUANTITY
53	BICARBONATE	01 PKG
54	BOTTLE RACK (2 oz)	06 US.
55	BELL-FLASKS NO 1963-00300	01 UNIT
56	BELL-FLASKS NO 1965-01000	02 US.
57	BELL-FLASKS NO 1965-06000	01 UNIT
58	BELL CAP	10 US.
59	AMPOULE (WEATON) NO 651483	06 BOX
60	AMPOULE HOLDER	200 US.
61	STREPTOMYCIN	04 PKG
62	ERYTHROMYCIN	15 PKG
63	CESIUM CHLORIDE	01 PKG
64	DAIFLOW SOLVENT	10 PKG
65	RUBBER MASKER NO 3397	05 US.
66	RUBBER TUBE	40 M
67	RUBBER VALVE	15 M
68	SILICONE TUBE 6 x 10 MM	30 M
69	SILICONE TUBE 8 x 12 MM	30 M
70	MAGNETIC STIRRER BAR	03 SET
71	MAGNETIC STIRRER BAR 40 MM	04 "
72	MAGNETIC STIRRER BAR 80 MM	04 "
73	LACTOALBUMIN HYDROLYSATE	03 PKG
74	TISSUE CULTURE RUBBER STOPPER (NO 6)	200 US.
75	JOINT TUBE A.B.	80 M
76	SURGICAL TAPE	02 BOX
77	ADESIVE BANDAGE 12 x 13 MM	50 US.
78	TRYPsinIZATION FLASK	20 "

## AFTER CARE PROGRAM

### 7.1 - LIST OF MATERIAL RECEIVED THROUGH JICA FOR POLIOMYELITIS SUBPROJECT

ITEM	ESPECIFICATION	QUANTITY
79	DIMETHYL SULFOXIDE	01 BOT
80	DULBECCOS MODIFIED	02 KG
81	MEDIUM 199	02 KG
82	RUBBER STOPPER (NO 2)	6100 US.
83	RUBBER STOPPER (NO 8)	600 "
84	HEAT-RESISTANT TC CAPS FOR ABOVE 1000 ML BOTTLE	300 "
85	HEAT-RESISTANT TC CAPS FOR ABOVE 800 ML BOTTLE	230 "
86	HEAT-RESISTANT TC CAPS FOR ABOVE 1500 ML BOTTLE	230 "
87	POLIO VIRUS TYPE I (2ML)	04 VIALS
88	POLIO VIRUS TYPE II (2 ML)	04 "
89	POLIO VIRUS TYPE III (2 ML)	04 "
90	ANTIPOLIO SERUM I (25 ML)	02 "
91	ANTIPOLIO SERUM II (25 ML)	02 "
92	ANTIPOLIO SERUM III (25 ML)	02 "
93	SPARE PARTS	07 SETS
94	DYFRON 83 (25 KG)	01 PKG
95	POLYVINYLPIRROLIDONE K-90 (500 G)	02 "
96	STERIHYDE (500 ML)	10 BOT
97	PURELOX (600 ML)	20 "
98	DIMETHYL SULFOXIDE (500 ML)	01 "
99	DIMETHYL DICHLOROSILANE (25 G)	20 VIALS
100	1.1.1 - TRICHLOROETHANE (500 G)	04 PKG
101	POLYETHYLEN GLYCOL	25 KG
102	BACTO AGAR	07 LB
103	AUTOCLAVE SPARE PARTS	02 SET
104	AMPOULE BOX	02 BOXES

## AFTER CARE PROGRAM

### 7.1 - LIST OF MATERIAL RECEIVED THROUGH JICA FOR POLIOMYELITIS SUBPROJECT

ITEM	ESPECIFICATION	QUANTITY
105	VACCINE STORAGE TANK WITH	06 US.
106	SPARE BULB	05 PKG
107	SPATULA	05 PKG
108	OPERATING KNIFE HOLDER	10 US.
109	OPERATING KNIFE BLADE	01 PKG
110	HYPODERMIC SYRINGE	10 US.
111	HYPODERMIC NEEDLE	10 DOZ
112	HEMACYTOMETER	04 SETS
113	HEMACYTOMETER COVER GLASS	02 BOXES
114	SEALING FILM	02 SETS
115	HAIRCUTTER FOR ANIMAL WITH ACCESSORIES	01 SET
116	MICROPLATE	400 PKG
117	SEAL FILM FOR MICROPLATE	04 BOXES
118	TISSUE CULTURE BOTTLE (5R)	50 US.
119	TISSUE CULTURE BOTTLE (4oz)	750 "
120	TISSUE CULTURE BOTTLE (2oz)	2400 "
121	TEST TUBE (SMALL)	500 "
122	TEST TUBE (BIG)	500 "
123	PLASTIC BOTTLE (30 ML)	200 "
124	RUBBER STOPPER NO 1	100 "
125	PROPELLER FOR TANK	01 UNIT
126	PARTS FOR FILLING MACHINE	66 US
127	WRAPPING PAPER	01 BOX
128	FELT PEN	80 US.
129	VINYL TAPE	100 "
130	ADHESIVE TAPE	110 "

## AFTER CARE PROGRAM

### 7.1 - LIST OF EQUIPMENTS RECEIVED THROUGH JICA FOR POLIOMYELITIS SUBPROJECT

ITEM	ESPECIFICATION	QUANTITY	USE #	CONDITION **
01	WATER BATH (YOKIWA)	04	2	A
02	WATER BATH (BM-41)	03	2	A
03	WATER BATH (TAIYO)	01	2	A
04	AUTOMATIC DISPENSER (FH - 10)	01	2	A
05	REFRIGERATED CENTRIFUGE	02	2	A
06	MICROSCOPE (ULTRA VIEW)	01	2	A
07	AUTOCLAVE	02	1	B
08	CO <sub>2</sub> INCUBATOR (LKA-121)	01	1	C
09	MAGNETIC STIRRER (M-41)	03	3	A
10	MIXER (K-550)	03	1	A
11	N <sub>2</sub> TANK (DALIC-35)	01	1	A
12	DRILL SET	01	2	A
13	AUTOMATIC BALANCE (L-00)	01	2	A
14	PLATER WASHER	02	2	A
15	FILTER HOLDER 142 <small>mm</small>	01	2	A
16	FILTER HOLDER 293 <small>mm</small>	02	2	A
17	ELECTRONIC TEMPERATURE RECORDER	01 SET	1	B
18	MICROSCOPE WITH ACCESSORIES	05 SET	1	A
19	FILLING MACHINE SET	01	2	A
20	ULTRA-LOW FREEZER WITH ACCESSORIES	04 SETS	1	B

\* 1 = FULL    2 = REGULAR    3 = LOW  
 \*\* A = GOOD    B = REGULAR    C = BAD

AFTER CARE PROGRAM

7.2 - LIST OF EQUIPMENTS AND PERMANENT MATERIALS ACQUIRED WITH FUNDS FROM

FIOCRUZ, FIEEC/BB AND FINEP/FHDCT FOR THE MEASLES SUBPROJECT

Us\$ 1,00

ITEM	TYPE OF EQUIPMENT	QUANTITY	UNIT/PRICE	TOTAL
01	VERTICAL REFRIGERATOR.	04	1,384	5,536
02	CONDUCTIVITY METER.	02	654	1,308
03	HORIZONTAL FREEZER.	07	602	4,214
04	DIGITAL POTENTIOMETER.	06	1,232	7,392
05	HYGROMETER.	01	117	117
06	WASHING MACHINE.	07	287	2,009
07	PRECISION ELETRONIC BALANCE, CAP. 12 Kg.	01	5,702	5,702
08	ELETRONIC BALANCE, CAP. 1 Kg.	01	2,989	2,989
09	INCUBATOR FOR B.O.D.	02	1,170	2,340
10	ULTRASONIC WASHER.	01	6,062	6,062
11	LAMINAR FLOW MODULE.	10	15,557	155,570
12	INCUBATION ROOM WITH REFRIGERATOR SYSTEM.	01	12,460	12,460
13	INCUBATION ROOM (200 x 160 x 120 cm).	01	3,679	3,679
14	INCUBATION ROOM (210 x 140 x 180 cm).	01	6,599	6,599
15	HORIZONTAL AUTOCLAVE WITH DOUBLE DOOR, CAP. 576 l.	01	21,649	21,649
16	HORIZONTAL AUTOCLAVE WITH DOUBLE DOOR, CAP. 1500 l.	01	30,238	30,238
17	HORIZONTAL AUTOCLAVE CAPACITY 1.500 l.	03	42,578	127,734
18	INSTALATION FOR DESMINERALIZATION OF WATER.	01	28,309	28,309
19	INCUBATOR (220 x 212 x 312 cm).	02	14,787	29,574
20	INCUBATOR (220 x 170 x 312 cm).	01	12,303	12,303
21	LAMINAR FLOW CABINET.	04	6,916	27,664
22	OVEN WITH DOUBLE DOOR.	03	7,666	22,998
23	OVEN BUNSEN BURSER.	02	12	24
24	DISSECTING FORCEPS.	370	4	1,480
25	DISSECTING SCISSORS.	30	7	210
26	SURGICAL SCISSORS.	232	11	2,552
27	STERILE AIR DIFFUSORS.	05	1,617	8,085
28	INCLINED TUBE MANOMETER.	05	183	915
29	CART FOR TRANSPORT OF MATERIAL.	04	286	1,144
30	CART FOR TRANSPORT OF BIG FLASKS.	03	292	876
31	METAL BELTS FOR EDWARDS FREEZE DRYER.	08	4	32
32	METAL BELTS FOR VIRTIS FREEZE-DRYER.	48	4	192
33	DIRECT RADIATION TYPE GERNICAL APPARATUS.	14	119	1,666
34	GERNICIDAL APPARATUS DOOR BARRIER TYPE.	01	168	168
35	SUPPORT FOR MICROSCOPE.	02	29	58
36	RACK FOR TEST TUBES.	06	25	150
37	STAINLESS BOX Nº 1.	10	78	780
38	STAINLESS BOX Nº 2.	10	58	580
39	STAINLESS BOX Nº 4.	50	26	1,300
40	STAINLESS RACK FOR TEST TUBES.	20	37	740
41	EDWARDS FREEZE-DRYER.	01	225,149	225,149
42	STAINLESS STEEL FUNNEL.	20	5	100
43	STAINLESS STEEL FUNNEL SIZE 1.	35	14	490
44	STAINLESS STEEL FUNNEL SIZE 3.	30	4	120
45	STAINLESS STEEL FUNNEL SIZE 2.	30	10	300
46	STAINLESS RACK FOR TEST TUBES.	60	6	360
47	HORIZONTAL AUTOCLAVE WITH DOUBLE DOOR CAP. 150 l.	01	39,012	39,012
48	CENTRIFUGAL FAN.	02	532	1,064
49	LABORATORY BENCH.	01	439	439
50	PUMP FOR WATER CIRCULATION.	02	178	356

**AFTER CARE PROGRAM**

**7.2 - LIST OF EQUIPMENTS AND PERMANENT MATERIALS ACQUIRED WITH FUNDS FROM  
FIDCRUZ, FIPEC/BB AND FINEP/FNDCT FOR THE MEASLES SUBPROJECT**

ITEM	TYPE OF EQUIPMENT	QUANTITY	UNIT/PRICE	TOTAL
51	STEEL WARDROBE CABINET.	30	66	1,980
52	STEEL SHELF.	220	43	9,460
53	SLICING EGGS SEMI-AUTOMATIC MACHINE, WITH ACCESS.	02	12,620	25,256
54	AIR CONDITIONER, WINDOW TYPE.	02	825	1,650
55	METAL CART FOR TRANSPORT OF CYLINDER.	03	24	72
56	HIGH PRESSURE CYLINDER.	06	209	1,254
57	PRESSURE REGULATOR.	02	305	610
58	SERINGE SPECIAL.	01	5	5
59	TRAY FOR EDWARDS FREEZE-DRYER.	56	27	1,512
60	COVER WITH VIRTIG.	32	8	256
61	COMPLETE CYLINDER F-12.	01	265	265
62	COMPLETE CYLINDER F-11.	01	307	307
63	STEEL CYLINDER OF FREON GAS.	01	925	925
64	STAINLESS STORAGE CABINET.	03	152	456
65	SWIVEL CHAIR MODEL 5303-GR.	16	112	1,792
66	REUNION TABLE MODEL 5150-C.	01	353	353
67	ARMCHAIR MODEL 5394-GR.	06	146	876
68	ARMCHAIR MODEL 5233/703 C.	01	277	277
69	STEEL FILE CABINET.	01	141	141
70	STEEL FILE CABINET.	01	93	93
71	WARDROBE WITH 8 COMPARTMENTS.	02	179	358
72	WARDROBE WITH 3 COMPARTMENTS.	02	126	252
73	WARDROBE WITH 1 COMPARTMENTS.	01	57	57
74	ELECTRICAL MOTORS.	03	17	51
75	TUBO AXIAL EXHAUSTORS.	03	267	801
76	PULLEY FOR VERTICAL LIFT.	01	283	283
77	EGG INCUBATOR.	02	5,954	11,908
78	STAINLESS STEEL.	1000	1	1,000
79	BECKMAN CENTRIFUGE AND ACCESSORIES.	01	19,687	19,687
80	STAINLESS BOX SIZE 6.	176	58	10,208
81	STEEL TRAY.	10	22	220
82	STAINLESS BOX NO 3.	10	69	690
83	STAINLESS BOX NO 4.	20	17	340
84	STAINLESS SIPHON NO 1.	250	24	6,000
85	STAINLESS SIPHON NO 2.	250	14	3,500
86	STAINLESS BOX NO 5.	356	63	22,428
87	MACHINE FOR FILLING AND SEALING AMPOULES.	02	9,139	18,278
88	STEEL CYLINDER FOR ACETYLENE.	04	0,13	0,52
89	STAINLESS CYLINDER FOR STORAGE OF LIQUID GAS.	01	976	976
90	GAS PRESSURE REGULATOR FOR ACETYLENE GAS.	01	14	14
91	GAS PRESSURE REGULATOR FOR OXIGEN.	03	16	48
92	GAS PRESSURE REGULATOR FOR NITROGEN.	03	18	54
93	AIR CONDITIONER, SELF-CONTAINED TYPE.	05	4,582	22,910
94	INCUBATOR FOR BACTERIOLOGICAL CULTURE (60x60x80).	04	225	900
95	INCUBATOR FOR BACTERIOLOGICAL CULTURE (50x50x60).	02	1,530	3,060
96	MACHINE FOR STAMPING AND LABELLING FLASKS.	01	12,252	12,252
97	EGG CANDLER.	01	791	791
98	RECORDING THERMOMETER.	01	296	296
99	CYLINDER FOR COMMERCIAL CARBON DIOXIDE.	10	419	4,190
100	CYLINDER FOR ANAEROBIC MIXTURE.	03	95	285

**AFTER CARE PROGRAM**

7.2 - LIST OF EQUIPMENTS AND PERMANENT MATERIALS ACQUIRED WITH FUNDS FROM

FIOCRUZ, FIPEC/BB AND FINEP/FNDCT THE FOR MEASLES SUBPROJECT

Us\$ 1,00

ITEM	TYPE OF EQUIPMENT	QUANTITY	UNIT/PRICE	TOTAL
101	CYLINDER FOR COMMERCIAL OXIGEN.	08	84	672
102	PRESSURE REGULATOR FOR ANAEROBIC MIXTURE.	01	19	19
103	MACHINE FOR FILLING AND SEALING AMPOULES.	01	210,000	210,000
104	MICROCOMPUTER.	01	7,600	7,600
105	PRINTING MACHINE.	01	1,520	1,520
106	REVERSE OSMOSE UNIT-KILLI RQ 250	01	25,000	25,000
107	MAGNETIC STIRRER.	01	100	100
108	WATER BATH.	04	900	3,600
109	ICE MAKER MACHINE.	01	1,700	1,700
110	SEALING MACHINE.	01	800	800
111	THERMIC FAN.	01	400	400
112	LABORATORY FREEZER ( -45º C ).	02	2,000	4,000
<b>TOTAL</b>				<b>1.249.576,52</b>

## AFTER CARE PROGRAM

### 7.2 - LIST OF EQUIPMENTS AND PERMANENT MATERIALS ACQUIRED WITH FUNDS FROM

FIOCRUZ, FIPEC/DB AND FINEP/FHDCI FOR THE POLIOMYELITIS SUBPROJECT

Us\$ 1,00

ITEM	TYPE OF EQUIPMENT	QUANTITY	UNIT/PRICE	TOTAL
01	LAMINAR FLOW MODULE, TYPE A.	01	25,109	25,109
02	LAMINAR FLOW MODULE, TYPE B.	01	9,367	9,367
03	INCUBATOR FOR B.O.D.	03	940	2,820
04	DESK WITH 3 DRAWERS.	03	200	600
05	REUNION TABLE.	01	171	171
06	SWIVEL CHAIR.	31	105	3,255
07	ARMCHAIR.	04	93	372
08	HARD WOOD TABLE.	03	324	972
09	INTERPHONE.	04	46	184
10	BATTERY CHARGER.	01	57	57
11	BENCHES AND CABINETS.	-	23,385	23,385
12	FORCEPS FOR CONDENSER.	06	15	90
13	STAINLESS CYLINDER FOR LIQUID GAS	01	860	860
14	HIGH PRESSURE CYLINDER.	02	249	498
15	PRESSURE REGULATOR.	02	328	656
16	VERTICAL LAMINAR FLOW ULTRA CLEAN WORK STATION.	02	5,098	10,196
17	HORIZONTAL LAMINAR FLOW ULTRA CLEAN WORK STATION.	01	5,098	5,098
18	INCUBATOR FOR B.O.D.	06	767	4,602
19	WATER BATH.	03	208	624
20	CENTRIFUGE.	03	794	2,382
21	HIGH PRECISION BALANCE.	01	281	281
22	HORIZONTAL FREEZER.	04	461	1,844
23	MAGNETIC STIRRING APPARATUS.	04	184	736
24	PRESSURE / VACCUUM PUMP.	01	249	249
25	HORIZONTAL AUTOCLAVE.	01	19,812	19,812
26	AIR CONDITIONER.	02	6,775	13,550
27	AIR CONDITIONER "SELF-CONTAINER TYPE".	01	8,709	8,709
28	AIR CONDITIONER, WINDOW MODEL.	09	858	7,722
29	TWO DOOR REFRIGERATOR	07	527	3,689
30	BALANCE, COMPLETE.	01	270	270
31	TANK FOR STORAGE AND TRANSPORT. OF LIQUID NITROGEN.	01	1,871	1,871
32	STOOL MOD. M9.	05	91	455
33	VERTICAL LAMINAR FLOW MODULE (133 x 285 x 62).	01	5,818	5,818
34	FREEZER -200 C	02	455	910
35	OVEN TWO DOOR CAP. 500 L.	01	2,516	2,516
36	TRANSPORT CART.	06	40	240
37	MODULAR STORAGE CABINETS WITH SHELF.	03	33	99
38	CABINET.	12	32	384
39	STEEL CABINET.	01	50	50
40	MULTI-STAGE CYLINDER REGULATORS.	01	15	15
41	REFRIGERATOR 320 L.	02	115	230
42	STAINLESS STEEL WORKTOP WITH BASIN CUT OUT.	-	-	14,219
43	LABORATORY CHAIR.	15	30	450
44	ARMCHAIR.	01	59	59
45	BUREAU.	01	110	110
46	GENERATOR SOURCE 330 KVA.	01	27,917	27,917
47	ELETRONIC BALANCE MODELO SARTORIUS 600 G	02	1,675	3,350
48	EPENDORF DIGITAL PIPETS 10 - 100 ul.	06	200	1,200
49	EPENDORF DIGITAL PIPEYS 10 - 1000 ul.	04	200	800
50	EPENDORF DIGITAL PIPETS 2 - 10 ul.	05	200	1,000

**AFTER CARE PROGRAM**

7.2 - LIST OF EQUIPMENTS AND PERMANENT MATERIALS ACQUIRED WITH FUNDS FROM  
 FIOCRUZ, FIEPC/BB AND FINEP/FHDCI FOR THE POLIOMYELITIS SUBPROJECT

Us\$ 1,00

ITEM	TYPE OF EQUIPMENT	QUANTITY	UNIT/PRICE	TOTAL
51	EPPENDORF DIGITAL MULTICHANNEL 5 - 50 ul.	05	200	1,000
52	EPPENDORF DIGITAL MULTICHANNEL 50 - 200 ul.	04	200	800
53	BRINKMANN DIGITAL BURET.	02	375	750
54	OXFORD APETTERS.	05	63	315
55	EPPENDORS REPEATER.	04	176	704
56	STERILIZATION OVEN - FANEM, MODEL 320-SE.	01	1,500	1,500
<b>TOTAL</b>				<b>214,922</b>

## AFTER CARE PROGRAM

### B. MEASLES PRODUCTION

#### Cells/Virus Suspension Production

Since 1982 FIOCRUZ is producing vaccine against Measles, according to the WHO and Japanese Minimum Requirements aiming to attend all vaccination programs from the Ministry of Health which has increased every year the amount of vaccine to be used by the Secretaries of Health from each State of the Republic.

All intermediate and final product carried out during these years can be summarized as follows:

- the yield of cells/virus suspension production is significant higher now, than in 1982, showing a decrease of rejection percentage.
- some adjustments have to be performed, e.g.: some equipments and supplies, in order to get better results in all the steps of production until final product.
- according to the improvements done in the laboratory facilities, we will be able to reach the following objectives already planned:
  - a) production of 30.000.000 doses/year
  - b) production of the Measles component for MMR vaccine

#### Filling and Freeze-Drying Operation

From 1983 to 1990 (August) a total of 825 batches of CAM-70 Measles vaccine were produced, totalizing 111 million doses (01,05 and 20 doses presentation).

The years of 1981 and 1982 were used to install equipments, staff training and definition of operation parameters and freeze-drying cycles, and by the end of 1983 the first experimental batches were produced.

In 1982 the operation runs routinely. In this same year freezer-dryer EDWARDS II and Gillow washing machine were installed, resulting in smooth operation until 1986.

Since 1986 we have been facing different problems as mechanical/electrical failures on freezer-dryers, increasing of losses in the processes in association with local problems of power supply.

In 1987 we received a Japanese team to review the filling/freeze-drying operation and to make review of the Gillow washing machine.

By the end of 1988 the problems of EDWARD'S freezer-dryers worsened and high losses were attained.

EDWARDS DO BRASIL was called and did revision of the machines defecting failures and worn parts. Various spare parts were installed and machines are now running almost normally.

### **Diluent Production**

More than 1.000 batches of diluents were produced, totalizing 119 million doses (01,05 and 20 doses presentation).

The original manual machinery was reinforced by the beginning of 1989, when FIOCRUZ purchased Marzocchi ampoule filling machine, that increased the capacity of production for diluents, either being limited on its operation (it doesn't fill 20 doses diluent containers).

### **Inspection**

Inspection of the Measles vaccine, is done at the moment of removal from the freezer-dryer.

Inspection of the diluent is done by manual and visual process resulting in low efficiency and high physical/psychological stress of the workers, resulting in slow operation of this activity.

Besides the problems of inadequate machinery and reduced personnel for this large production, the quality of the product and diluent is kept at high level due to the dedication showed by all the involved team.

## Labelling/Packing

Virtually is completely manual, as the simple machines available are of very low speed and manual control. These conditions result in long time of exposure to the vaccine at room temperature. Until now, no problems of vaccine degradation were detected at this step, but this situation is completely undesirable due to the normally high room temperature in our area.

## Conclusions

The construction concept of the KT filling machines makes quite difficult to change the size of the containers to be filled, thus, we have no flexibility in our filling operation using them.

The long time running of the equipment (almost 10 years), results now in severe consume of various parts of the machinery, reducing of the output/hour of the filling machines and irregular operation of freeze-dryers, as well other equipments in the virus suspension production laboratory, e.g.: incubators, ovens, autoclaves, laminar flows and deep freezers.

At the present stage of production, when our laboratories, planned initially to produce 10 million doses/year, already produced almost 25 million doses/year and are being demanded to supply the Brazilian needs for 1991 (30 million doses), is more than just time for general evaluation of the whole machinery available and also reinforce and mechanize critical areas like virus suspension production laboratory, filling and freeze/drying laboratory, inspection, labelling and packing areas.

**AFTER CARE PROGRAM**

8 - S.P.F. EGGS/REZENDE CHICKEN FARM

YEARS	RECEIVED AMOUNT	USAGE		REJECTED (%)
		PRODUCTION (%)	OTHER (%)	
1983/1984	30.494	20.033 (66)	5.766 (19)	4.695 (15)
1985	16.000	12.000 (75)	1.600 (10)	2.400 (15)
1986	24.000	16.380 (68)	3.515 (15)	4.105 (17)
1987	22.100	15.763 (71)	3.984 (18)	2.353 (11)
1988	18.045	11.879 (66)	5.066 (28)	1.100 (6)
1989	20.510	14.386 (70)	4.418 (21)	1.706 (8)
1990 (JUN)	9.743	7.168 (74)	983 (10)	1.592 (16)

## AFTER CARE PROGRAM

### 8 - CELLS SUSPENSION

YEARS	HR. OF PRODUCTION (ML)	CELLS SUSP. VOLUME (ML)	USED VOLUME IN VACCINE PRODUCTION (ML)	USED VOLUME IN SEED VIRUS PRODUCTION (ML)	USAGE (%)	REJECTED AND OTHERS (%)
83/84	93	1.882.100	1.693.890	-	90	10
85	40	1.459.170	1.395.000	-	95,6	4,4
86	38	1.431.900	1.398.000	-	97,6	2,4
87	55	2.975.300	2.054.489	-	95,9	4,1
88	51	1.136.600	1.104.400	138.700	97,2	2,8
89	61	1.499.700	1.420.200	28.400	95	5
90 (JUN)	25	472.700	463.000	15.000	98	2

## AFTER CARE PROGRAM

8 - PSH - PRE SINGLE HARVEST

YEAR	PRODUCED VOLUME (ml)	VOLUME AFTER STERILITY TEST (ml)	USAGE (%)	REJECTED AND OTHERS (%)
83/84	1.208.400	1.036.000	87,9	12,1
85	1.289.200	1.139.650	88,4	11,6
86	1.304.600	1.148.048	88	12
87	1.550.000	1.218.810	79	21
88	965.700	863.740	90	10
89	1.174.850	1.107.350	95	5
90 (jun)	337.800	311.800	93	7

**AFTER CARE PROGRAM**

8 - PAC - POOL AFTER CLARIFICATION

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YEAR	PRODUCED VOLUME (m <sup>3</sup> )	VOLUME AFTER STERILITY TEST (m <sup>3</sup> )	USAGE (%)	REJECTED AND OTHERS (%)
83/84	877.600	788.085	89,8	10,2
85	886.992	813.755	91	09
86	902.838	821.583	91	09
87	953.250	893.000	94	06
88	721.830	668.720	93	07
89	837.890	820.450	98	02
90 (jun)	218.040	205.140	94	06

**AFTER CARE PROGRAM**

0 - STABILIZERS + 199 - MEDIUM

YEAR	PRODUCED VOLUME (ml)	VOLUME AFTER STERILITY TEST (ml)	USAGE (%)	REJECTED AND OTHERS (%)
07	3.425.070	3.153.190	92	08
88	3.327.960	3.199.960	97	03
89	1.493.131	1.493.131	100	0
90 (jun)	788.900	788.900	100	0

**AFTER CARE PROGRAM**

3 - FB - FINAL BULK

YEAR	PRODUCED VOLUME (ML)	01 DOSE PRESENTATION		05/20 DOSES PRESENTATION	
		BATCHES	NR. OF DOSES	BATCHES	NR. OF DOSES
1983/1984	3.625.066	00	322.970	109	17.929.305
1985	3.054.398	53	2.129.542	48	10.015.520
1986	3.122.670	45	1.748.639	81	16.030.460
1987	3.920.000	25	1.100.000	115	24.725.000
1988	3.472.000	115	4.945.000	33	7.095.000
1989	2.324.000	-	-	83	17.845.000
(JUN.) 1990	924.000	-	-	33	7.095.000

**AFTER CARE PROGRAM**

**B - ACTIVITIES OF THE CENTRAL OF FILLING AND FREEZE - DRYING MEASLES VACCINE, CAN-70  
FROM 1983 TO 1990**

YEAR	PRESENTATION (DOSE)	HUNBER OF LOTS	HUNBER OF DOSES	HUNBER OF DISCARDED LOTS	% OF LOSS
1983	01	09	333.650		
	05	33	5.694.545		
	20	32	3.862.058		
TOTAL		74	9.090.253	04	5,4
1984	01	46	1.076.113		
	05	63	12.170.235		
	20	25	5.221.660		
TOTAL		134	19.268.008	07	5,2
1985	01	53	2.129.542		
	05	45	9.293.980		
	20	03	721.540		
TOTAL		101	12.145.062		0
1986	01	45	1.748.639		
	05	48	8.830.460		
	20	33	7.200.000		
TOTAL		128	17.779.099	03	2,4
1987	01	44	425.547		
	05	65	11.999.050		
	20	35	7.560.960		
TOTAL		144	19.985.557	09	8,1
1988	01	119	4.670.640		
	05	28	4.441.568		
TOTAL		147	9.112.208	05	3,4
1989	05	57	8.925.820		
	20	10	2.386.200		
TOTAL		67	11.312.020	05	7,5
1990 (UNTIL AUGUST)	05	58	10.582.015		
	20	05	1.102.420		
TOTAL		63 / 95	11.684.435	02	3,2
TOTAL		825	111.176.634	35	4,2

**AFTER CARE PROGRAM**

B - PRODUCTION OF DILUENT FOR NEABLES VACCINE (CAN-70)

PERIOD: 1983 TO 1990

YEARS	PRESENTATION (DOSE)	NUMBER OF BATCHES	NUMBER OF DOSES	NUMBER OF DISCARDED BATCHES	% OF LOSS
1983	01 20	75	9.870.253	01	1,3
1984	01 03 20	198	28.800.000	02	1,0
1985	01 05 20	209	16.533.660	----	0
1986	01 05 20	145	12.680.313	----	0
1987	01 05 20	200	25.082.916	03	1,5
1988	01 05	231	6.975.886	----	0
1989	01 05	91	12.371.873	----	0
UNTIL AUGUST 1990	05 20	48	7.249.770	06	12,5
TOTAL	----	1.197	119.584.671	12	1,0

**AFTER CARE PROGRAM  
MEASLES VACCINE  
PRODUCTION**

**SUBJECT:**

**CELLS CULTURE**

**EVALUATION:**

**IMPOSSIBILITY TO KEEP AND/OR  
INCREASE PRODUCTION WITH THE  
IMPORTED GLASSWARE THAT  
EXIST TODAY**

**NECESSITIES:**

- . ROUX BOTTLES (2.500)**
- . TRYPSINIZING FLASK (50 US.)**
- . NISHIMAKI DISPENSER (50 US.)**

**AFTER CARE PROGRAM  
MEASLES VACCINE  
PRODUCTION**

**SUBJECT:**

**CELLS / VIRUS CULTURE**

**EVALUATION:**

**THE LABORATORY HAVE TO INCREASE  
PRODUCTION TO ATTEND BIO-MANGUINHOS  
ANNUAL PROGRAM**

**NECESSITIES:**

- . LABORATORY FACILITIES HAVE TO  
BE IMPROVED**
- . INVERTED MICROSCOPE (01 UNITS)**

**AFTER CARE PROGRAM  
MEASLES VACCINE  
PRODUCTION**

**SUBJECT:**

**VIRUS CULTURE**

**EVALUATION:**

**. QUANTITY OF BOTTLES TO STORAGE VIRUS  
SUSPENSION IS NOT ENOUGH TO SUPPLY  
NECESSITIES**

**. CAPACITY OF STORAGE (FREEZERS)  
IS NOT ENOUGH**

**NECESSITIES:**

**. FREEZING BOTTLES (GLASS OR  
STAINLESS STEEL) - (1.000 UNITS)**

**. DEEP-FREEZERS / FORMA (03 UNITS)**

## AFTER CARE PROGRAM

### 9. MEASLES QUALITY CONTROL

Since 1983 we are testing the measles vaccine BIKEN CAM-70. During these years were tested 822 batches with 34 batches rejected (around 4.0% rejection). The quality of the measles vaccine has been considered satisfactory and Bio-Manguinhos has improved the production facilities and the quality control laboratories.

All of the tests carried out have been done according to WHO requirements as follow:

- I - Potency: Mean Titer:  $4.37 \pm 0.20 \log_{10}$  DICT 50/dh
- II - Stability: Loss Mean Titer:  $0.60 \pm 0.25 \log_{10}$  DICT 50
- III - Residual Moisture: Mean %  $1.27 \pm 0.25$
- IV - Sterility: Approved
- V - Tests on Animals: Approved

At this time Bio-Manguinhos produces, further on measles vaccine and others viral and bacterial vaccines, which has increased so much the activities of the Quality Control Laboratories. Some equipment as Karl Fischer Titrator, to carry out the moisture content of the products (only 05 minutes working, against 18 hours by gravimetric method), a digital, tele-thermometer for pyrogen determination and a filtration holder set for membrane filtration sterilization test, a more sensible method than the direct inoculation in culture medium, are needed.

The above technological improvement has been provided by FIOCRUZ.

**AFTER CARE PROGRAM  
MEASLES VACCINE  
QUALITY CONTROL**

**SUBJECT:**

**VIRUS TITRATION**

**EVALUATION:**

**THE LABORATORY MUST BE IMPROVED TO  
ATTEND THE PRODUCTION OF BIO-MANGUINHOS  
AND THE WHO REQUIREMENTS**

**NECESSITY:**

**THE LABORATORY FACILITIES  
MUST BE IMPROVED**

AFTER CARE PROGRAM  
MEASLES VACCINE  
QUALITY CONTROL

SUBJECT:

STABILITY

EVALUATION:

LOW CAPACITY TO CARRY OUT THE TESTS  
NECESSARY TO ATTEND THE BRAZILIAN  
DEMAND OF VACCINE

NECESSITY:

THE LABORATORY FACILITIES  
MUST BE IMPROVED

**AFTER CARE PROGRAM  
MEASLES VACCINE  
QUALITY CONTROL**

**SUBJECT:**

**STERILITY TEST**

**EVALUATION:**

**. LOW CAPACITY TO CARRY OUT THE TESTS  
IN MEMBRANE FILTRATION , ACCORDING  
WHO REQUIREMENTS**

**. NO CAPACITY TO CARRY OUT STERILITY  
TESTS OF ENVIRONMENT**

**NECESSITY:**

- . FILTRATION HOLDER ( 03 FILTERS )**
- . PARTICLE COUNTER**

**AFTER CARE PROGRAM  
MEASLES VACCINE  
QUALITY CONTROL**

**SUBJECT:**

**RESIDUAL MOISTURE**

**EVALUATION:**

**LOW CAPACITY TO ATTEND  
BIO-MANGUINHOS PRODUCTION  
(THE GRAVIMETRIC METHOD  
TAKES AROUND 18 HOURS)**

**NECESSITY:**

**KARL FISCHER TITRATOR**

**AFTER CARE PROGRAM  
MEASLES VACCINE  
QUALITY CONTROL**

**SUBJECT:**

**TESTS ON ANIMALS**

**EVALUATION:**

**LOW CAPACITY TO CARRY OUT THE  
PIROGEN TEST IN DILUENTS**

**NECESSITY:**

**DIGITAL TELE - THERMOMETER  
WITH MICROPROCESSOR**

**AFTER CARE PROGRAM  
MEASLES VACCINE  
QUALITY CONTROL**

**SUBJECT:**

**NITROGEN CONTENT**

**EVALUATION:**

**LOW CAPACITY OF DETERMINING NITROGEN  
CONTENT THROUGH CLASSIC METHODOLOGY**

**NECESSITY:**

- . CHEMILUMINESCENT DIGITAL NITROGEN**
- . THERMOSTATIC WATER BATH**

## AFTER CARE PROGRAM

### 10. POLIOMYELITIS PRODUCTION AND QUALITY CONTROL:

#### I - Establishment of TOPV Quality Control.

With Japanese experts, the Brazilian staff was trained in Japan and, in 1981 a laboratory for TOPV Quality Control was installed at FIOCRUZ.

From August to June 1983, 155 lots of imported vaccine were subjected to the following tests:

##### a) Potency and virus identification test.

These tests were done according to the Japan Poliomyelitis Research Institute (JPRI) methodology, using GMK-2 cells as substrate for microtitration.

##### b) Toxicity test.

The initial tests using adult mice and guinea pigs as recommended by WHO and the Japanese Minimum Requirement for Biological Products showed high toxicity due to the presence of Magnesium Chloride (MgCl<sub>2</sub>) in the TOPV formulation.

We adopted a new methodology, offered by the manufacturer, with approval of Pan-American Health Organization (PAHO). This minimizes the side effects caused by the chemical stabilizer.

##### c) Sterility test.

Sterility test routines for bacteria and fungi was and still is done by INCQS (National Institute for Quality Control for Health), FIOCRUZ. We do our own tests, using the same methodology.

In 1983, once fully trained the INCQS staff, the potency and toxicity standardized tests were transferred to them, as Brazilian Official Controllers.

#### II - Development and production of TOPV imported monovalent bulks.

From 1984 our activities were directed toward the technological aspects of formulation and filling TOPV the following activities were developed at Bio-Manguinhos:

- Checking the absence of Poliovirus inactivating agents in the materials for formulation.

- Evaluation of the influence of residual formalin used for disinfection of working rooms and its equipment.
- Evaluation and selection of plastic droppers for vaccine administration.
- Conditions for acconditioning and shipment of the vaccine to prevent vial leakage.
- Evaluation of virus titer of TOPV subjected to routine vaccination procedures.

In 1984, still with the presence of Japanese experts, the Poliomyelitis Laboratory formulated the first two batches of TOPV, using monovalent bulks from JPRI and sucrose as stabilizer.

In 1985, this initial formulation procedure was rewied, to have a formulation using magnesium chloride (MgCl<sub>2</sub>) as thermostabilizer, once the imported monovalent Poliovirus bulks were pre-stabilized with this chemical.

After one year producing and filling TOPV, corrosion caused by MgCl<sub>2</sub> on machinery and equipments resulted in drastic reduction of the expected service time of those apparatus.

There was also some concern about production costs and importation dependence of ingredients.

Based on these two points, our laboratory decided to search for a less aggressive formulation at lower cost, that should also improve (or at least maintain) the quality of the thermostability presently achieved.

Unfortunately, the non-aggressive formulation for the machinery demonstrated low thermostability characteristics at storage temperatures.

The more appropriate formulation was a solution with MgCl<sub>2</sub> and arginine, showing high standard of thermostability, and better cost composition.

Presently, we are processing around 10 % of the Ministry of Health needs of this vaccine.

Our plans are to reach in 1991 a larger share of this supply (+/- 30 % of total needs).

This production is being requested by official authorities to be filled in plastic tubes.

### III - Quality control of monovalent bulks and final product.

During the period we have been engaged in the TOPV production, 17 lots of monovalent Poliovirus bulks were subjected to potency, virus identification, sterility and toxicity tests.

Troubles on potency tests to confirm type III were discussed with manufacturer and solution came after a re-evaluation of our titration methodology.

### IV - Development of production technology for Poliovirus monovalent bulks.

Three of our professionals were trained in Japan on technology and process control for the production of concentrated virus suspension using monkey kidney cell culture.

Looking for alternatives others than imported monkeys, some tests were conducted using kidney cell cultures of Brazilian simians (*Cebus apella*), captured in the Amazon region.

We observed that these cultures were hardly contaminated with adventitious virus, and only a few ones showed reasonable cell growing evolution "in vitro".

Anyway, none of these cultures were able to replicate wild or attenuated Poliovirus, showing natural resistance or viral interference caused by detected or undetected agents.

Once conclude the inviability of this animal species to be used for virus production, other tests were performed to evaluate its response "in vivo", to spinal inoculation with wild and attenuated Poliovirus.

It was used Poliovirus, type I, and the results showed that these animals reacts marked, and differently, either on serological response, clinical symptoms and histopathological examination, depending on the virus nature.

Shortage of African Green Monkeys, restriction on live animals importation, ecological efforts to protect wild animal species, recognized risks of viral infection by monkeys, and inexistence of facilities for animal breeding in closed colonies, led us to search alternative source of cell substrate to replicate attenuated Poliovirus.

Although technologies for production of oral Poliomyelitis vaccines using human diploid cells had been introduced in the 60 decade, some manufacturers had difficulties to prepare adequate amounts of high titer virus suspension.

Otherwise, continuous cell lines, as "Vero" are being pointed out as a promising alternative to substitute primary monkey kidney and human diploid cell technologies.

We already have assayed the attenuated Poliovirus replication on Vero cells, and we are receiving internal collaboration to detect the amount of cell nucleic acid associated to viral particles.

Nowadays, we are studying both alternatives in order to evaluate the suitable technology to be used at FIOCRUZ.

Further steps on the Poliomyelitis Vaccine Project are depending on institutional support for financing the next steps of development, production instalations, equipment and training.

**AFTER CARE PROGRAM**

**POTENCY TEST OF IMPORTED TRIVALENT ORAL POLIOMYELITIS VACCINE**

PERIOD 1981 - 1983

YEAR	NR. OF LOTS	CELL LINE	AVERAGE TITER (TCID 50/DOSE)			
			TRIVAL.	TYPE I	TYPE II	TYPE III
1981	8	HEP-2C	6,05	5,74	4,92	5,48
	12	VERO	5,94	5,69	4,93	5,35
	13	GMK-2	6,05	5,85	4,50	5,16
1982	81	GMK-2	6,14	5,96	4,90	5,71
1983	41	GMK-2	6,22	6,05	5,17	5,38

**AFTER CARE PROGRAM**

PRODUCTION AND QUALITY CONTROL OF 1N MAGNESIUM CHLORIDE SOLUTION USED AS

TERMOSTABILIZER IN TOPU FORMULATION

PERIOD 1985 - 1989

YEAR	NR. OF LOTS	VOLUME (l)	STERILITY	TOXICITY	AVERAGE pH	AVERAGE MgCl <sub>2</sub> CONCENTRATION	NR. DISCARDED LOTS **
1985	08	820	APPROVED	APPROVED	6.7	1.08 N	-
1986	13	1.975	APPROVED	APPROVED	6.9	1.08 N	07
1987	-	-	-	-	-	-	-
1988	09	1.470	APPROVED	APPROVED	6.7	1.09 N	-
1989	-	-	-	-	-	-	-
TOTAL	30	4.265					

\*\* IN 1986 07 LOTS WERE DISCARDED DUE PRECIPITATION

**AFTER CARE PROGRAM**

**PRODUCTION OF POLIOMYELITIS TRIVALENT ORAL VACCINE**

**FROM MONOVALENT BULK**

**PERIOD 1984 - 1989**

YEAR	SOURCE OF BULK	ESTABILIZER	NR. OF LOTS	NR. OF DOSES	YIELD (AVERAGE)
1984	JAPAN	SUCROSE 35%	02	576.460	96,92%
1985	BELGIUM	MgCL <sub>2</sub> 1M	16	5.659.140	90,27%
1986	BELGIUM	MgCL <sub>2</sub> 1M	10*	6.039.720	91,58%
1987	BELGIUM	MgCL <sub>2</sub> 1M	06	3.938.000	96,26%
1988	BELGIUM	MgCL <sub>2</sub> 1M	06	4.162.000	95,36%
1989	BELGIUM	MgCL <sub>2</sub> 1M	09	5.887.180	96,67%
1990	-	-	-	-	-

\* 01 LOTS - MONOVALENT FOR TYPE III  
 02 LOTS - TRIVALENT, WITH HIGH CONCENTRATION OF TYPE III (600.000 TCID 50/DOSE)

## AFTER CARE PROGRAM

### QUALITY CONTROL OF POLIOVIRUS MONOVALENT BULK IMPORTED FROM BELGIUM

PERIOD 1984 - 1990

YEAR	TYPE OF VIRUS	APPROXIMATED NUMBER OF DOSES	TITER * (BELGIUM)	TITER * <sub>1</sub> (BIO-WORK.)	VIRUS IDENTIFICATION	STERILITY	TOXICITY
1984	I SB-134C	6.000.000	8,10	8,39	TYPE I	APPROVED	APPROVED
	II SB-216B	6.000.000	7,90	8,04	TYPE II	APPROVED	APPROVED
	III SB-310B	6.000.000	8,10	7,73	TYPE III	APPROVED	APPROVED
1985	I SB-138A	5.000.000	8,10	8,19	TYPE I	APPROVED	APPROVED
	II SB-216L	5.000.000	7,90	7,92	TYPE II	APPROVED	APPROVED
	III SB-318K	5.000.000	8,10	7,96	TYPE III	APPROVED	APPROVED
1986	I SB-142A	10.000.000	8,10	8,16	TYPE I	APPROVED	APPROVED
	I SB-142C		8,10	8,05	TYPE I		
	II SB-210A	10.000.000	7,90	7,83	TYPE II	APPROVED	APPROVED
	III SB-320A	10.000.000	8,10	7,84	TYPE III	APPROVED	APPROVED
1987	II SB-219E	1.800.000	7,90	7,88	TYPE II	APPROVED	APPROVED
	III SB-322A	17.000.000	8,10	8,17	TYPE III	APPROVED	APPROVED
1988	I SB-131A	6.400.000	8,10	8,28	TYPE I'	APPROVED	APPROVED
	II SB-221E	6.000.000	7,90	7,90	TYPE II	APPROVED	APPROVED
1990	I SB-156A	20.000.000	8,10	-	-	APPROVED	-
	SB-222C	20.000.000	7,90	-	-	APPROVED	-
	SB-326B	20.000.000	8,10	-	-	APPROVED	-

\* TCID 50/ML

\*<sub>1</sub> TCID 50/ML IN ONK-2 CELL

**AFTER CARE PROGRAM**

**QUALITY CONTROL OF POLIOHYELITIS TRIVALENT ORAL VACCINE PRODUCED IN**

**BIO-MANGUIINHOS FROM IMPORTED BULK**

**PERIOD 1981 - 1983**

YEAR	NR. OF LOTS	PROTENCY (AVERAGE TITER *)				STERILITY	TOXITICY
		TRIVAL.	TYPE I	TYPE II	TYPE III		
1984	02	6,31	6,12	5,12	5,70	APROVED	APROVED
1985	16	6,09	6,11	5,05	5,51	APROVED	APROVED
1986	10	6,10* <sub>1</sub>	6,18	4,95	5,34	APROVED	APROVED
1987	06	6,18	6,16	4,94	5,75	APROVED	APROVED
1988	06	6,14	5,96	5,01	5,57	APROVED	APROVED
1989	09	6,29	6,18	5,09	5,73	APROVED	APROVED
1990**	30						

\* - TCID 50/DOSE IN GMK-2 CELL

\*<sub>1</sub> - NOT INCLUDED 1 MONOVALENT LOT (TYPE III) AND 2 TRIVALENT LOTS WITH HIGH CONCENTRATION OF TYPE III.

\*\* - ESTIMATED FOR 20.000.000 DOSES

**AFTER CARE PROGRAM  
POLIOMYELITIS VACCINE**

**SUBJECT:**

**QUALITY CONTROL OF IMPORTED TOPU**

**EVALUATION:**

**TOXICITY - TOXICITY DUE  $MgCl_2$**

**SOLUTION:**

**NEW METHODOLOGY OF TOXICITY TEST**

**AFTER CARE PROGRAM  
POLIOMYELITIS VACCINE**

**SUBJECT:**

**PRODUCTION OF TOPU FROM IMPORTED  
MONOVALENT BULK**

**EVALUATION:**

- . MONOVALENT BULK QUALITY CONTROL (POTENCY TEST FOR TYPE III)**
- . BLENDING AND FILLING OF TOPU (MACHINERY CORROSION)**
- . VACCINE PRESENTATION**

**SOLUTION/NECESSITY:**

- . RE-EVALUATION OF POTENCY TEST METHODOLOGY**
- . RESEARCH OF NEW STABILIZER**

**AFTER CARE PROGRAM  
POLIOMYELITIS VACCINE**

**SUBJECT:**

**DEVELOPMENT OF PRODUCTION TECHNOLOGY  
FOR POLIOVIRUS MONOVALENT BULK**

**EVALUATION:**

- . INTRODUCTION OF PRIMARY MONKEY  
KIDNEY CELLS CULTURE**
- . ALTERNATIVES OTHERS THAN IMPORTED  
MONKEYS (CEBUS APELLA)**  
-----

**SOLUTION:**

**ALTERNATIVES FOR CELL SUBSTRATS  
(MRC-5, VERO**

③ アフターケア協力に係る供与希望機材リスト



## AFTER CARE PROGRAM

### 1 - COMPLEMENTARY EQUIPMENT

ITEM	DESCRIPTION	QUANTITY
01	FILTRATION HOLDER WITH 03 FILTER SUPPORT - HILLIPORE MRE8TPYB3	01
02	KARL FISCHER TITRATION METROMM MODEL 684 COULOMETRIC MEASUREMENTS	01
03	DEEP FREEZER (FORMA)	03
04	CHEMILUMINESCENT DIGITAL NITROGEN DETECTOR	04
05	THERMOSTATIC WATER BATH	05
06	DIGITAL TELETHERMOMETER OPT-75 ELEBRA	01
07	INVERTED MICROSCOPE (OLYMPUS)	02
08	PARTICLE COUNTER	01

## AFTER CARE PROGRAM

### 2. SPARE PARTS

ITEM	QUANTITY
<p>I) FOR KT FILLING STOPPERING AND TRAYING MACHINE MOD. BF-L/121-V/AB-15- KI-MFG Co.</p> <ul style="list-style-type: none"> <li>- TIMER H3Y-2-18EG/TATEISHI</li> <li>- TIMER H3Y-2-5SEG/TATEISHI</li> <li>- TIMER H3Y-2-30SEG/TATEISHI</li> <li>- PHOTO SWITCH SENSOR NX-22HV/SUNX</li> <li>- PHOTO SWITCH SENSOR SX-23R-803/SUNX</li> <li>- PHOTOELECTRIC SWITCH RT-4101-1R-8B3/SUNX</li> <li>- PHOTOELECTRIC SWITCH NX-22HV-803/SUNX</li> <li>- AUXILIARY RELAY MV4H-220V-4C/TATEISHI</li> </ul>	<p>02 02 02 06 06 06 04 10</p>
<p>II) FOR GILOHY DRYING STERILIZING AND RECOOLING TUNNEL MOD. 35-D4B/S/GILOHY</p> <ul style="list-style-type: none"> <li>- MAIN TROUBLE CONTROLLER CARD HBL5-0K-24V/ETG</li> <li>- SIGNAL CARD FOR STATIC INPUT SLS6-S/O-K24/220V/ETG</li> <li>- AIR VELOCITY AMPLIFIER 220V, 0-1,2M/S, 52H100/KRIWAN</li> <li>- MIN-MAX RELAY CARD 12M361/KRIWAN</li> <li>- LIGHT BARRIER AMPLIFIER 110/220V 53S-A10/OMRON</li> <li>- IR-HEATING BAR 1,5 KW, 22 X 10 X 1500 MM/HERAEUS</li> <li>- IR-HEATING BAR 1,0 KW, 22 X 10 X 1500 MM/HERAEUS</li> <li>- SIX-COLOR POINT RECORDER 220V, PT 100, 0-400/0-150 DC, MOD. 9404-336-949B1/PHILIPS</li> <li>- INCKED RIBBONS FOR RECORDER PHILIPS (SET WITH SIX)</li> <li>- TIME DELAY, KZI-11-10-220/SCHLEICHER</li> <li>- TIME DELAY 1-100S, KZI-12-100S-220/SCHLEICHER</li> <li>- TIME DELAY 1-30S, KZI-30S-220/SCHLEICHER</li> <li>- PUMP TYPE HVG1A 1/25A, MOTOR DN 9905/2-1,5 KW-220V/HILGE</li> </ul>	<p>01 02 01 01 01 15 21 01 10 02 02 02 02</p>
<p>III) FOR ULTRA LOW TEMPERATURE CABINET MOD. ULT-1200 CLS/REVCO SCIENTIFIC INC.</p> <ul style="list-style-type: none"> <li>- TEMPERATURE CONTROLLER -100/50 DC/REVCO</li> <li>- CONTAINER OF PENTANE 300Z (10 PIECE)</li> <li>- COMPRESSOR JFP1-0050-1AV-BM-220. COPELAND</li> </ul>	<p>02 02 06</p>
<p>IV) FOR MEDICAL DEEP FREEZERS MOD. MDF-390 AT/SANYO TRADING Co.</p> <ul style="list-style-type: none"> <li>- RECORDING THERMOMETER -100/+ 50 DC, 168H/SATO</li> <li>- WARNING SYSTEM MAL-3F/SANYO</li> <li>- TEMPERATURE CONTROL ME221/SANYO</li> <li>- DELAY RELAY 282-3K23/OMRON</li> <li>- TIME RELAY LV1D/10A OMRON</li> <li>- RELAY V1-12075A/OMRON</li> <li>- SPECIAL GRADE OF REFRIGERATION MACHINE OIL, CAPACITY 5 l</li> <li>- COMPRESSOR LOW STAGE</li> <li>- COMPRESSOR HIGH STAGE</li> </ul>	<p>03 02 04 04 04 06 04 04 04</p>

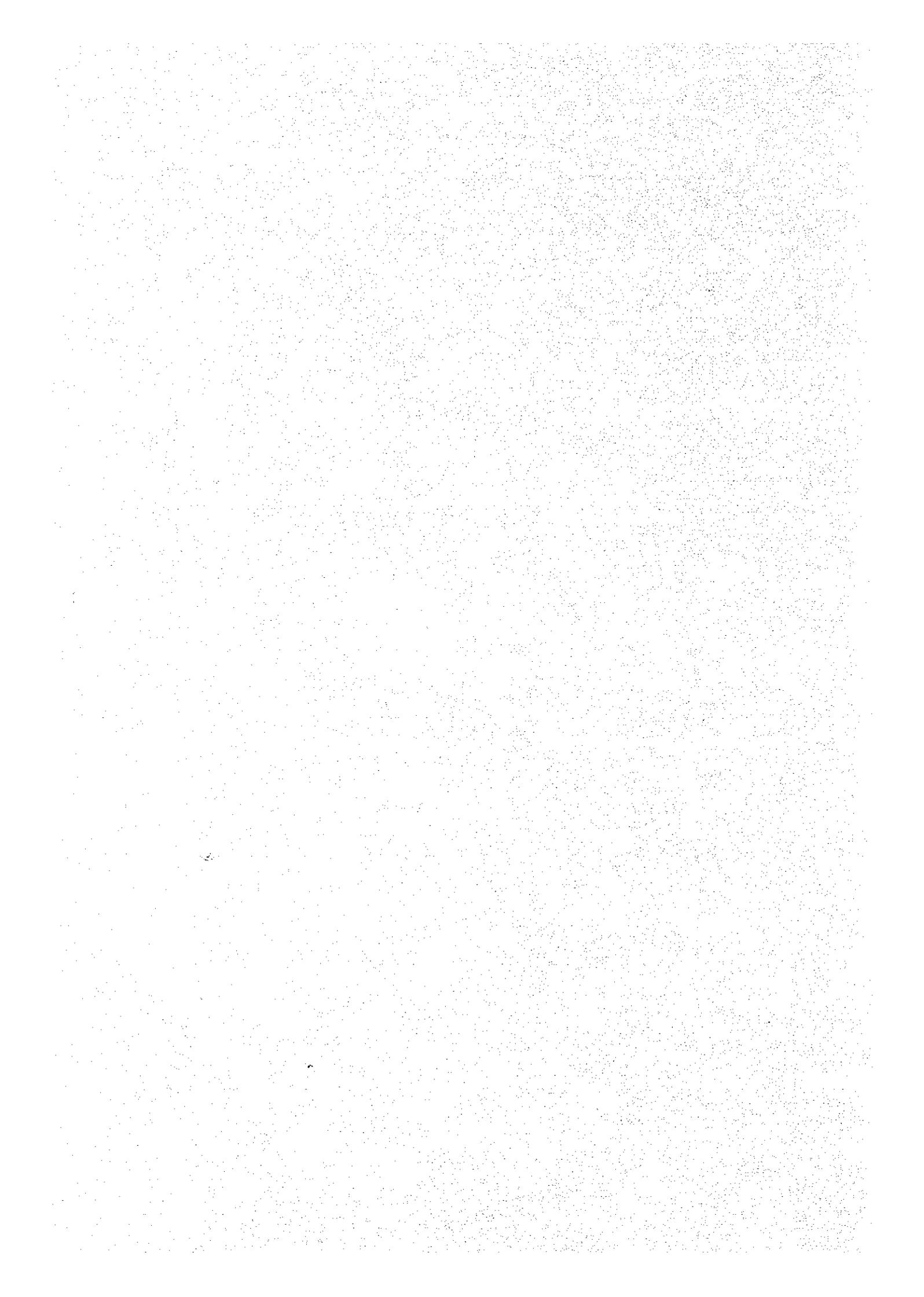
AFTER CARE PROGRAM

3 - IMPORTED SUPPLIES

ITEM	ESPECIFICATION	QUANTITY
01	SILICONE STOPPER FOR STERILITY TEST (T-19)	2000 US.
02	MICROPLATE FLAT BOTTOM (96 WELLS)	2000 US.
03	MICROPLATE 24 WELLS	1000 US.
04	MICROPLATE 6 WELLS	1000 US.
05	L-ARGININE (500 G)	24 PKG
06	TRYPSIN (1:250) (1 LB)	5 PKG
07	KANAMYCIN (1 G)	2000 VIALS
08	ERYTHROMYCIN (300 G)	5 PKG
09	ANTIGEN AND ANTI-SERUM FOR AVIAN DISEASES	
	- RSU (RAV - 1) (AMPOULE)	50 US.
	- RSU (RAV - 2)	50 US.
	- RAV - 1	40 US.
	- RAV - 2	30 US.
	- REO	50 US.
	- ILTV	50 US.
	- MDV	60 US.
	- REV	60 US.
	- IBDV	50 US.
	- IBU	50 US.
	- AIF	50 US.
	- APIF	50 US.
	- NDV	25 US.
	- HG	10 US.
	- SP	10 US.
	- MG	10 US.
	- MS	10 US.
	- BVD	04 US.
10	ANTI MEASLES SERUM	100 ml
11	ANTI GS SERUM	90 ml
12	PLATE WASHER	02 US.
13	TISSUE CULTURE DISH / STERILE 35 x 10 mm	500 US.
14	TISSUE CULTURE FLASK / 150 cm <sup>2</sup>	500 US.
15	TISSUE CULTURE FLASK / 75 cm <sup>2</sup>	700 US.
16	PIPETTE TIPS 0,5 - 200 ul	3000 US.
17	ROUX BOTTLES	1500 US.
18	TRYPSINIZING FLASK	50 US.
19	NISHIMAKI DISPENSER (MANUAL)	50 US.
20	FREEZING BOTTLES (GLASS OR STAINLESS STEEL)	500 US.



④ 供与予定機材リスト



④ 供与予定機材リスト

番号	機材名	仕 様	メーカー名	数量	見積書価格
1	フィルターホルダー	(316, ステンレス, サニタリーホルダー-142%) YY3014236	ミリボマ	1	308,000
2	カールフィッシュャー滴定装置	E 684 (No.7702-1)	METROHM	1	690,000
3	ディープフリーザー	MDF-291 (180ℓ) -85℃常用	サンヨー	1	1,220,000
4	ウォーターバス	NTT-211-T2 水槽サイズ:(W)495×(D)295×(H)150mm ステンレス製, 室温+5℃~80℃	東京理化	1	110,000
5	デジタル温度計	No.8008 6チャンネル(サーミスター入力) 湿度センサー6本付(サーミスターセンサー) CK2-BIC-2型	佐藤計器	1	255,000
6	倒立型顕微鏡	照明装置: 6V20Wハロゲン光源 熱線吸収用フィルター付 コンデンサ: 超長焦点コンデンサー-N.A 03 (CK2-ULWCD) 鏡筒: 双眼45° (CK2-BI) 固定 レボルバー: 4穴 (固定) ステージ: メカニカルステージ (サブステージ1ヶ付) (CK2-MVR) 位相差スライダー: 4×, 10×, 20×用 (CK2-SL) 位相差用対物レンズ: PCSPlan 4×PL, PCDAch10×PL LWD CD Ach 20×PL (各1) 接眼レンズ: CWHK10×(2) (特別付属品)	オリンパス	1	426,000
7	パーティクルカウンター	1. 40×リングスリット (CK2-RS40×) 2. 対物レンズ: LWDCD Plan 40×PL 3. スペアランプ 6V20W HAL 8004-810, 8004-8101 本体PCK3010A型 (1台) プリンター, PCK3010P型 (1台)	柴田科学	1 1 6 1	2,000 150,000 2,000 1,300,000
				小計	4,473,000

番号	機材名	仕様	メーカー名	数量	見積書価格
1	KT. 充填：密封装置用スペアパーツ	(KT BF-L/121-V/AB-15用) 1) タイマー, H3Y-2-1SEG, TATEISHI 2) " , H3Y-2-5SEG, " 3) " , H3Y-2-30SEG, " 4) ファーストスイッチセンサー, NX-22MV/SUNX 5) " " , SX-23R-8D3/SUNX 6) 光電スイッチ, RT-410T-1R-8B3/SUNX 7) " " , NX-22MV-8D3/SUNX 8) リレー, MY4N-220V-4C, TATEISHI	K	T	2 8,200 16,400 2 8,200 16,400 2 8,200 16,400 6 12,000 72,000 6 12,000 72,000 6 7,000 42,000 4 7,000 28,000 10 6,000 60,000
2	独ギロロイ (GILLOWY) 社製 洗熱滅菌, トンネル, 部品類	1) Main trouble, controller card HBLS-OK-24V 2) Signal card for static input SLS 6-S/O-K24/220V 3) Probe 02N146 4) Light barrier amplifier 110/220V, S3S-A10 5) I.R-heating bar. 1.5kw 22×10×1,000mm 6) I.R-heating bar. 1.0kw 22×10×1,000mm 7) Inked ribbons for recorder. 9404-386-94981 Order No.4012 151 52642 (現有 recorder 用) 8) Time delay, Type. KZT-11 0.6-10 sec : 220V 9) Time delay, 1-100S Type. KZT-12 5-100 sec : 220V 10) Time delay, 1-30S Type. KZT-01 1.5-30 sec : 220V 11) Pump type Hygic. Bloc. T/25A. 1.5kw 3×220V-60cps without housing MDF-390.AT 1) 624-022-0284. Alarm Unit. MAL-3F 2) 624-030-0955. Temp. Controller Unit. 3) 624-001-4463. Delay Relay LYID-TB 4) 624-001-4548. Relay, High Temp. Alarm MY2-1-TS2-T1 5) 626-100-1527. Relay AMVL-180A 6) Compressor 011 7) 624-017-1777. Compressor (L) 8) 624-01701821. " (H)	サノヨ	1 16,720 167,200 1 20,400 20,400 1 32,130 32,130 1 19,380 19,380 1 1,295,000 1,295,000	
3	超低温フリーザー用パーツ				2 18,700 37,400 4 57,000 228,000 4 8,000 32,000 4 1,100 4,400 6 1,700 10,200 4 58,900 235,600 4 57,000 228,000
				小計	5,003,250

番号	機材名	仕 様	メーカー名	数 量	見 積 書 価 格
1	シリコン栓 (通気栓)	T-19	信越ポリマー	2,000	380,000
2	マイクロプレート	(マイクロテスト用) 50枚入 No.3070. 96穴, 平底	FALCON	20	380,000
3	マイクロプレート	(マイクロテスト用) 50枚入 No.3047. 24穴, 平底	"	10	255,000
4	マイクロプレート	(マイクロテスト用) 50枚入 No.3046. 6穴, 平底	"	10	184,000
5	L-アールギニン	500g 新薬特級	和光純薬	1	13,000
6	トリプシン	(500g) 1Lb (1:250)	DIFCO	1	68,400
7	硫酸カナマイシン	1g	明治	200	66,000
8	エリスロマイシン	注射用エリスロシン500mg	ABBOT	300	378,000
9	診断用抗原抗体	SPF鶏モニタリング用	阪大微研		
10	抗麻疹血清		"		
11	抗GS血清		"		
12	プレートウォッシュャー	*96穴プレート用 M-014	バイオテック	2	36,000
13	ティッシュカルチャーディッシュ	No.3001 35φ×10mm 500枚入	FALCON	1	26,500
14	ティッシュカルチャーフラスコ	175cm <sup>3</sup> No.3028 40ヶ入	"	10	310,000
15	ティッシュカルチャーフラスコ	75cm <sup>3</sup> No.3024 100ヶ入	"	5	168,000
16	ビベットチップ	No.113GN 1~200μl	クオリティ	3	13,500
17	ルー氏培養瓶	*ポリオ大型1,000ml	VIDREX	1,500	5,100,000
18	トリプシン消化フラスコ	500ml, ポリオ研仕様	豊島	10	120,000
	トリプシン消化フラスコ	500ml コード番号6263-02	小倉ガラス	50	260,000
19	ニシマキディスペンサー	100ml	星盛堂	50	105,000
20	凍結瓶	600ml, ガラス	VIDREX	250	1,250,000
			小計		9,113,400



