

STUDY REPORT
ON
THE PROJECT FOR IMPROVEMENT OF EQUIPMENT
FOR DEMINING ACTIVITIES (PHASE II)
IN
THE KINGDOM OF CAMBODIA

FEBRUARY 2000

JAPAN INTERNATIONAL COOPERATION AGENCY

PREFACE

In response to a request from the Government of the Kingdom of Cambodia the Government of Japan decided to conduct a study on the Project for Improvement of Equipment for Demining Activities (Phase II) and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Cambodia a study from January 9 to January 23, 2000.

The team held discussions with the officials concerned of the Government of Cambodia, and conducted a field survey at the study area. After the team returned to Japan, further studies were made, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Kingdom of Cambodia for their close cooperation extended to the teams.

February 2000



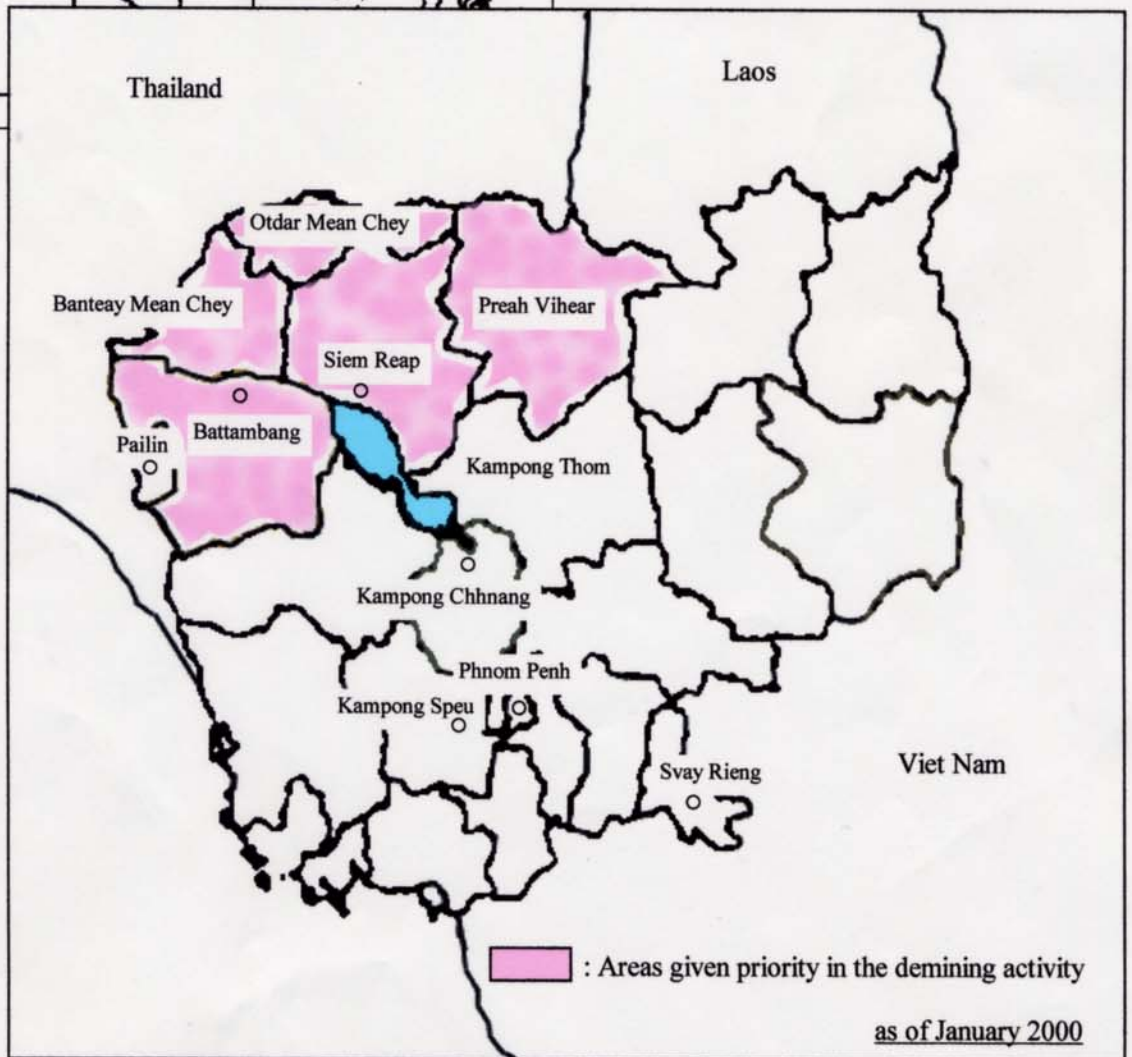
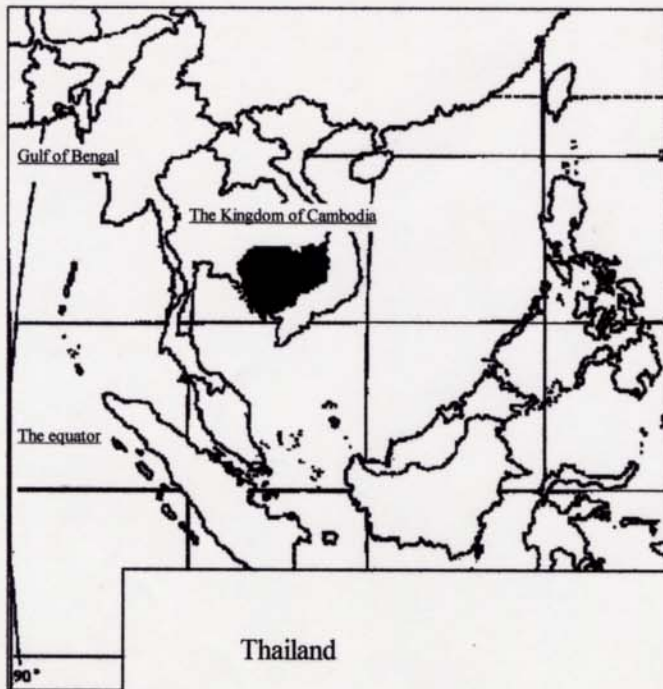
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Location map/ perspective



Abbreviations

UNTAC	United Nations Transition Authority in Cambodia
UNDP	United Nations Development Programme
CMAC	Cambodian Mine Action Centre
MPT	Mobile Platoon Team
CMT	Community Marking Team
MMT	Mine Marking Team
D/U	Demining Unit
EOD	Explosive Ordnance Disposal
SOP	Standing Operation Procedure
PMU	Project Managing Unit
PIP	Public Investment Programme
CDC	The Council for Development of Cambodia

Chapter 1 Background of the Project

The Kingdom of Cambodia (hereinafter referred to as "Cambodia") became independent from France in November 1953 after the World War II. Since then, the civil war continued in Cambodia for more than twenty years and caused political confusion.

In October 1991, the "Cambodian Peace Agreement" was signed in Paris. Based on this Agreement, the United Nations Transition Authority in Cambodia (UNTAC) started its activity from March 1992 and Cambodia launched on the reconstruction of country with international supports.

Because Cambodia is traditionally an agricultural country and more than 80% of its nation are engaged in agriculture, it started to reconstruct agriculture. In 1993, the UNTAC started to repatriate approximately 350,000 refugees evacuated in the border area of Thailand. In response to that, Cambodia started to put all its efforts in recovering the farmlands in Cambodia, which had been exhausted by the civil war, in order to secure the living of returning farmers in the society.

However, even at present, approximately 4 to 6 million land mines (estimated by the United Nations (UN)) buried during the civil war period are said to exist in the rural areas except Phnom Penh, the capital of Cambodia. The cases of returning farmers and local residents suffering from the injuries caused by antipersonnel mines and unexploded ordnance are still found (about 1,600 people were injured in 1998). The ratio of the residents suffering from land mines in Cambodia was one out of 236 (according to the material of the UN in 1997), which is higher than those in other countries having buried land mines (one out of 470 in Angola and one out of 862 in Mozambique). Thus the existence of land mines and unexploded ordnance presents urgent problem to the Government of Cambodia.

The Government of Cambodia established the Cambodian Mine Action Center (CMAC) under the guidance of UNDP in 1992 as an implementation organization for the demining activity. In 1998, the CMAC formulated the Five-year Plan covering 1999 to 2003 in order to promote the effectiveness of demining activities, and this plan contained the purchasing plan of equipment for demining activities over the same 5 year period.

However, due to the lack of financial resources, the CMAC could not implement its purchasing plan. Therefore, the Government of Cambodia requested the Japan's Grant Aid in order to procure the necessary equipment for the CMAC's Five-year Plan. To response the

request, the Japanese Government conducted a study and implemented "The Project for the Improvement of Equipment for Demining Activities" (hereinafter referred to as "Phase I"), which will be completed at the end of March 2000. The equipment procured in the Phase I was decided based on the equipment list which the CMAC had planned to procure in 1999 and 2000 as a part of the Five-year Plan.

In July 1999, the UNDP that manages the operating funds of the CMAC advised the CMAC to promote more efficient humanitarian demining activity and reduce the operating costs. In response to that, the CMAC analyzed its operations and formulated a reform plan including a drastic reform of organization in November 1999. The main points of the reform plan are described as follows:

1. Planning Department of the CMAC, which will be exclusively responsible for selection of demining area, will work with Provincial Land Use Planning Unit (LUPU) to meet the needs from local residents.
2. 23 existing demining platoons will be transformed into Mobile Demining Platoon Teams (MPT), which are expected to perform demining activities with high flexibility.
3. Community Marking Team (CMT¹, currently 12 teams) and Mine Marking Team (MMT², currently 11 teams) whose works are directly connected with profit of local residents will be increased to 20 teams each.
4. Functions of Operations and Planning in the current headquarters in Phnom Penh will be moved to the Forward Headquarters in Battambang, the priority demining area.
5. Demining Unit (D/U) No.3 in Kampot will be transferred to Battambang in order to concentrate the demining resources to the priority demining area.
6. Vehicle workshop system will be re-established and moved toward demining sites.
7. Financial transactions will be made transparent with new account system.
8. Human Resource Development Department will be newly established to develop the CMAC's capability especially in the field of management.

¹ CMT: Consists of five members and conducts the demining work in restricted areas when a request for demining is made from the local residents for their daily needs such as the access road to water supply site. Therefore, the demining range is usually indicated not by the area but by the length (m).

² MMT: Consists of five members and identifies the areas where land mines and unexploded ordnance are buried based on the records of battles in the former civil war, past accidents, and the hearing from residents near the demining site. This team lays the mine marking poles/notice boards and isolates that area as the dangerous area. If a demining activity is necessary to proceed the mine marking activities, MMT itself conducts a demining activity.

Under the above mentioned situation, the Government of Cambodia requested the grant aid of the Japanese Government to procure the equipment for replacement and addition as the continuation of the Phase I and to procure the equipment considered necessary for the reform plan.

Chapter 2 Contents of the Project

2-1 Objectives of the Project

The main objective of this Project is to procure the equipment considered necessary for item 2, 3 and 6 of the reform plan explained in Chapter 1. Item 2 and 3 intend to promote the effectiveness and the quickness of the demining activities of the CMAC by improving the mobility of demining platoons. Item 6 is expected to support the activities executed by MPT, CMT and MMT by improving the facility and equipment for maintenance of vehicles which are indispensable for demining activities of the CMAC.

2-2 Basic Concept of the Project

(1) Equipment to newly established MPT

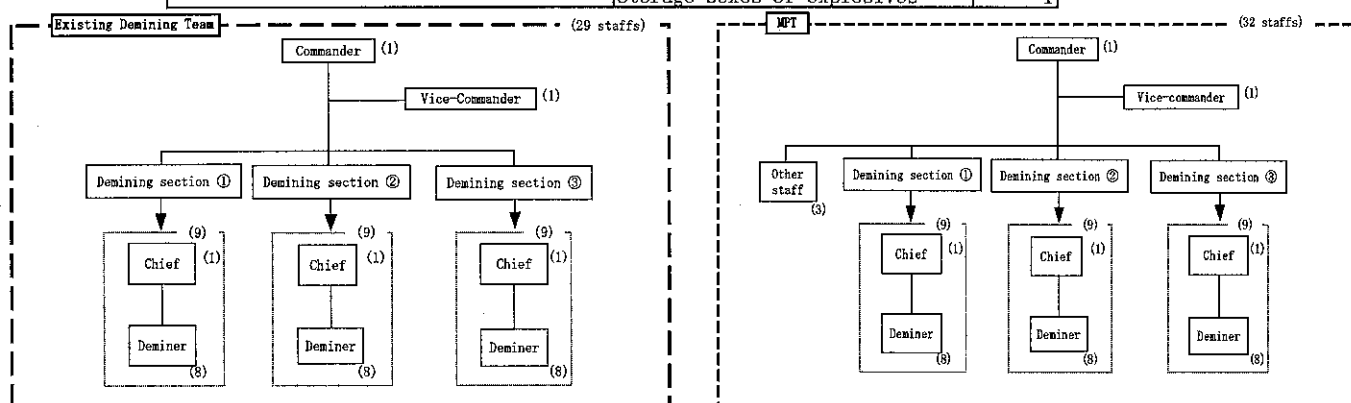
According to the reform plan, twenty-three teams out of the sixty-seven existing demining platoons shall be converted into MPTs. The CMAC intends to make better use of its demining resources by mobilizing the MPTs, which makes possible demining activities in the area where it is inaccessible by the existing demining platoons.

Currently existing demining platoons have to commute between the demining fields and the Demining Site, where they sleep, by taking one to three hours for one way (two to six hours for the round trip). The CMAC wants to improve the daily operating efficiency by reducing the moving time to sites to within thirty minutes and changing the working days of the demining platoon staff from five days a week to twenty-one days a month.

The CMAC plans to equip the MPTs with the accommodation facilities and several daily necessities. Thus the requested tents, camp cots, water tank trailers, and power generators are determined necessary and included in procurement items. In addition, since the standing operation procedure (SOP) requires one ambulance for each demining site, one ambulance shall be procured to each MPT. However, the duck boards/flooring and the mobile stores that were also requested shall be excluded from the procurement items because it was determined more rational for the CMAC itself to make and install these items after constructing the tents. Differences of the personnel configuration and the items between the existing demining platoons and the MPTs are shown in the Table below. (Portable toilet and storage case for explosives shown in the Table below were not requested.)

Figure 1 Table and diagram comparing the existing demining team and the MPT

Existing demining team		MPT	
Equipment name	Amount	Equipment name	Amount
Truck	1	Truck	1
Ambulance	1	Ambulance	1
Motorcycle	1	Motorcycle	1
Radio equipment (mobile station)	1	Radio equipment (mobile station)	1
Tranceiver	2	Tranceiver	2
Tent for demining site	1	Tent for demining site	1
Mine detector	13	Mine detector	13
Demining instrument	12	Demining instrument	12
		Tent (10m×6m)	2
		Generator (5kVA)	1
		Camp cot	32
		Water tank trailer	1
		Water pump	1
		Portable toilet	1
		Mobile store	1
		Storage boxes of explosives	1



Source: Hearing from the CMAC in January 2000

(2) Equipment to CMT and MMT

CMTs and MMTs are required to have the highest mobility among the demining platoons. However, because they do not have accommodation facilities such as tents at present, they must commute to the demining work from the Demining Site. Thus they are almost impossible to conduct the demining activity at the sites where they cannot commute in a day. From this reason, the Project shall include procurement of the tents (7 x 3 m) each of which can accommodate a team of five members and camp cots to all the members of 20 CMTs and 20 MMTs. The contents of the standard equipment for each CMT and MMT are shown below.

Table 1 Standard equipment for CMT and MMT

CMT		MMT	
Equipment name	Amount	Equipment name	Amount
Truck	1	Truck	1
Motorcycle	1	Motorcycle	1
Radio equipment	1	Radio equipment	1
Tranceiver	2	Tranceiver	2
Marking equipment (pole, paint, wire, etc.)	1	Marking equipment (pole, paint, wire, etc.)	1
Office equipment	1	Office equipment	1
Map making tools	1	Map making tools	1
Tent	1	Tent	1
Camp cot	6	Camp cot	6
Generator	1	Generator	1
Water tank trailer	1	Water tank trailer	1
Mine detector	2	Mine detector	2

Note: MMT shall use mine detectors of its D/U as necessary.

Source: Hearing from the CMAC in January 2000

(3) Workshop tools and equipment

The workshop tools of the CMAC are insufficient. Many of the vehicles that need repair are transferred from the demining sites to Phnom Penh and repaired at the private workshops. Under these circumstances, the CMAC plans to construct a Central Workshop in Battambang where the Forward Headquarters will be established by the reform plan, and six workshop stations close to the demining sites (four D/Us, Phnom Penh and Kampong Chhnang). This Project shall include the workshop tools and equipment which shall complement the existing workshop system.

(4) Flat form (Low bed)

Two flat forms (20-ton class) shall be procured in this Project for transporting the four brush cutters which were procured in the Phase I.

2-3 Basic design

2-3-1 Design Concept

The Basic Design of this Project shall be based on the following concept in order to maximize the effect of this Project.

(1) Natural and social conditions

The climate of Cambodia can be broadly classified into the rainy (from May to October) and the dry (November to April) seasons. In the rainy season, more than 80% of annual rainfall concentrates and the roads in the areas for demining activity are in bad condition. Therefore, the ambulances to be procured for twenty-three MPTs shall be of four-wheel drive and the flat forms for transportation of the brush cutters shall be of 20-ton class which is minimum for transportation of the two types of brush cutters (10 and 15-ton class).

The tents to accommodate the MPTs, CMTs and MMTs shall be made of the materials having sufficient waterproofness.

(2) Operating and Maintenance Costs

Because the CMAC is required to reduce the operating and maintenance costs by the CMAC Steering Committee, which is the supervising organization, the number of the equipment that needs fuel and replacement parts, such as flat form, forklift, and ambulance, shall be limited to the minimum. (See 3-2 in the Chapter 3 for reference of the detailed contents of the operating and maintenance costs of equipment to be procured.)

Besides, in order to avoid operating and maintenance costs to increase, unnecessary equipment shall be excluded from this Project.

Table 2 CMAC component unit and the change of the owned equipment

	Necessary amount	January 2000		After delivery of the equipment procured by Phase I Estimate for March 2000		Necessary number of equipment after the reform of organization	After delivery of the equipment procured by The Project Estimate for March 2001	
		Number of the existing equipment	Amount procured by Phase I		Number of the owned equipment		Number of equipment to be procured by The Project	Number of the owned equipment
Equipment for demining platoons (traditional team and MPT)								
Generator (5kVA)	45	12	5	17	47	23	40	
Ambulance	45	13	8	21	47	23	44	
Tent (10m×6m)	0	0	0	0	46	46	46	
Camp cot	0	0	0	0	759	759	759	
Water tank trailer	45	9	15	24	47	23	47	
Water pump	45	9	0	9	47	23	32	
Truck	45	57	0	57	47	0	57	
Motorcycle	45	42	0	42	47	0	42	
Radio equipment (VHF mobile station)	67	45	10	55	55	0	55	
Tranceiver (VHF)	134	90	25	115	110	0	115	
Mine detector	871	1200	200	1400	715	0	1400	
Demining equipment	804	1000	0	1000	660	0	1000	
Mobile store	0	0	0	0	23	0	23	
Tents for demining sites	67	67	0	67	55	0	67	
Portable toilet	0	0	0	0	47	0	47	
Storage box of explosives	0	0	0	0	23	0	23	
Equipment for CMT and MMT								
Tent (7m×3m)	0	0	0	0	40	40	40	
Camp cot	0	0	0	0	248	248	248	
Number of CMAC component unit								
Demining Site		15	15			8		
Existing demining team		67	67			32		
MPT		0	0			23		
CMT		12	12			20		
MMT		11	11			20		

NOTES

- 1: The necessary amount of generator, ambulance, water tank trailer, water pump, truck, motorcycle and portable toilet shall be three for each Demining Site and one for each MPT.
- 2: The necessary amount of radio equipment (VHF mobile station) shall be one for each demining team (traditional team and MPT).
- 3: The number of existing mine detector includes the ones being in trouble.
- 4: The number of existing demining equipment is the approximation.
- 5: Mobile stores, portable toilets and storage boxes of explosives shall be manufactured or procured by the CMAC.

Source: Hearing from the CMAC in January 2000

(3) Technical level of the CMAC's maintenance division

The CMAC classifies the levels of the vehicle maintenance into three levels (Level 1 to 3). Level 1 is daily routine inspection. Level 2 is repair of minor damages. Level 3 is repair of major damages. The work of Level 1 and 2 is conducted by the CMAC itself, but Level 3 work is currently done by private workshops in Phnom Penh not because of lack of capable mechanics but because of lack of equipment and facilities.

Judging from the above-mentioned situation, the CMAC is considered capable of utilizing the workshop tools to be procured in this Project, which shall be used for the maintenance of Level 2 and 3.

2-3-2 Basic Design

(1) Distribution plan of the equipment

The equipment to be procured in this Project shall be allocated as shown in Table 3.

Because twenty-three MPTs, and eight CMTs and nine MMTs to be additionally established do not exist at present, they must be organized by the CMAC by the time the equipment is delivered.

The places to keep these tools and equipment are already secured in the Central Workshop in Battambang and the regional workshop stations in D/Us 1 to 4, Phnom Penh, and Kampong Chhnang.

Table 3 Places where the equipment to be procured by this Project shall be assigned

	Location	Flat form	Water tank trailer	Water pump	Forklift	Ambulance	Tent 1	Tent 2	Camp cot	Generator	Workshop tools and equipment 1	Workshop tools and equipment 2
HQ	Phnom Penh											1
Forward HQ	Battambang	2									1	
PMU	Siem Reap											
Central warehouse	Kampong Chhnang				1							1
D/Us	Banteay Mean Chey, Battambang (2), Kampong Thom											4
Demining Site												
Demining platoons												
MPT	Banteay Mean Chey, Battambang (2), Kampong Thom		23	23		23	46		759	23		
CMT								20	124			
MMT								20	124			

(2) Equipment plan

Table 4 Equipment to be procured by this Project

	Equipment name	Amount	Specifications and use
1	Flat form	2	Transportation of brush cutters
2	Water tank trailer	23	Supply of living water to MPT
3	Water pump	23	Supply of water to water tank trailer
4	Forklift	1	Loading , unloading and transportation inside the Central Warehouse
5	Ambulance	23	Transportation of wounded staff from the MPT demining site
6	Tent 1 (10m×6m)	46	Accommodation of MPT staff
7	Tent 2 (7m×3m)	40	Accommodation of CMT and MMT staff
8	Camp cot	1,007	Accommodation of MPT, CMT and MMT staff
9	Generator	23	Power supply to MPT
10	Workshop tools and equipment 1	1	Maintenance of vehicles and generator at the Central Workshop
11	Workshop tools and equipment 2	6	Maintenance of vehicles at six workshop stations

1) Flat form (Low Bed)

The flat form to be procured in this Project shall be used to carry the brush cutters (10 and 15-ton classes) procured in the Phase I. Battambang province where the flat forms shall be

used has poor road condition and most of the roads are unpaved. Thus the flat forms shall be of flat bed type. Also, it shall be of 20-ton class because the maximum load of bridges is approximately 30 to 40 tons.

2) Water tank trailer

The water tank trailers to be procured in this Project shall be used to supply the living water to twenty-three MPTs. The tank shall have a capacity of 1,000 liters, which is sufficient to supply the living water and convenient to be carried. The specifications shall be the same as those of Phase I.

3) Water pump

The water supply pumps to be procured in this Project shall be used with the above mentioned water tank trailers.

Pumps powered by gasoline engines shall be procured. Because approximately 500 liters/minute of water must be supplied, the diameter of the water pump shall be 2 inches. Also, the pumps shall be operated by gasoline engines, which are easy to carry and handle.

4) Forklift

The forklift to be procured in this Project shall be used in the Central Warehouse established next to the CMAC training center in Kampong Chhnang. Because the forklift will be used in-door and gasoline is easily available around Kampong Chhnang, the forklift shall use the gasoline as the power source. A 3-ton class forklift which the CMAC have borrowed in the past and the CMAC operators are accustomed to is considered to be most appropriate. The cargoes to be handled in the warehouse will be approximately 2.7 tons at the maximum.

5) Ambulance

The ambulances is planned in this Project since the SOP requires that each demining team keep one ambulance in standby state, which shall be used to transport the injured people by the accident during the demining work or transport the injured people from their accommodation facilities. In the past, forty-six people were injured or died during the demining activity and more than ten demining workers died from malaria. Considering the road situation, the ambulances shall be of four-wheel drive as those in the Phase I. The number of ambulances to be procured shall be one for each MPT with a total of twenty-three ambulances.

6) Tent 1 (10 x 6 m for 16 people), tent 2 (7 x 3 m for 5 people)

Tent 1 shall be used as the accommodation facility of MPT demining workers. The size of tent 1 shall be 10 x 6 m for accommodating sixteen people and be effectively carried and

constructed near the demining field. The necessary number of tents shall be estimated as follows.

Necessary number

$$\begin{aligned} &= (\text{number of a MPT's staff} / 16) \times \text{number of MPT} \\ &= (32 \div 16) \times 23 \\ &= 46 \end{aligned}$$

Tent 2 shall be used as the accommodation facility of twenty CMTs and twenty MMTs that do not have any tents for accommodation purpose. Each CMT and MMT shall consist of five people and equipment. The tent of 7 x 3m size shall be sufficient for accommodating five people and storing the equipment. Therefore, the amount shall be estimated as follows.

Necessary number of tents

$$\begin{aligned} &= \text{number of CMTs} \times 1 + \text{number of MMTs} \times 1 \\ &= 20 + 20 \\ &= 40 \end{aligned}$$

Both the tents 1 and 2 shall be made of membrane cloth by considering the meteorological and soil conditions of the places where the tents will be constructed and have the durability of at least five years. Because they are expected to be used during the rainy season, they shall have waterproof processing and spare waterproof spray and the spare equipment shall be also attached.

Because large-scale tents need certain techniques and experience to set up, only two types are selected.

7) Camp cot

The camp cots shall be used by MPT demining workers, CMT and MMT workers, and CMT and MMT supervisors. Because the average height of a Cambodian adult male is less than 170 cm, the size of the camp cot to be procured shall be of standard specifications (length of approximately 210 cm). The necessary number of camp cots is estimated as follows.

Necessary number of camp cots

$$\begin{aligned} &= (\text{number of a MPT's staff} + \text{spare (1)}) \times \text{number of MPTs} + (\text{number of a CMT's workers} + \text{spare (1)}) \times \text{number of CMTs} + \text{CMT supervisors (4)} + (\text{number of a MMT's workers} + \text{spare (1)}) \times \text{number of MMTs} + \text{MMT supervisors (4)} \\ &= (32 + 1) \times 23 + (5 + 1) \times 20 + 4 + (5 + 1) \times 20 + 4 \end{aligned}$$

$$= 759 + 124 + 124$$

$$= 1007$$

8) Generator

The generators shall be used to supply power to MPTs. Thus the generators of 5 kVA have sufficient power. In addition, because MPTs have to move frequently, generators with gasoline engine will be the convenient.

9) Workshop tools and equipment

The workshop tools and equipment to be procured in this Project shall be used at the Central Workshop and six regional workshop stations. The detail of workshop tools and equipment for the Central Workshop and workshop stations are shown below.

Table 5 Details of workshop tools and equipment

	Central Workshop	Workshop Station
Vehicle maintenance and service	two-pole lift, hydraulic press, portable gantry crane, wagon, air compressor, parts rack	hydraulic press, floor crane, wagon, air compressor, parts rack
Tools and equipment to repair oil and grease system	grease gun, oil filter wrench, drum pump	grease gun, oil filter wrench, drum pump
Detection of the location that needs repair and measuring equipment	compression gauge (for diesel engine and gasoline engine), nozzle tester, diesel tachometer tester, cylinder gauge	compression gauge (for gasoline engine), battery coolant tester, nozzle tester, diesel tachometer tester
Tools and equipment to disassemble, assemble and repair the engine	engine stand, valve filter, piston ring compressor, puller set, socket wrench	puller set, socket wrench
Tools and equipment to repair tire and brake system	tire air pressure gauge, valve repair tool, air chuck	tire air pressure gauge, valve repair tool, air chuck
Tools and equipment to repair battery and electric system	battery replacement tool, electrolyte injector, electrolyte hydrometer, booster cable	battery replacement tool, electrolyte injector, electrolyte hydrometer, booster cable
Tools and equipment for disassembling and assembling	welder, electric grinder, sledge hammer, saw, large scissors, spray gun	welder, electric drill, electric grinder, spray gun

Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Schedule

The implementation schedule of this Project is shown in Table 6.

Table 6 Implementation schedule of this Project

	1	2	3	4	5	6	7	8	9	10	11	12	
D e t a i l D e s i g n	■	Site Survey (1)											
		■	Site Survey (2)										
	□					Domestic Work							
P r o c u r e m e n t	□					□							
	Equipment manufacturing and procurement												
												□	
												■	
												□	
												■	



Overseas operation Site survey (1): Contract on the consultant services, Detail design
Site survey (1): Explanation of tender documents



Domestic operation Domestic work: Request for estimate, announcement of tender and selling of documents, implementation of tender, contractor agreement

3-1-2 Obligations of Recipient Country

The following measures should be taken by the Cambodian side for the successful implementation of the Project.

- (1) To ensure prompt unloading and customs clearance at ports of disembarkation in Cambodia and internal transportation therein of the products purchased under the Project
- (2) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Cambodia with respect to the supply of the products and services under the Verified Contracts
- (3) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts such facilities as may be necessary for their entry into Cambodia and stay therein for the performance of their work
- (4) To ensure that the products purchased under the Project be maintained and used properly, effectively and exclusively for the humanitarian mine clearance activities conducted by the CMAC
- (5) To bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" and payment commissions
- (6) To bear all the expenses, other than those covered by the Grant, necessary for the Project
- (7) To organize the responsible organization and select the staff in charge for implementing and after implementing this Project
- (8) To secure the budget of the responsible organization in implementing and after implementing this Project

3-2 Operation and Maintenance

The budget for operating and maintaining the equipment and facilities of the CMAC in 2000 is approximately US\$3,903,000, which is 47.1% of the entire budget of the CMAC. The equipment to be procured in this Project shall cause the additional operating and maintaining costs of almost US\$91,500. The ratio against the operating and maintenance budget of the

CMAC of US\$3,903,000 is almost 2.3%. The detail costs are shown in Table 7.

Table 7 Approximate annual maintenance costs

<Maintenance costs>

Equipment name	Unit price (in dollar)	Ratio of maintenance consts (%)	Durability (year)	Ratio of the parts to be procured (%)	Amount	Sum of money (US\$)
Flat form	109,961	35	6	5	2	12,187
Ambulance	18,327	25	6	5	23	16,685
Forklift	27,490	25	7	5	1	933
Water pump	1,833	35	5	5	23	2,803
Generator (5kVA)	3,665	35	6	5	23	4,672
Total						37,280

<Fuel costs>

Equipment name	Ratio of fuel costs (€/HP)	HP	Hours used in a year	Unit price of fuel	Amount	Total (US\$)
Flat form	0.056	250	300	0.658	2	5,526
Ambulance	0.04	150	300	0.658	23	27,237
Forklift	0.04	100	300	0.263	1	316
Water pump	0.01	20	600	0.658	23	1,816
Generator (5kVA)	0.01	20	5400	0.658	23	16,342
Total						51,237

<Oil and grease costs>

Equipment name	Capacity	Number of replacement	Price per a liter	Amount	Total (US\$)
Flat form	20	4	1.8	2	288
Ambulance	10	4	1.8	23	1,656
Forklift	10	4	1.8	1	72
Water pump	3	4	1.8	23	497
Generator (5kVA)	3	4	1.8	23	497
Total					3,010

This amount is not large and considered being able to be covered by the CMAC budget. However, the CMAC is instructed to reduce the operating and maintenance costs by the UNDP. Thus the efforts and the results of its cost reduction (for example the results of cost reduction in 2000, and that of 2001 which is after handing over the equipment procured in this Project) must be observed closely.

The above Table does not include the personnel costs. This is because the CMAC does not

plan to increase the number of operators and drivers for this Project. The CMAC plans to implement this Project with the existing personnel. Thus the increase of the personnel costs is not expected. However, with the expansion of the workshop for vehicle service, twelve mechanics are to be employed. This addition of personnel costs is to be sufficiently absorbed by the reduction of personnel which the CMAC plans under the guidance of the UNDP (the number of personnel to be reduced has not been confirmed).

Chapter 4 Project Evaluation and Maintenance Plan

4-1 Project Effect

(1) Verification from the standpoint of the effects on economic development

The Government of Cambodia formulated a Five-Year Socio-Economic Development Plan 1996 to 2000 and aims at an economic recovery towards year 2000. In this Plan, the Council for Development of Cambodia (CDC) planned a Public Investment Program (PIP), in which the development of agricultural villages has been intensively promoted. If the demining in agricultural villages is effectively implemented, promotion of development and reduction of poverty in these areas can be expected. Thus this Project is determined conforming to the above mentioned upper level Plan.

(2) Verification from the standpoint of social needs

The present CMAC reform plan has an objective to improve the efficiency of demining activities. However, the increase of working speed has physical limitations because demining activities of the CMAC depend on manual demining, whose procedure is strictly defined in the SOP. Thus, the CMAC reform plan aims at the efficient demining in the sense that it will satisfy the needs of local residents. MPTs, CMTs, and MMTs, which are to be covered by this Project, try to handle the needs of local residents promptly by improving the mobility of demining teams, which will conform also to the social needs.

(3) Verification from the standpoint of the environment surrounding the CMAC

Since the CMAC operation was audited in July 1999, the donor countries and international organizations contributing the operating funds to the CMAC have been taking cautious attitude towards the supports of the CMAC. However, termination of the contribution of operating funds from donors to the CMAC may lead to the deterioration of quality of the CMAC demining activity. Thus, if this Project helps the CMAC to implement its reform plan and the efficiency of the demining activities of the CMAC proves to be improved, this Project will contribute to recovery of donors' confidence in the CMAC.

(4) Verification from the aptness of implementing the grant aid cooperation

Because the demining activity should save human lives and secure the safety of their lives, this Project is determined to conform to the basic policies of Japan's Grant Aid Program, which emphasize the basic human needs.

4-2 Recommendation

For the effective implementation of this Project, the following points must be noted.

- (1) MPT, to which quite a large portion of the equipment procured under the Project will be delivered, is not in existence at present. The CMAC must establish the platoon before the delivery of the equipment. In case the final draft of the reform plan differs from those expected, the contents of the equipment procured under the Project must be revised.
- (2) Because the CMAC's operation depends on the UNDP trust funds, the CMAC must recover the confidence from the donor countries contributing the funds and secure the UNDP trust funds.
- (3) In order to achieve the above mentioned item (1) and (2), the CMAC must implement the formulated reform plan as planned.

**MINUTES OF DISCUSSIONS
STUDY
ON
THE PROJECT FOR
IMPROVEMENT OF EQUIPMENT FOR DEMINING ACTIVITIES (PHASE II)
IN
THE KINGDOM OF CAMBODIA**

In response to the request from the Royal Government of Cambodia (hereafter referred to as Cambodia), the Government of Japan decided to conduct the Study on the Project for Improvement of Equipment for Demining Activities (Phase II) in the Kingdom of Cambodia (hereafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA")

JICA sent to Cambodia the Study Team (hereinafter referred to as "the Study Team"), which is headed by Mr. Nobuharu IMANISHI, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs, and the Study Team is scheduled to stay in the country from January 10th to 21st, 2000.

The Study Team held discussions with the officials concerned of Cambodia and conducted site surveys.

In the course of discussions and site surveys, both parties confirmed the main items described on the attached sheets. The Study Team will proceed to further works and prepare the Study Report.

Phnom Penh, January 20, 2000





Mr. Nobuharu IMANISHI
Leader,
The Study Team
JICA



Mr. Khem SOPHOAN
Director General
Cambodian Mine Action Centre

ATTACHMENT

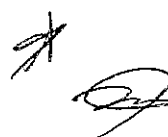
1. Objective
The objective of the Project is to strengthen demining activities of Cambodian Mine Action Centre (CMAC) by upgrading their equipment.
2. Project Site
The Project sites are shown in ANNEX 1.
3. Responsible and Executing Organization
 - (1) The responsible agency is Cambodian Mine Action Centre.
 - (2) The implementing agency is Cambodian Mine Action Centre.
4. Items Requested by the Royal Government of Cambodia
After discussions with the Team, items listed in ANNEX 2 were finally requested by the Royal Government of Cambodia. JICA will further assess the appropriateness of the request in Japan to prepare a study report.
5. Japan's Grant Aid System
 - 5-1. The Royal Government of Cambodia understands the Japan's Grant Aid Scheme as described in ANNEX 3.
 - 5-2. The Royal Government of Cambodia will take the necessary measures as described in ANNEX 4 for the smooth implementation of the Project as a condition for the Japanese Grant Aid to be implemented to the Project.
6. Schedule of the Study
 - 6-1. The Study Team will prepare a study report on the Project and send it to the Royal Government of Cambodia by the end of April 2000.
7. Other Relevant Issues
 - 7-1. Cambodian side emphasized the necessity of early implementation of the Project for mobile team that would be inaugurated in April 2000.
 - 7-2. Japanese side required more detailed future plan of CMAC, such as "Integrated Work Plan 2000," when it would be finalized since it is necessary for appropriate implementation of the Project.

PROJECT SITES

The Project sites are;

1. CMAC Headquarter in Phnom Penh
2. CMAC Training Centre in Kampong Chhnang
3. CMAC Forward Headquarter in Battambang
4. 4 (four) Demining Unit Headquarters, 8 (eight) Site Offices, 23 (twenty-three) Mobile Demining Teams, 20 (twenty) Community Marking Teams and 20 (twenty) Mine Marking Teams in Kampong Thom, Preah Vihear, Siem Reap, Otdar Mean Chey, Banteay Mean Chey, Pailin and Battambang Provinces



ITEMS REQUESTED BY THE ROYAL GOVERNMENT OF CAMBODIA

No.	Item	Quantity	Remarks	Priority
1	Flat Form (Low bed) 20t	2		A
2	Water Tank Truck with Pump	8	Capacity 8000 liters	B
3	Water Tank Trailer with Pump	23	Capacity 1000 liters	A
4	Forklift 3t	1		A
5	Ambulance 4 × 4 (4WD)	23		A
6	Tents 10m × 6m	118		A
7	Tents 7m × 3m	48		A
8	Camp Cots	2,055		A
9	Generator 200KVA	1		B
10	Generator 10KVA	8		B
11	Generator 5KVA	23		A
12	Workshop Tools & Equipment	1	for Central Workshop	A
13	Workshop Tools & Equipment	6	for Workshop Stations	A
14	Vehicle Spare Parts			C
15	Minelab Detector Parts			C

Japan's Grant Aid Scheme

1. Grant Aid Procedure

- (1) Japan's Grant Aid Program is executed through the following procedures.
- | | |
|--|--|
| Application | (Request made by a recipient country) |
| Study | (Study conducted by JICA) |
| Appraisal & Approval | (Appraisal by the Government of Japan and Approval by Cabinet) |
| Determination of Implementation | (Notes exchanged between the both Governments) |
| Implementation | (Implementation of the project) |
- (2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study on the request to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the study, using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Study (hereafter referred to as "the study"), conducted by JICA on a requested project (hereafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows:

- a) to confirm of the background, objectives, benefits of the requested Project and also institutional capacity of the agencies concerned of the recipient country necessary for the Project's implementation.
- b) to evaluate appropriateness of the Project for the Grant Aid Scheme from a technical, social and economic point of view.
- c) to confirm items agreed on by both parties concerning the basic concept of the Project.

d) to prepare a basic design of the Project

e) to estimate cost involved in the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take the measures necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) consultant firm(s) registered. JICA selects (a) firm(s) based on proposals submitted by interested firms which are interested. The firm(s) selected carry(ies) out a Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the study is (are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

(2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

(3) "The period of Grant Aid" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

(4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However the prime contractors, namely, consulting, constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means

persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(5) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

(6) Undertaking required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as following;

- a) to secure land necessary for the sites of the Project and to clear and reclaim the land prior to commencement of the construction,
- b) to provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- c) to secure buildings prior to the procurement in case the installation of the equipment,
- d) to ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant Aid and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(8) Re-export

The products purchased under the Grant Aid should not be re-exported from the recipient country.

(9) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government to the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.



NECESSARY MEASURES TO BE TAKEN BY CAMBODIA

The following necessary measures should be taken by Cambodia on condition that the Grant Aid by the Government of Japan is extended to the Project.

1. To ensure prompt unloading and customs clearance at ports of disembarkation in Cambodia and internal transportation therein of the products purchased under the Grant;
2. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Cambodia with respect to the supply of the products and services under the Verified Contracts;
3. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts such facilities as may be necessary for their entry into Cambodia and stay therein for the performance of their work;
4. To ensure that the products purchased under the Grant be maintained and used properly, effectively and exclusively for the humanitarian mine clearance activities conducted by the Cambodian Mine Action Centre under the Project;
5. To bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" and payment commissions, and
6. To bear all the expenses, other than those covered by the Grant, necessary for the Project.
7. The products purchased under the Grant shall not be transferred, either temporarily or permanently, by means to those outside of the Cambodian Mine Action Centre, without prior written consent of the Government of Japan.

