3. Evaluation by Five Criteria

3.1 Relevance

The Project is highly relevant to the needs of Viet Nam and also in line with its development policies as well as Japan's official development assistance policies because this is a technical cooperation project based on the MVPF.

Because of the complete introduction of second dose immunization by 2006 in order to achieve the WPRO policy to eliminate measles by 2012 (by 2010 domestically according to the National EPI plan), demand for the measles vaccine will more than double in Viet Nam. The targeted amount of measles vaccine production by the Project was 7.5 million doses by the end of the project period. This target is highly relevant since it is able to cover the vaccine requirement (6.15 million doses, see Table 1) for routine two-dose immunization in 2007. The production capacity of POLYVAC, however, is not enough to cover the vaccine requirement for ad-hoc, large-scale campaigns such as the one conducted in 17 mountainous provinces in 2007.

Table 1 Necessary amount of measles vaccine in 2007

	Target	Population (million) a	Wastage factor b	Total requirement a*b (mil. doses)
Routine	First immunization for the infant of 9 month old	1.6	1.5	2.40
	Second immunization for the child of 6 years old	2.5	1.5	3.75
Sub total				6.15
Campaign	Children between 10 to 19 years old (In 2007, targeted 17 provinces out of 64 in the country)	4.2	1.2	5.04
Grand total				11.19

Source: National EPI

3.2 Effectiveness

Reviewing how the Outputs have contributed to the achievement of the Project Purpose, the Project has been effective as it has successfully achieved the fundamental technical transfer for measles vaccine production according to the original schedule. In the second-half of the Project period, capacity in production management and GMP management should be further developed, and technical transfer from key persons to the other staff conducted.

In order to manage daily and weekly schedule of the Project, continuous holding of morning, afternoon and weekly meeting was highly effective and it was pointed out by all of the interviewed managers, staff and Japanese experts during mid-term evaluation. The morning meetings aimed to share the daily activity schedules of each department among managers. The afternoon meetings and the weekly meetings were held to confirm the progress of each department. Although having daily meetings were common management tool at Japanese factories, they were totally new to Vietnamese culture and not easily accepted at first. However, at the time of the evaluation those meetings were chaired by the Director or the Deputy Director, Production Manager of POLYVAC and held autonomously.

Also, working groups functioned to smooth cross-department information sharing. Five working groups (i.e. Calibration/Validation, Formalin Fumigation, Environmental Pollution Control, Environmental Monitoring and Procurement Control) were organized and had meetings periodically to solve the problems that matter more than one department of POLYVAC (See Annex 16).

3.3 Efficiency

The Project has been efficient because the Inputs and Activities have contributed to produce the Outputs as planned. The efforts by both Vietnamese and Japanese sides contributed to improve the efficiency of the Project.

From Vietnamese side, timely and continuous input of additional human resource to POLYVAC was a key factor to cope with the expanding activities of the Project. Since the beginning of the Project, 16 new staff were hired with the expense of the Vietnamese government. The managers of the departments provided training to the new staff sufficiently to fulfill the requirement of their job. Although the current number of staff would not be sufficient for the full-scale production, it was expected that necessary number of staff would be hired according to the needs of the Project.

It took POLYVAC a long time to justify budget proposal for the maintenance of the new measles vaccine facility to Ministry of Health, Finance, and Planning and Investment since estimation of such cost was difficult due to the fact that the facility was unprecedented in terms of the quality and required maintenance costs. Not only the facility but the equipment were mostly new to Viet Nam and further pushed up the required maintenance cost. Nevertheless, due to the earnest explanation by POLYVAC executives, sufficient maintenance budget had been allocated so far.

The foundation of the technical transfer was consolidated long before the commencement of the Project. The core members working for the measles vaccine production line were also the core members of polio vaccine production and received technical training at Kitasato institute on vaccines production during their assignment in the polio vaccine facility. Such training experiences in Japan among the key counterparts of the Project contributed to the effective and efficient technical transfer from Japanese experts to Vietnamese

counterparts.

The duration of the assignment of the Japanese experts in Viet Nam was minimal but sufficient with the combination of the assignment in Japan. Necessary GMP documents were drafted by the Japanese experts during the assignment in Japan and translated from Japanese into Vietnamese in Viet Nam. During the assignment in Viet Nam, Japanese experts could focus on the training with the translated documents. Monitoring of PQ and checking the test results by Japanese experts were also done in Japan through telecommunications such as e-mail and telephone calls.

The difference of language was one of the biggest barriers to the communication between Vietnamese and Japanese. For efficient technical transfer, a phrases book for technical terms shown in three languages (Japanese, English and Vietnamese) was developed step by step by the efforts of translators of the Project. It was quite useful for the better understanding between the Vietnamese staff and the Japanese experts, especially for the staff working inside the production area because the translators were not allowed to enter there to ensure sterility.

Also, efforts by many POLYVAC staff to study Japanese made the process of technical transfer more efficient. Japanese classes were run by the translators of the Project twice a week after the working hour and attracted approximately 10- 20 participants per session since November 2006. At present, most of POLYVAC staff understand basic Japanese. Their efforts promoted communication between the Japanese experts and the Vietnamese staff and fostered a friendly atmosphere at POLYVAC.

Utilization of Japanese past experiences of technical cooperation for measles vaccine production also contributed to the efficient implementation of the Project. Biofarma, an Indonesian vaccine manufacturer, was established by Japanese grant aid and is the only WHO-GMP abiding company amongst the manufacturers in the South-east Asia. Sometimes the experts in Biofarma provided lectures and advices to POLYVAC staff that motivated them significantly.

3.4 Impact

The Project is the first vaccine production process fully abiding with the GMP standard (both domestic and WHO). Thus, the production process was expected to be a prototype for other manufacturers and production facilities to follow in terms of the abidance with the current Vietnamese GMP code.

Also, having a GMP-abiding vaccine production facility in-country, the national regulatory authority (NRA) of Viet Nam had been facilitated to streamline its regulatory organization by resolving all existing conflicts of interest and strengthen its six essential regulatory functions (clinical trial supervision, GMP inspection, licensing, lot release, laboratory access and post-marketing surveillance). NRA accreditation by the WHO is a prerequisite for POLYVAC measles vaccine to be WHO-prequalified for export through the

United Nations in the future. As such, the project had been providing a momentum for upgrading domestic vaccine regulatory system that would ensure better safety of domestic and imported vaccines Vietnamese children receive.

3.5 Sustainability

Viet Nam had been expressing substantial needs for domestic measles vaccine production and the Government maintaining a high level of commitment towards the production. Such commitment had been reflected in their pledge to bear the counter-cost worth approximately 500 million Japanese yen since the construction of the measles vaccine production facility under the Japanese grant aid scheme. Upcoming product licensing was expected to lead to the domestic government purchase-guarantee of the measles vaccine that eventually derives economic sustainability of POLYVAC through the sales revenue. The company needed continued supports from concerned parties in strengthening managerial, financial, technical and GMP aspects in stepping towards an established measles vaccine manufacturer.

Managerial aspect

Management strengthening at each department was needed in order for the company to be an autonomous measles vaccine manufacturer.

The Project is not only the first domestic measles vaccine production, but also the first vaccine production process abiding with the GMP standard (both domestic and WHO). Some raw materials and consumables were not available in Viet Nam and establishment of the procurement routes was difficult. Procurement from overseas led to higher costs. In some instances Japanese side provided necessary assistances to overcome the shortfalls. Establishment of sustainable procurement routes was considered to be essential for sustainability of POLYVAC measles vaccine production.

Toward mass production of vaccines, management capacity of managers needs to be further strengthened in planning, processing, and document and inventory control according to their job descriptions under development.

Financial aspect

The product licensing had still been awaited, thus the revenue from measles vaccine sales was yet to be attained. Therefore, cost of procurement of raw materials and maintenance had been subsidized by the Ministry of Health budget. Continuation of the MOH subsidy was considered to be essential for a short-term sustainability, and early licensing critical for a long-term sustainability.

Technical aspect

Technical transfer had so far mainly focused on the upgrading skills of selected staff. Further technical transfer from those staff to the others through an internal technical transfer system was considered essential.

Each department had attained capability to abide with the routine production process. However, further capacity building on risk/deviation management would be needed in order to cope with unexpected events,

accidents or claims.

GMP compliance

The Project had been trying out the first ever vaccine production with full compliance with domestic and WHO-GMP standard. There was still a long way for each staff of POLYVAC to fully understand the meaning of the GMP although there had been a huge progress with regard to their compliance to GMP rules and regulations.

For GMP to take root in all staff. further GMP education by the Japanese experts and QA Department would be needed.

4. Revision of Project Design Matrix

The PDM (version 1) which had been authorized on 24 March. 2006 by the Minutes of the Meeting is modified to the PDM (version 2) as attached as Annex 1.

The details of the revision were indicated in Annex 2.

5. Conclusions

Technical transfer on production had mostly been conducted according to the specified schedule and in time. Overall, satisfactory progress had been made in constructing a GMP system in the POLYVAC measles vaccine production facility due to effective technical transfer of experts despite the fact that the facility is the first one to comply with GMP (both domestic and WHO) in Viet Nam.

In the remaining period of the Project, it is required to maintain the skills already transferred from Japanese experts and to extend the skills acquisition from the staff that had already attained sufficient skill level to the others. It is also important for QA Department to continue training all the staff on GMP with consistent assistance by the Japanese experts in order to have the GMP system function well. Toward mass production of the measles vaccine management capacity of managers needs to be further strengthened in planning, processing, and document and inventory control according to their job descriptions that are under development.

6. Recommendations

Based on the review on the achievement of the activities and the outputs of the Project, both sides confirmed the following recommendations:

1. It is required for POLYVAC staff to maintain the skills already transferred from Japanese experts and to extend the skills acquisition from the staff that had already attained sufficient skill level to the others through an internal technical transfer system.
2. Further capacity building on risk/deviation management would be needed in order to cope with unexpected events, accidents or claims.
3. It is suggested that Quality Assurance (QA) Department to continue training all the staff on Good Manufacturing Practice (GMP) with assistance of the Japanese experts in order to disseminate the basic concept of GMP and to have the GMP system function well.
4. Toward the future mass production of the measles vaccine POLYVAC needs to further strengthen management capacity of managers in planning, costing, financing, processing, and document and inventory control with their own initiative.

5. Budget for procurement of raw materials and maintenance including calibration and spare parts supply needs to be secured.
6. In order to secure Specific Pathogen Free (SPF) eggs it is recommended that the MOH continues to convince the Ministry of Agriculture and Rural Development to approve importing the SPF eggs even when the exporting countries report Highly Pathogenic Avian Influenza (HPAI) infection among poultries, because SPF eggs are assured pathogen-free. In addition, POLYVAC needs to look for alternative sources of import. Domestic production is considered to be a potential but uneasy option because it requires much cost, time and technical expertise.
7. It is highly essential that the GMP inspection, clinical trial and licensing regarding the POLYVAC measles vaccine will be done appropriately and in time.
8. The technical capacity of the National Regulatory Authority (NRA) should be strengthened in its six functions so that the NRA can be WHO-accredited as soon as possible.

Annex 1 Project Design Matrix (PDM) (Version 2) **Date: December 19, 2007**

Project title: Technical Cooperation Project for Strengthening Capacity for Measles Vaccine Production **Project Duration: 4 years, from March 24, 2006**

Target Area: The Socialist Republic of Viet Nam **Target group: People in the Socialist Republic of Viet Nam (particularly focusing on children)**

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal			
The health status of the children in the Socialist Republic of Viet Nam is improved.	・Infant mortality rate in the Socialist Republic of Viet Nam	Ministry of Health	
Overall Goal	・Rate of children infected with measles in the Socialist Republic of Viet Nam.	Ministry of Health	・Public Health activities in the Socialist Republic of Viet Nam is strengthened.
Measles Infection Rate in the Socialist Republic of Viet Nam will be decreased from the current level.	・Number of children immunized with measles vaccine in the Socialist Republic of Viet Nam.		・The vaccine is licensed by NRA.
Project Purpose	1.Measles vaccines are produced in POLYVAC at a rate of 300,000 doses x 25 batch (i.e. 7,500,000 doses)/year.	Ministry of Health, NRA(NICVB) POLYVAC WHO	・EPI activities will be sustained and enhanced.
POLYVAC will be capable to produce necessary amount of measles vaccine for use of measles control activities in the Socialist Republic of Viet Nam complying with Viet Nam-GMP which has met WHO-GMP standard.	2.Clearance on the Production and quality management by NRA which has met WHO-GMP		
Outputs			
1 Staff of POLYVAC acquires appropriate technical skill to produce quality measles vaccine.	1-1 Number of Staff in POLYVAC who get technical training to reach a sufficient technical level (i.e. level 4 * for staff categorized as A)for measles vaccine production. *level 4 : be able to work by themselves and could train others	Ministry of Health POLYVAC	・GMP inspection will be done by NRA.
	1-2 Standard Operating Procedure (SOP), equipment maintenance list, equipment inventory and other necessary documents for operation and maintenance of the facilities and production equipment by POLYVAC shall be prepared.		
	1-3 Details on equipment, apparatus, raw materials, spare parts and consumables are properly administrated and inventory is properly managed.		
2 Production and quality management meet Viet Nam-GMP which has met WHO-GMP standard.	2-1 Performance Qualification (PQ) and Process Validation (PV) are executed as scheduled.	WHO Ministry of Health	
	2-2 Validation complying with VN-GMP is conducted periodically by POLYVAC.	NRA(NICVB)	
	2-3 GMP documentation complying with VN-GMP is prepared.		
	2-4 SOPs complying with VN-GMP are prepared and production process is done according to the SOPs.	Records of production, quality control, validation, maintenance of equipment and facilities, and quality assurance of POLYVAC	

Activities	Inputs		
	Japan	Viet Nam	
1 Staff of POLYVAC acquires appropriate technical skill to produce quality measles vaccine. 1-1 Conduct technical transfer on bulk, filling, freeze-dry through the process of producing vaccine from the imported bulk. 1-2 Conduct technical transfer on production of bulk vaccine through the processing of producing bulk vaccine from the seed virus. 1-3 Conduct technical transfer on proper operation of mass production (7.5 million doses/year) of the measles vaccine. 1-4 Conduct technical transfer on quality control of the products. **2 Production and quality management meet Viet Nam-GMP which has met WHO-GMP standard.** 2-1 Conduct PQ/PV for vaccine production from bulk vaccine. 2-2 Conduct PQ/PV for vaccine production from seed virus. 2-3 Establish validation system for the production and strengthen the validation skill of the staff. 2-4 Establish and implement quality assurance functions complying with Viet Nam-GMP which has met WHO-GMP standard. 2-5 Prepare and implement necessary SOP for the process of production, storage, carrying in/out of the products, etc. 2-6 Conduct technical transfer on preparation of documents that need to meet Viet Nam-GMP which has met WHO-GMP standard and to be approved by NRA in the Socialist Republic of Viet Nam.	***Experts*** (1) Chief Advisor / Vaccine Production (2) Bulk Production (3) Medium Preparation (4) Final Production (5) Quality Control (6) Management of Experimental Animals (7) Quality Assurance (8) GMP (9) Validation (10) Facility Management ***Other necessary fields.*** ***Full-time project staff*** (1)Secretary (2)Interpreter ***Training in Japan*** (1)Production management (2)Quality management ***Equipment and materials*** (1)Equipment for Validation (2)Equipment for Technical Activities on Vaccine Production and Quality Assurance (3)Other equipment mutually agreed upon as necessary. ** The equipment to be provided will be subjected to change due to the budgetary conditions of the Japanese side.* ***Local cost*** (1)Training textbooks, and materials (2)General expenses of the project office	***Counterpart officers*** (1) Director (2) Vice Director (3) QA Manager (4) Production Manager (5) QC Manager ***Full-time project staff*** (1)Production Unit Staff (2)Quality Management Unit staff (3)Engineering Staff ***Equipment and materials*** (1)Project Office facilities (2)Stationary (3)Cosumables for Vaccine Production ***Local cost*** (1) Vaccine Bulk (2) Maintenance for equipment	·Trained Staff will not leave POLYVAC. **Pre-conditions** NRA of Viet Nam including NICVB will be functioning according to WHO recommendation. The policy of promotion on measles elimination programme will be sustained.

Note: GMP: Good Manufacturing Practice, NRA: National Regulatory Authority, SOP: Standard Operating Procedure
PQ: Performance Qualification, PV: Process Validation

Annex 2 Revision of Project Design Matrix (PDM) **Date: December 19, 2007**

Project title: Technical Cooperation Project for Strengthening Capacity for Measles Vaccine Production **Project Duration: 4 years, from March 24, 2006**

Target Area: The Socialist Republic of Viet Nam **Target group: Children People in the Socialist Republic of Viet Nam (focus on those under 5 years old particularly focusing on children)**

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal			
The health status of the children in the Socialist Republic of Viet Nam is improved.	・Infant mortality rate in the Socialist Republic of Viet Nam	Ministry of Health	
Overall Goal	・Rate of children infected with measles in the Socialist Republic of Viet Nam.	Ministry of Health	・Public Health activities in the Socialist Republic of Viet Nam is strengthened.
Measles Infection Rate in the Socialist Republic of Viet Nam will be decreased from the current level.	・Number of children immunized with measles vaccine in the Socialist Republic of Viet Nam.		・The vaccine is licensed by NRA.
Project Purpose	~~・Number of measles vaccine doses produced in POLIOVAC~~ 1.Measles vaccines are produced in POLYVAC at a rate of 300,000 doses x 25 batch (i.e. 7,500,000 doses)/year.	Ministry of Health, NRA(~~CENCOBI~~NICVB) ~~POLIOVAC~~ POLYVAC	・EPI activities will be sustained and enhanced.
~~POLIOVAC~~ POLYVAC will be capable to produce necessary amount of measles vaccine for use of measles control activities in the Socialist Republic of Viet Nam complying with Viet Nam-GMP which has met WHO-GMP standard.	~~・Clearance of Produced Measles vaccine complying with WHO-GMP standard.~~ 2.Clearance on the Production and quality management by NRA which has met WHO-GMP	WHO	
Outputs			
1 Staff of ~~POLIOVAC~~ POLYVAC acquires appropriate technical skill to produce quality measles vaccine.	1-1 Number of Staff in ~~POLIOVAC~~ POLYVAC who get technical training to reach a sufficient technical level (i.e. level 4 * for staff categorized as A)for measles vaccine production. *level 4 : be able to work by themselves and could train others 1-2 Standard Operating Procedure (SOP), equipment maintenance list, equipment inventory and other necessary documents for operation and maintenance of the facilities and production equipment by POLYVAC shall be prepared. 1-3 Details on equipment, apparatus, raw materials, spare parts and consumables are properly administrated and inventory is properly managed.	Ministry of Health ~~POLIOVAC~~ POLYVAC	~~・Trained Staff will not leave POLIOVAC.~~ ・GMP inspection will be done by NRA.
2 Production and quality management meet Viet Nam-GMP which has met WHO-GMP standard.	~~・Clearance on the Production and quality management by NRA which has met WHO-GMP~~ 2-1 Performance Qualification (PQ) and Process Validation (PV) are executed as scheduled. 2-2 Validation complying with VN-GMP is conducted periodically by POLYVAC. 2-3 GMP documentation complying with VN-GMP is prepared. 2-4 SOPs complying with VN-GMP are prepared and production process is done according to the SOPs.	WHO Ministry of Health, NRA(~~CENCOBI~~NICVB) Records of production, quality control, validation, maintenance of equipment and facilities, and quality assurance of POLYVAC	

Activities	Inputs		
1 Staff of ~~POLIOVAC~~ POLYVAC acquires appropriate technical skill to produce quality measles vaccine. 1-1 Conduct technical transfer on bulk, filling, freeze-dry through the process of producing vaccine from the imported bulk. 1-2 Conduct technical transfer on production of bulk vaccine through the processing of producing bulk vaccine from the seed virus. 1-3 Conduct technical transfer on proper operation of mass production (7.5 million doses/year) of the measles vaccine. 1-4 Conduct technical transfer on quality control of the products. **2 Production and quality management meet Viet Nam-GMP which has met WHO-GMP standard.** 2-1 Conduct PQ/PV for vaccine production from bulk vaccine. 2-2 Conduct PQ/PV for vaccine production from seed virus. 2-3 Establish validation system for the production and strengthen the validation skill of the staff. 2-4 Establish and implement quality assurance functions complying with Viet Nam-GMP which has met WHO-GMP standard. 2-5 Prepare and implement necessary SOP for the process of production, storage, carrying in/out of the products, etc. 2-6 Conduct technical transfer on preparation of documents that need to meet Viet Nam-GMP which has met WHO-GMP standard and to be approved by NRA in the Socialist Republic of Viet Nam.	**Japan** ***Experts*** (1) Chief Advisor / Vaccine Production (2) Bulk Production (3) Medium Preparation (4) Final Production (5) Quality Control (6) Management of Experimental Animals (7) Quality Assurance (8) GMP (9) Validation (10) Facility Management ***Other necessary fields.*** ***Full-time project staff*** (1)Secretary (2)Interpreter ***Training in Japan*** (1)Production management (2)Quality management ***Equipment and materials*** (1)Equipment for Validation (2)Equipment for Technical Activities on Vaccine Production and Quality Assurance (3)Other equipment mutually agreed upon as necessary. * *The equipment to be provided will be subjected to change due to the budgetary conditions of the Japanese side.* ***Local cost*** (1)Training textbooks, and materials (2)General expenses of the project office	**Viet Nam** ***Counterpart officers*** (1) Director (2) Vice Director ~~(Production Management)~~ (3) ~~Vice Director (Quality Management)~~ QA Manager (4) ~~Chief of WHO-GMP license~~ Production Manager (5) QC Manager ***Full-time project staff*** (1)Production Unit Staff (2)Quality Management Unit staff (3)Engineering Staff ***Equipment and materials*** (1)Project Office facilities (2)Stationary (3)Cosumables for Vaccine Production ***Local cost*** (1) Vaccine Bulk (2) Maintenance for equipment	・Trained Staff will not leave POLYVAC. **Pre-conditions** NRA of Viet Nam including ~~CENCOBI~~ NICVB will be functioning according to WHO recommendation. The policy of promotion on measles elimination programme will be sustained.

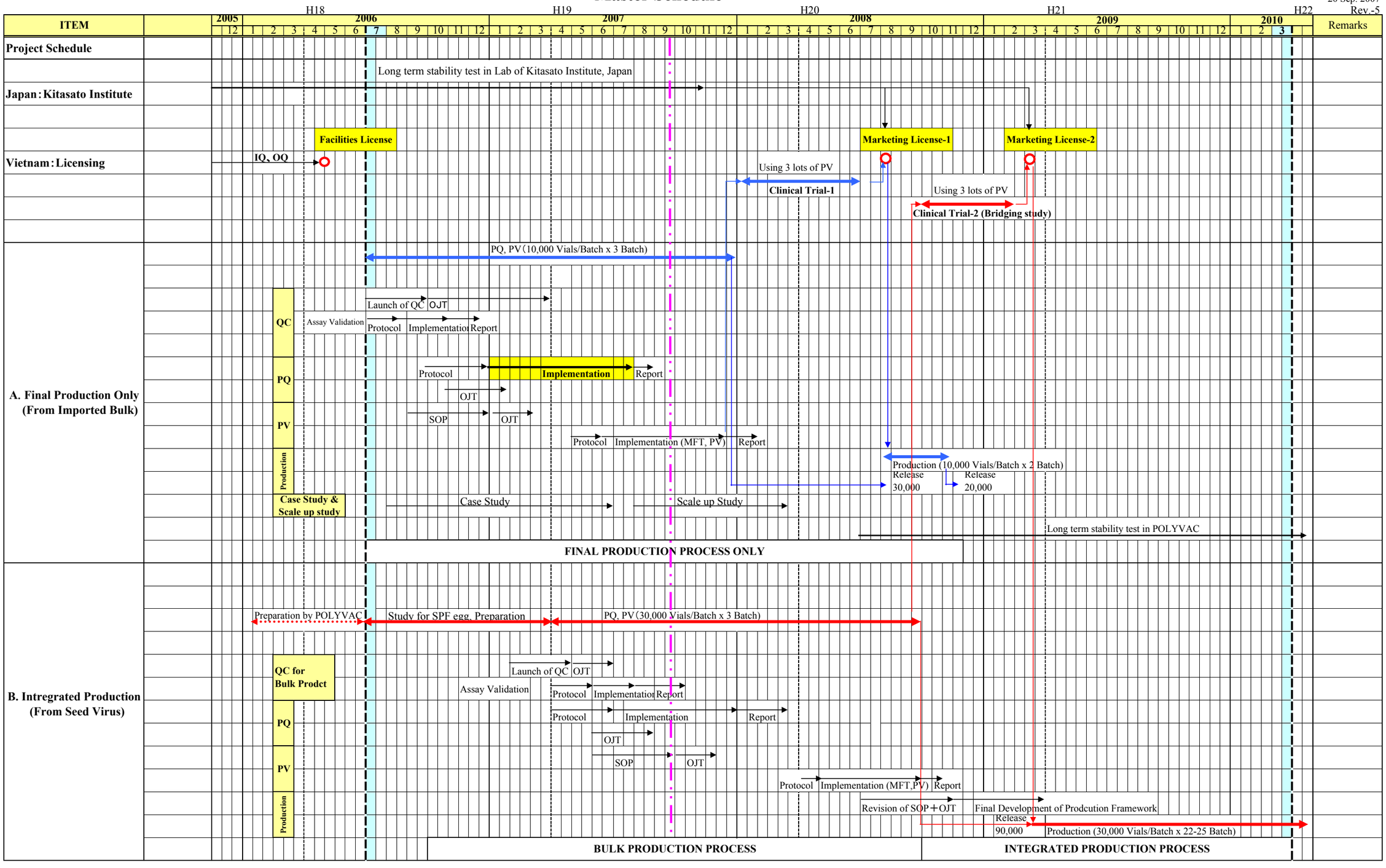
Note: GMP: Good Manufacturing Practice, NRA: National Regulatory Authority, SOP: Standard Operating Procedure
PQ: Performance Qualification, PV: Process Validation

Annex 3. Master Schedule of the Project

Technical Cooperation Project for Strengthening Capacity for Measles Vaccine Production

Master Schedule

20 Sep. 2007
Rev.-5



Annex 4. Evaluation Grid

Evaluation Grid

for the Mid-term Evaluation of Measles Vaccine Production Project in Vietnam

Questions	Items to be confirmed	information/indicator	Information source/ target
1. Relevance			
1-1. Was the needs of Vietnamese side fully reflected?	1) Was the project purpose in line with the health policy in Vietnam?	- Long term health and medical policy (2001-2010)	
	2) Was the counterpart was suitable to the institution to produce measles vaccine?	-	Counterpart JICA expert
1-2 Was the process of planning relevant?	1) Was the target of output relevant?		Counterpart JICA expert
	2) Was the project purpose relevant?		Counterpart JICA expert
	3) Were necessary activities include to achieve the project purpose?		Counterpart JICA expert
	4) Was the system of Vietnamese project implementation body specified?		JICA expert
	5) Was the process of planning relevant?	Did all stakeholders participate?	Counterpart JICA expert
1-3 Was implementation schedule relevant enough?	1) Was the duration of the activities enough for the technical transfer?		Counterpart JICA expert
1-4 Was the project design accorded with Japanese international cooperation policy?			
2. Effectiveness			
2-1. How was the achievement of the Project purpose?	1) Were the necessary facility and equipments provided?	Provided equipment	Provided equipment list
	Output 1 2) Staff of POLIOVAC will acquire appropriate technical skill to produce quality measles vaccine	- Number of staff reached level 4. - Confidence in the task of the manager at each department	- Mid-term review - Counterpart interview
	Activities 1 - Had the technical transfer on bulk, filling, freeze-dry through the process of producing vaccine from the imported bulk been conducted?	- Number of staff reached level 4. - Confidence in the task of the manager at each department	- mid-term evaluation preparation report - Counterpart interview
	Activities 2 - Had the technical transfer on production of bulk vaccine through the processing of producing bulk vaccine from the seed virus been conducted?	- Number of staff reached level 4. - Confidence in the task of the manager at each department	- mid-term evaluation preparation report - Counterpart interview
	Activities 3 - Had the technical transfer on proper operation of mass production (7.5 million doses/year) of the measles vaccine been conducted?	- Number of staff reached level 4. - Confidence in the task of the manager at each department	- mid-term evaluation preparation report - Counterpart interview
	Activities 4 - Had the technical transfer on quality control of the products been conducted?	- Number of staff reached level 4. - Confidence in the task of the manager at each department	- mid-term evaluation preparation report - Counterpart interview
	Output 2 3) Production and quality management meet Vietnam-GMP which has met WHO-GMP standard.		- Interview to MOH, WHO
	Activity 1 - Had PQ/PV for vaccine production from bulk vaccine been conducted?	- Time/ number/ result of implementation	- mid-term evaluation preparation report - Counterpart interview
	Activity 2 - Had PQ/PV for vaccine production from seed virus been conducted?	- Time/ number/ result of implementation	- mid-term evaluation preparation report - Counterpart interview
	Activity 3 - Had the validation system for the production was established? Had the validation skill of the staff been strengthened?	- Implementation mechanism - Progress of technical transfer	- mid-term evaluation preparation report - Counterpart interview

Questions	Items to be confirmed	information/indicator	Information source/ target
	Activity 4 - Had the quality assurance complying with Vietnam-GMP which has met WHO-GMP standard been established and implemented?	- Implementation record for the establishment of GMP	- mid-term evaluation preparation report - Counterpart interview
	Activity 5 - Had the necessary SOP for the process of production, storage, carrying in/out of the products, etc. been prepared and implemented?	- Availability of prepared SOP - Implementation of it	- mid-term evaluation preparation report - Counterpart interview
	Activity 6 - Had the technical transfer on preparation of documents that need to meet Vietnam-GMP which has met WHO-GMP standard been conducted?	- Type of prepared documents - Progress of technical transfer in documentation	- mid-term evaluation preparation report - Counterpart interview
	4) What was the factor promoting/preventing the achievement of the outputs?		Counterpart JICA expert
2-2. Project purpose will be achieved?	1) Has the capacity of counterparts organization improved as a result of the Project implementation?		Counterpart JICA expert
	2) What was the factor promoting/preventing the achievement of the Project purpose?		Counterpart JICA expert
2-3. Overall goal will be achieved?	1) Is it possible to achieve the decrease of measles morbidity rate?	- Coverage rate of two doses of measles vaccine	Counterpart JICA expert
	2) What was the factor promoting/preventing the achievement of overall goal?		Counterpart JICA expert
3. Efficiency			
3-1. Was the scale of the Project appropriate for the project purpose?	1) Were the number and duration of the assignment of Japanese experts appropriate?		JICA Counterpart JICA expert
	2) Were the items, numbers and prices of the provided equipment appropriate?		JICA expert
	3) Was the number and duration of trainees in Japan appropriate?	Number and duration	JICA expert Counterpart
	4) The Project was implemented as scheduled?		Counterpart JICA expert
	5) Was the total amount of the Project budget appropriate?		Counterpart JICA
	6) Number of counterpart was appropriate? They were working full time for the Project?	Number of the counterpart-	Counterpart JICA expert
3-2. Was the timing of the Project appropriate?	1) The experts were dispatched timely?	Dispatching schedule	Counterpart JICA expert
	2) Equipment was provided timely?		Counterpart JICA expert
	3) Did the counterparts have been trained in Japan timely?		Counterpart JICA expert
	4) Did the project have been implemented timely?		Counterpart JICA expert
3-3. Was the support system of the Project appropriate?	1) JCC was functioned as expected?	-	Counterpart JICA expert
	2) Were the supports by the relevant organizations available?	(a) Vietnamese side (b) Japanese side	Counterpart JICA expert WHO
3-4. Was the linkage with other scheme of cooperation appropriate?	1) Was the linkage with the past Japanese project and project by other donors good enough?	(a) Other JICA projects (b) Projects by other donors	Counterpart JICA expert
4. Impact			
4-1. How was the extent of the contribution by the Project to the development of the health sector?	1) How much extent of social and economical progress have seen by the implementation of the Project?	- Extent of development of the GMP for vaccine manufacturer - Extent of the development of NRA	WHO MOH、NICVB
	2) What was the promoting/hampering factor to the Project for the development of the		Counterpart Other international organization

Questions	Items to be confirmed	information/indicator	Information source/ target
	health sector?		
4-2 How was the positive and negative impact by the Project?	1) Is there any impacts brought by the implementation of the Project? ・Technical ・Organizational ・Environmental ・Financial ・Cultural and social		JICA expert Japanese Volunteers
5. Sustainability			
5-1. Organizational sustainability	1) Do the counterparts have full intention to continue project activities?		Counterpart
	2) Do the counterpart have sufficient number of staff to continue project activities?	POLIVAC organization chart	Counterpart JICA expert
	3) Do the counterparts have assistance from the external organizations?		Other international organization (WHO、UNICEF、GAVI、Luxemburg)
5-2. Financial sustainability	1) Is it expected that the Project will be sustainable financially?		JICA expert Counterpart
	2) Is it expected that MOH will acquire sufficient budget?		MOH
5-3. Technical sustainability	1) Do the counterparts utilize the transferred technology appropriately?	- Record of maintenance	Counterpart JICA expert
	2) Do the trained counterparts assigned to the proper post?	- Plan of staff assignment	Counterpart JICA expert
	3) Were the facility and equipment maintained appropriately?	- Record of maintenance	Counterpart JICA expert
	4) How the technical transfer form the trained counterpart to the other staff will be proceeded?	- Plan of technical transfer	Counterpart
6. Lessons learnt and recommendations			
6-1. Is it necessary to extend project period?	1) In which area of the project is it necessary to extend?		JICA Vietnam Office JICA expert Counterpart
	2) How long it should be extended?		JICA Vietnam Office JICA expert
6-2. Is there any points to improve in the process of technical cooperation?	1) What was the issues and remedies for the implementation of the Project?		JICA Vietnam Office JICA expert
6-3. Is it necessary to reform from the aspects of the institution?	1) Any institutional change by Japanese side?		JICA Vietnam Office JICA expert
	2) What were the reforming points by the Vietnamese side from the aspects of organizational, authoritative, financial?		JICA Vietnam Office JICA expert
6-4. Is there any lessons learnt?	1) What were the promoting/ hampering factors to the Project?		Counterpart JICA expert
6-5. Is there any recommendations?	1) Is there any recommendations for the Project?		Counterpart JICA expert
	2) Is there any recommendations for the cooperation in the health sector?		Counterpart JICA expert

Annex 5. List of Dispatched Experts

Technical Cooperation Project for Strengthening Capacity for Measles Vaccine Production

DISPATCHED RECORD OF EXPERTS IN FY2006

Rev: 3 As of 20 Mar. 2007

No.	Name of Expert	Responsibility	Total days Plan	Total days Actual
1.	Setsuo ARAI	Project Manager	10	10
2.	Shuzo ISHIKAWA	D. PM/Engineering	120	90
3.	Tomio LEE	D. PM/Product Manager-1	60	60
3-1.	Tomio LEE	Final Production	0	16
4.	Keiko SASAKI	Product Manager-2	30	30
5.	Shigemitsu HIRAYAMA	GMP/Validation-1	30	7
5-1.	Shigemitsu HIRAYAMA	Final Production	0	25
6.	Takanori NAKASHIMA	GMP/Validation-2	0	38
6-1.	Takanori NAKASHIMA	Final Production	0	31
7.	Hidoe OKUMA	Organization Management	10	10
8	Shinji NAKAJIMA	Bulk Production-2	30	34
9	Kazunori MIYAGAWA	D. Product Manager/ Final Productio-1	128	122
10	Shuichi BABA	Final Productio-2	105	0
11	Nobuyuki IHARA	Final Productio-3	15	15
12	Kenichi BABA	QC-1	60	70
13	Fumio YOSHIDA	QC-2	90	115
14	Rikio OIKAWA	QC-4	36	26
15	Mitsuo NAOI	Medium Preparation	71	71
16	Tetsuo NAKAYAMA	QA-2	7	7
17	Shuzo ISHIKAWA	Facilities Validation	0	39
18	Hirohisa KAJIOKA	Process Water Validation	15	15
19	Haruo HIROSE	Vial Washing and Sterilization Validation	15	11
20	Keisuke SUZUKI	Filling Machine Validation	15	15
21	Toshiki YAMANOUCHI	Freeze Drying Machine Validation	15	15
22	Kaoru TOMIYAMA	Steam Sterilization Machine Validation	7	7
23	Mr. Song	Freeze Drying Machine Engineer		
Daily Total		Plan	869	879
		Actual		
Total Days		Plan	869	(1486)
		Actual	879	(1486)

July 2006: Plan 154 / Actual 142
August 2006: Plan 224 / Actual 157
September 2006: Plan 160 / Actual 210
October 2006: Plan 210 / Actual 179
November 2006: Plan 121 / Actual 191

No.	Name of Expert	Responsibility	Total days Plan	Total days Actual
1	Mr. Ishikawa		30	60
2	Dr. Lee		30	30
3	Mr. Hirayama		45	41
4	Mr. Nakashima		0	86
5	Mr. Miyagawa		82	90
6	Mr. Shuichi BABA		45	0
15	Mr. Ihara		60	41
7	Mr. Baba K		30	42
8	Mr. Yoshida		60	84
9	Mr. Naoi		34	34
10	Mr. Ishikawa		60	21
	Mr. Hirohisa KAJIOKA		15	0
	Haruo HIROSE		15	0
	Keisuke SUZUKI		15	0
	Toshiki YAMANOUCHI		15	0
	Yukihiro MOTOKI		30	0
	Kaoru TOMIYAMA		21	0
11	Mr. Kaname HIROSE		0	21
12	Mr. Takaya BAN		0	21
13	Mr. Sato F		15	26
14	Mr. Shinji Nakajima		15	0
16	Mr. Oikawa		0	10
Daily Total		Plan	617	607
		Actual		
Total Days		Plan	617	(1486)
		Actual	607	(1486)

December 2006: Plan 228 / Actual 136
Jan. 2007: Plan 198 / Actual 206
February 2007: Plan 109 / Actual 154
March 2007: Plan 82 / Actual 111
April 2007: Plan 17 / Actual 24

Annex 5. List of Dispatched Experts

Technical Cooperation Project for Strengthening Capacity for Measles Vaccine Production

Yearly Schedule in FY2007 (2nd Year)

Date; 16-Oct-2007
Rev- 18

Dispatch Schedule of Expert

No.	Description	PIC	Grade	Apr 2007	May 2007	Jun 2007	Jul 2007	Aug 2007	Sep 2007	Oct 2007	Nov 2007	Dec 2007	Jan 2008	Feb 2008	Mar 2008	Total days				Total Trips				Remarks
				1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	1W 2W 3W 4W	Plan	Actual	Present △	Total △	Plan	Actual	Present △	Total △	
	Project Manager	Arai	2						9/18 **6** 9/23			10				16	6	0	-10	2	1	0	-1	
	Deputy PJ Mger /Engineering	Ishikawa	3		5/27 0 **12** 6/07	6/25 **34** 7/28		9/03 **34** 10/06			**11/26**	27 **12/22**	27	24 12		146	80	12	-66	5	2	0	-3	
	Deputy PJ Mger /Production Manager (1)	Lee	3	4/23 **13** 5/5		7 7/18 13 **14** 7/31			9/13 **13** 9/25	**10/08** **13** **10/20**		13			13	78	53	1	-25	6	4	0	-2	
	Production Mger (2)	Sasaki	4						9/18 **10** 9/27							10	10	0	0	1	1	0	0	
	GMP/Validation (1)	Hirayama	3	4/22 **15** 5/6						20 11 **18** 10/21 18 **20** **11/09** **9/25** **10/12**						53	53	0	0	3	3	0	0	
	Administration Mger (1)	Okuma	5						9/18 **6** 9/23							6	6	0	0	1	1	0	0	
	Administration Mger (2)	Tamura	5			6/4 **9** 6/12			9/18 **6** 9/23			7 12				22	15	0	-7	3	2	0	-1	
	Bulk Production (1)	Sato	5		5/14 **62** 7/14			8/13 **27** 9/08				27 48		27 20		143	89	0	-54	4	2	0	-2	
	Bulk Production (2)	Nakajima	5							27 **0**			48 0			75	0	-75	-75	2	0	-2	-2	
	Bulk Production (3)	Katsuda	6		5/14 41 **34** 6/16								48 32			89	34	-7	-55	2	1	0	-1	
	Final Production (1)	Miyagawa	5	4/23 **48** 6/9		7/09 34 **48** 8/25				10/15 34 **48** **12/01**			27			143	144	28	1	4	3	0	-1	
	Final Production (2)	Baba S	5		5/14 **20** 6/02	0 7/08 **7** 7/14		9/03 0 **13** 9/15		10/23 **13** **11/04**			13			33	53	20	20	2	4	2	2	
	Final Production (3)	Ihara	5	4/30 **20** 5/19		7 7/16 **11** 7 7/26										31	31	0	0	2	2	0	0	
	Quality Control (1)	Baba K	5	4/23 **34** 5/26		7/16 **20** 8/04				20 **0**						74	54	-20	-20	3	2	-1	-1	
	Quality Control (2)	Yoshida	5		5/14 **48** 6/30		7/30 62 27 **17** 8/25			10/22	0 **34** **11/24**		20			130	99	-11	-31	3	3	1	0	
	Quality Control (4)	Yoshino	5		5/28 19 **18** 6/14					10/22	12 **27** **11/17**					31	45	14	14	2	2	0	0	
	Quality Control (5)	Hisashima	5		6/04 13 6/16											13	13	13	0	1	1	0	0	
	Quality Control (6)	Urayama	5		5/28 19 **18** 6/14											19	18	-1	-1	1	1	0	0	
	Medium Preparation	Naoi	5			6/11 34 **41** 7/21				10/01 20 **13** 10/13						54	54	0	0	2	2	0	0	
	Quality Assurance (1) /GMP/Validation (2)	Nakashima	3	4/22 **27** 5/18		6/03 27 **34** **41** 7/13	8/05 **27** 8/31			9/25 27 **32** **10/26**		11/25 27 **12/21**	20	27		182	127	19	-55	7	4	0	-3	
	Quality Assurance (2)	Nakayama	3							10/10 10 **7** 10/16		10	10			30	7	-3	-23	3	1	0	-2	
	Facilities Validation (1)	Ishikawa	4	4/23 **34** 5/26												34	34	0	0	1	1	0	0	
HVAC	Facilities Validation (2)	Matsumoto	5		5/13 21 **22** 6/03											21	22	1	1	1	1	0	0	
HVAC	Facilities Validation (3)	Shibata	5		5/13 21 **22** 6/03											21	22	1	1	1	1	0	0	
P Water	Equip Validation (1)	Kajioka	5					11 **0**								11	0	-11	-11	1	0	-1	-1	
Vial Washing	Equip Validation (2)	Takamori	5		5/28 **13** 6/09											13	13	0	0	1	1	0	0	
Filling	Equip Validation (3)	Suzuki	6					11 **0**								11	0	-11	-11	1	0	-1	-1	
Freeze Drying	Equip Validation (4)	Yamanouchi	5					11 **0**								11	0	-11	-11	1	0	-1	-1	
Freeze Drying	Equip Validation (4)	Iwami	5						9/04 **11** 9/14							0	11	0	11	0	1	1	1	
Freeze Drying	Equip Validation (4)	Kasuya	5						9/05 0 **11** 9/15							0	11	11	11	0	1	1	1	
Laminar	Equip Validation (5)	Motoki	5		5/21 **20** 6/9											20	20	0	0	1	1	0	0	
Autoclave	Equip Validation (6)	Tomiyama	5					11 **0**								11	0	-11	-11	1	0	-1	-1	
Calibration (1)	Equip Calibration (1)	Hirose	5		21 5/17 **9** 5/25											21	9	-12	-12	1	1	0	0	
Calibration (2)	Equip Calibration (2)	Ban	6		5/06 21 **20** 5/25											21	20	-1	-1	1	1	0	0	
Calibration (3)	Equip Calibration (3)	Tada	5		5/12 0 **9** 5/20											0	9	9	9	0	1	1	1	
																1573	1162	-45	-411	70	52	-1	-18	
																Plan	Actual	Present △	Total △	Plan	Actual	Present △	Total △	
																	73.9%				74.3%			

Note : Number of Italic means actual dispatched days.

Annex 6. List of Equipment provided by JICA

(Pattern No.2)
(Place of Purchase)
(Japan・Local)

Date/Month/Year(D/M/Y)
(01 / 03 / 2007)

Equipment Administration for the Survey/Expert/Volunteer/Others

Project/Expert/Volunteer /Others Name	Technical Cooperation Project for Strengthening Capacity for Measles Vaccine Production	Project/Expert/Volunteer/Others No.	No.	Budget Subject	
Counterpart Organization	CENTER FOR VACCINE AND BIOLOGICALS (POLYVAC)	Department/Section/office in Charge			
Dispatching/Cooperation Period	D/M/Y～D/M/Y 12 / 07 / 2006 ～ 22 / 03 / 2007	Consultant Name	Kitasato Institute		

Date of Registration in JICA Office D/M/Y	Description/ Name of Equipment /Goods	Specification ・Standard	Quantity	(Yen/Foreign Currency) Unit Price	Provider	User	Condition after Cooperation of Survey/Technical transfer				Transfer ・Return Date D/M/Y	Receiver	Receipt Date D/M/Y	Reference
							Transfer	Return	Others	Approval Document No. Date D/M/Y				
	A-1 Vibration Meter Model: VM-63A	*Type: Shear type * Measurement range: 0.001 to 1.999mm/s or wider *Accuracy:Within ±(5+2digits) *Display: 3-1/2 digits *Signal output: AC 2V Peak, load impedance >=10kΩ	1		Rion Japan									
	A-2 Sound Level Meter Model: NL-20	*Type: Handy *Measurement time: Auto 10s, 1min,. .30min, 1h, .24h Manual: 200h *Measurement level range: 28 to 138 dB *Freq range: 20Hz to 8kHz * Microphone: Electric condenser * Display: LCD, AC/DC output *Power source: Battery	1		Rion Japan									
	A-3 Stopwatch Model: SVAE 997	*Type: Industrial decimal type *Measurement time: 0 to 99999.9 DM *Resolution: 0.1 DM *Display time: Lap time/ Total time/ Running lap time/ Split time *Display: Digital (LCD) *Memory: 100 memories *Features: Alarm, full automatic calendar, watch. *Power source: Battery	1		Seiko Japan									
	A-4 Thermo-Hygro Recorder model: TR 72U	*Type: Handy recorder *Number channel: 2 *Measurement range: 0 to 50 degC (External Sensor) *Measurement accuracy: Temp(Average) within ±0.3degC (at -20 to 50degC) *Resolution: 0.1 degC *Recording time: range 1s to 60m in 15 choice time selection *Recording capacity: 8 000 readings *Data back-up: Active when battery low or switch off *Display: Digital (LCD) *Signal output: USB communication cable *Power source: Battery (life 1 year)	30		T&D Japan									

	A-5 Aerosol Generator Model: 3079	*Type: Compact type validation of HEPA filter *Liquid: DES (Nontoxic), DOP, PAO, Parafin *Solid: PSL, Nacl, other salt solution *Partice size: 0.2 to 0.3 µm (for EDS) *Particle concentration: > 10E+7/cm3 *Flow rate: 1.0 to 4.2 L/min *Max counter Presure: 10kPa (0.1bar) *Aerosol Outlet: Approx. Dia. 8mm *Dimension (cm): L28 x W20 x H17.5 *Power source: - Aerosol Generator DC12V - AC Adapter AC220V 50Hz 1 phase	1		TSI USA										
	A-6 Mist Generator Model: SCM2000	*Type: Handy type mist generator *Mist generating method: Ultrasonic generator or equiv *Tracer: Water, ultra pure water *Filter: HEPA filter (Equipped) *Particle size: Approx. 0.3µm *Filtering efficient: 99.97 or more *Power source: Mist generator - Ac220V 50Hz, single phasse or rechargeable battery - AC Adapter/ Battery charger	1		Shiro Japan										
	A-7 Particle Counter Model: KC-01E	*Type: Table top *Measuring Method: Optical sys by transverse light-scattering sys - Light source: Semiconductor laser wavelength: 780nm, rated output 40mW - Light detector: Photo diode *Mearsure range: 0.3 to 5 µm *Display: Digital (LCD) *Interface: RS-232Gx1 *Power source: AC220V 50Hz, single Phase	1		Rion Japan										
	A-8 Gas Detector Set Model: GV-100S	*Type: handy type *Sampling method: Manual (one hand Operation) *Sampling volume: Approx. 100mL *Applicable gas: Formaldehyde (HCHO) *Measure range: 0.05 to 1 ppm *Sampling time per pump stroke: Approx 1.5min	2		Gastec Japan										
	A-9 Gas Mask Model: GM165	*Type: Full facepiece type *Operating condition: 0.1% *Material: Silicone rubber *Weight: (680 ± 20)g	2		Shigematsu Japan										
	A-10 Gap Torque Meter Model: DTX2	*Type: Table top *Measure range: 3 - 50 kgf-cm *Revolution: 0.01 kgf-cm *Accuracy: ±0.5% F.S ±LSD *Display: Digital *Interface: RS-232 *Power source: AC220V 50Hz, single Phase	1		Imada Japan										
	A-11 Spectrophotometer Model: Helios Gamma	*Measurement method: single beam measurement, quartz coated *Wave length: 190 to 1100nm *Accuracy: 1.0nm *Photometric Repeatability: ±0.002A at 1A *Repeatability: within ±0.2n *Tray light: < 0.05% at 220nm *Display: LCD 75 x 100 mm, VGA graphic *Language: English, French, Germany, Italian, Spainish *Supplied Interface: RS-232C, Centronics Parallel (Printer), 0-1V analog Recorder *Dimension (cm): W45.5 x D39.5 x H21.5 *Weight: 10kg *Power source: AC220V 50Hz, single Phase	1		Thermo Electron England										
	A-12 Measuring tape Model: GL 12-30	*Type: Double faced tape *Tape length: 30m *Tape width: 12mm *Material: Glass fiber	1		KDS Japan										

	A-13 Digital Stroboscope Model: DT-2239A	*Type: Handy *Flash rate: 100 - 10000 flashes per minute (FPM) *Accuracy: ±(0.05%+1 digit) *Revolution: 1 fpm *Sampling time: 1s *Display: Digital (LED, 4 digits) *Range select: Auto *Power source: AC220V 50Hz, single Phase	1	A&D Japan	
	A-14 Electronic Balance Model: GX-200	*Type: Table top type *Max. weighing capacity: 210g *Resolution: 0.001g *Repeatability: 0.001g *Linearity: within ±0.002g *Display: Vacuum Flourescent Display (VFD) Operating range: 5 to 40degC or wider (at 85RH or less) *Power source: Ac220V 50Hz, Single phase	1	A&D Japan	
	A-15 Digital Surface Thermometer Model: TES-1304	*Type: Handy *Measurement range: -200+1333 degC *Accuracy: Within ±(0.1%reading +0.8 degC at 0 to 1333 degC) *Revolution: 0.1 degC *Channels: 2 *Apply thermocouple: K or J *Display: Digital (LCD) *Printer: Thermal printer (Equipped) *Power source: Battery	1	TES Taiwan	
	A-16 Low Temperature Water bath Model: PSL-1800	*Type: Tabletoop *Temp range: -80 to -40 degC *Temp Accuracy: Within ±1.0degC at center of bath *Temp resolution: 1degC *Temp Controller: PID Controller *Temp Sensor: Thermocouple(T type) *Bath: Volume 2.1L *Size: Dia. 140xH135mm *Material: Stainless steel (SUS304)	1	Eyela Japam	
	A-17-1 Standard Thermometer Code: No.0022	*Type: Dual-tube typemercury -in glass thermometer *Temp range: -50 to 0 degC *Resolution: 0.1degC *Total length: 400mm *Diameter: 9 to 10mm	1	Sato Japan	
	A-17-2 Standard Thermometer Code: No.0022	*Type: Dual-tube typemercury -in glass thermometer *Temp range: 0 to 50 degC *Resolution: 0.1degC *Total length: 400mm *Diameter: 9 to 10mm	1	Sato Japan	
	A-17-3 Standard Thermometer Code: No.0022	*Type: Dual-tube typemercury -in glass thermometer *Temp range: 50 to 100 degC *Resolution: 0.1degC *Total length: 400mm *Diameter: 9 to 10mm	1	Sato Japan	
	A-17-4 Standard Thermometer Code: No.0022	*Type: Dual-tube typemercury -in glass thermometer *Temp range: 100 to 150 degC *Resolution: 0.1degC *Total length: 400mm *Diameter: 9 to 10mm	1	Sato Japan	
	A-18 Hygrometer Model: 7450-60	*Type: Assmann type psychrometer *Measureing range: -30 to 50degC or wider *Resolution: 0.2degC *Accuracy: within ±0.2degC *Air flow system: Spring wound fan	1	Sato Japan	

	A-19 Multifunction Calibration Model: CA71	*Type: Handy *Measure range: -DVC -110V to 110V of wider (4 ranges) -ACV 0 to 300V or wider (4 ranges) -DCA -100 to 100mA (2 ranges) *Pulse 1 cycle/within ±2 digits *Display: Digital (LCD with backlight) *Display update rate: 2 times/s *Power source: AC220V 50Hz, single Phase and Battery	1	Yokogawa Japan
	A-20-1 Weight Calibration Model: 7508-F2PW	*Mass: 20 Kg *Material: Non magnetic stainless steel *Accessories: Carry case	1	Troemner LLC USA
	A-20-2 Weight Calibration Model: 7509-F2PW	*Mass: 10 Kg *Material: Non magnetic stainless steel *Accessories: Carry case	2	Troemner LLC USA
	A-20-3 Weight Calibration Model: 7513-F2PW	*Mass: 1 Kg *Material: Non magnetic stainless steel *Accessories: Carry case	1	Troemner LLC USA
	A-20-4 Weight Calibration Model: 7514-F2PW	*Mass: 500g *Material: Non magnetic stainless steel *Accessories: Carry case	1	Troemner LLC USA
	A-20-5 Weight Calibration Model: 61-1173	*Mass: 100g *Material: Non magnetic stainless steel *Accessories: Carry case	1	Sansho Japan
	A-20-6 Weight Calibration Model: 61-1171	*Mass: 20g *Material: Non magnetic stainless steel *Accessories: Carry case	2	Sansho Japan
	A-20-7 Weight Calibration Model: 61-1170	*Mass: 10g *Material: Non magnetic stainless steel *Accessories: Carry case	2	Sansho Japan
	A-20-8 Weight Calibration Model: 61-1169	*Mass: 5g *Material: Non magnetic stainless steel *Accessories: Carry case	2	Sansho Japan
	A-20-9 Weight Calibration Model: 61-1168	*Mass: 2g *Material: Non magnetic stainless steel *Accessories: Carry case	2	Sansho Japan
	A-20-10 Weight Calibration Model: 61-1167	*Mass: 1g *Material: Non magnetic stainless steel *Accessories: Carry case	2	Sansho Japan
	A-20-11 Weight Calibration Model: 61-1164	*Mass: 100mg *Material: Non magnetic stainless steel *Accessories: Carry case	2	Sansho Japan

	B-1 Intergrity Taster	*Type: Table top *Applicable filter: Sterilizing-grade filter *Test measure range: - Forward flow: 0.1 to 200mL/m - Bubble point: 700 to 6000mbar (0.07 to 0.6MPa) - Water intrusion: 0.05 to 30 mL/m *Operate SYS: Touch and Install software *Printer: Thermal printer *Interface for external PC: Equipped *Power source: AC220V 50Hz, single Phase	1		Pall										
	C-1-1 Spare Parts Insulated thermocouple for Sakura Autoclave	*Type: T *Element: single *Size: Dia 0.32mm x L12m	80		Okazaki Japan										
	C-1-2 Spare Parts Insulated thermocouple for Sakura Autoclave	*Type: K *Element: single *Size: Dia 0.32mm x L7m	15		Okazaki Japan										
	C-1-3 Spare Parts Mineral Insulated thermocouple for Airtech Japan	*Type: K *Element: single *Size: Dia 0.1mm x L3.5m	15		Okazaki Japan										
	C-1-4 Spare Parts Mineral Insulated thermocouple for BOG Edward	*Type: T *Element: single *Size: Dia 0.27mm x L17.112m	60		Okazaki Japan										
	C-2 Hybrid Recorder Model: DR232-12-00-1S/M1/H1	*Type: Table top Digital and Analog Recorder *Input Module: A/D resolution ±20000 *Measurement range DC 20mV to 50 mV *Measurement Accuracy: ±(0.05%ading + 2digits) *Power source: AC220V 50Hz, single Phase	2		Yokogawa Japan										
	D-1 Sensor Fitting Freezer Dryer	*Type: Sensor fitting of freeze dryer in JICA project site *Material: Stainless steel (SUS304) *Sensor size: Dia. 39mm	3		Sakura SI Japan										
	E-1 Temperature Calibrator	*Type: Portable type *Cal. Method: Constant temp. by dual-zone heating block *Temp range: 33 to 320 degC/ 91 to 608 degF *Stability: ±0.03degC / ±0.05degF *Heating time: 50 to 320 degC: 7 minutes *Cooling time: 320 to 100 degC: 30 mins, 320 to 50 degC: 60 mins *Insert tube: Code 105648, 105624 (probe Dia 16, 4 mm) *Material: Brass Dia 30mm x L160mm	1		JOFRA/AMETEK DENMARK/EU										
	E-2 Pressure Calibration	*Type: Portable type *Pressure range (CPC 200C): Vacuum to 15 bar/200 psi -0.8300 to 15.0000 bar (200psi) *Pressure Unit: 11 Units including *Media compability: non-corrosive and liquids *Display: Digital (LCD 5 digits) *Pressure generating sys: Hand pump (Model: T-930) *Power source: 9V battery x 1 pc	1		JOFRA/AMETEK DENMARK/EU										
	F-1-1 (Accessories for Freeze Dryer) Tray	*Type: Tray for Freeze dryer *Frame size(mm): W298 x D567 x H30 *Material: Stainless steel (SUS316L, t1.5mm) *Handle: Equipped	2		Suzuki Japan										

	F-1-2 (Accessories for Freeze Dryer) Frame	*Type: Internal frame for Item F-1-1 Tray *Frame size(mm): W391 x D565.5 x H28.5 *Material: Stainless steel (SUS316L, t2.0mm) *Handle: Equipped	1		Suzuki Japan										
	F-1-3 (Accessories for Freeze Dryer) Frame	*Type: Internal frame for Item F-1-1 Tray *Frame size(mm): W391 x D557 x H30 *Material: Stainless steel (SUS316L, t2.0mm) *Handle: Equipped	79		Suzuki Japan										
	F-1-4 (Accessories for Freeze Dryer) Loading Bar	*Type: Loading bar for item F-1-3 Frame *Blade width: 200mm *Length(mm): 1700 x 10 Dia *Material: Stainless steel (SUS316L)	2		Suzuki Japan										
	G-1 Tank Transporter	*Type: Manual type tank for transporter for laboratory *Frame material: Stainless steel SUS304 *Lifting winch: Manual *Lifting wire and hook: Equipped	1		Ikemoto Japan										

Annex 7. Operational Expenses provided by JICA

FY2007 (From July 2006 to March 2007)

Unit : Japanese Yen

Item	Contract Sum (A)	Expenditure (B)	Balance (C)=(A)−(B)
Personnel Cost	3,415,494	3,182,800	232,694
Maintenance / Management for Equipment Cost	62,808	67,939	▲ 5,131
Consumables Cost	496,500	494,756	1,744
Communication / Transportation Cost	124,960	128,483	▲ 3,523
Rental Fee	1,055,336	1,155,145	▲ 99,809
Miscellaneous Cost	163,396	188,159	▲ 24,763
Sub Total	5,318,494	5,217,282	101,212
Adjustment	▲ 494	▲ 494	
Total	5,318,000	5,216,788	101,212
Final Adjustment		5,216,000	102,000

FY2007 (Assumption from April to Sep. 2007)

Unit : Japanese Yen

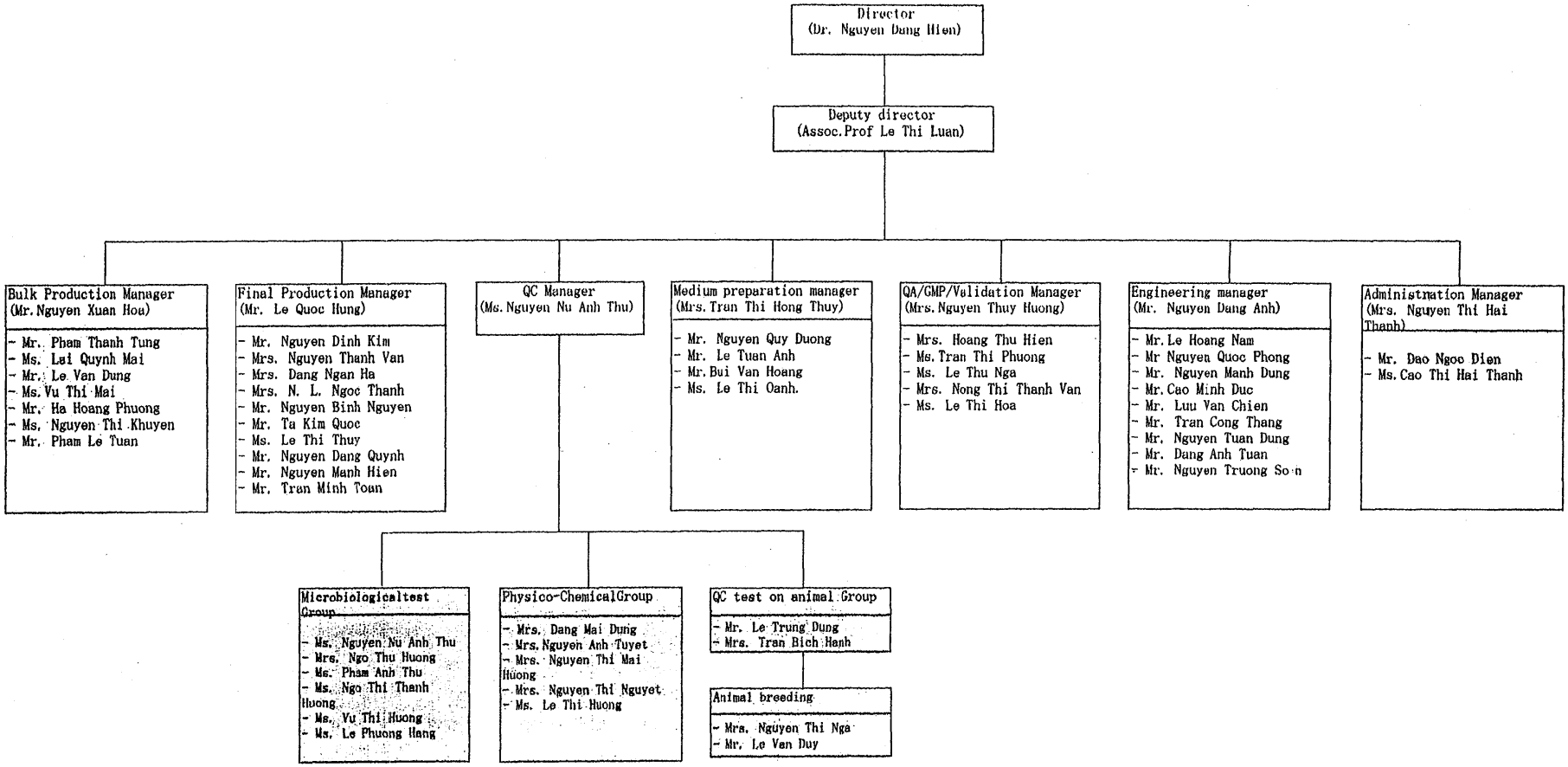
Item	Contract Sum (A)	Expenditure (B)	Balance (C)=(A)−(B)
Personnel Cost	5,420,542	2,000,000	3,420,542
Maintenance / Management for Equipment Cost	89,540	1,000	88,540
Consumables Cost	528,000	167,000	361,000
Communication / Transportation Cost	227,920	82,000	145,920
Rental Fee	1,579,160	608,000	971,160
Miscellaneous Cost	44,400	24,000	20,400
Sub Total	7,889,562	2,882,000	5,007,562
Adjustment	▲ 562		▲ 562
Total	7,889,000	2,882,000	5,007,000
Final Adjustment		2,882,000	5,007,000

Annex 8. Counterpart Training in Japan

Fiscal Year	Name of Training Course	Name of Trainees	Position of POLYVAC	Period	Contents of Training	Remarks
2006	Measurement of Serum Antibody Titer against Measles virus	1. Ms. Tran Thi Bich Hanh 2. Ms. Pham Anh Thu	Staff of QC Department Staff of QC Department	18 Jan.-17 Mar. 2007 (2 months)	Serum antibody titer measurement by HI and Neutralization methods	
2007	Test of Raw materials, Newborn bovine serum and Trypsin for Measles vaccine production	1. Ms. Nguyen Nu Anh Thu	QC Manager	Feb. 2008 (1 month)	Test for freedom from extraneous viruses of bovine serum and trypsin	
	GMP control and Quality assurance for Vaccine production	2. Ms. Nguyen Thuy Huong	QA Manager		Quality assurance and GMP/Validation managements	

Annex 9. Organization Chart of Measles Vaccine Production of POLYVAC

Organization Chart for Measles vaccine production



Annex 10. List of Counterparts of the Project

List of staff working in MVPF

No.	Name	Total
I Director board.		
1	Nguyen Dang Hien	**2**
2	Le Thi Luan	
III. QA Dept.		
3	Nguyen Thuy Huong	**6**
4	Hoang Thu Hien	
5	Le Thu Nga	
6	Tran Thi Phuong	
7	Nong Thi Van	
8	Le Thi Hoa	
IV. QC Dept.		
9	Nguyen Nu Anh Thu	**15**
10	Ngo Thu Huong	
11	Pham Anh Thu	
12	Vu Thi Huong	
13	Ngo Thi Thanh Huong	
14	Le Phuong Hang	
15	Dang Mai Dung	
16	Nguyen Anh Tuyet	
17	Nguyen Thi Mai Huong	
18	Nguyen Thi Nguyet	
19	Le Thi Huong	
20	Le Trung Dung	
21	Tran Bich Hanh	
22	Nguyen Thi Nga	
23	Le Van Duy	

V. Bulk Dept.		
24	Nguyen Xuan Hoa	**8**
25	Pham Thanh Tung	
26	Lai Quynh Mai	
27	Ha Hoang Phuong	
28	Le Van Dung	
29	Vu Thi Mai	
30	Khuyen	
31	Pham Le Tuan	
VII. Final Dept.		
32	Le Quoc Hung	**11**
33	Nguyen Dinh Kim	
34	Dang Thi Ngan Ha	
35	Nguyen Thi Thanh Van	
36	Nguyen Luong Ngoc Thanh	
37	Nguyen Binh Nguyen	
38	Le Thi Thuy	
39	Ta Kim Quoc	
40	Nguyen Dang Quynh	
41	Tran Minh Toan	
42	Nguyen Manh Hien	
VIII. Medium Dept.		
43	Tran Hong Thuy	**5**
44	Nguyen Quy Duong	
45	Le Tuan Anh	
46	Bui Van Hoang	
47	Le Thi Oanh	

IX. Eng. Dept.		
48	Nguyen Dang Anh	**9**
49	Nguyen Manh Dung	
50	Nguyen Quoc Phong	
51	Cao Minh Duc	
52	Tran Cong Thang	
53	Nguyen Tuan Dung	
54	Danh Anh Tuan	
55	Nguyen Truong Son	
56	Luu Van Chien	
X. Administration dept.		
57	Nguyen Thi Hai Thanh	**3**
58	Dao Ngoc Dien	
59	Cao Thi Hai Anh	
Total staff		**59**