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STRENGTHENING THE MAINTENANCE AND OVERHAULING DEPARTMENT OF BGTS

DP/BHU/83/028

BHUTAN

Terminal report*

Prepared for the Government of Bhutan by the
United Nations Industrial Development Organization
acting as executing agency for the United Nations Development Programme

Backstopping officer: E. Sharapov, Engineering Industries Branch

United Nations Industrial Development Organization
Vienna

*This document has not been edited.

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INTRODUCTION

With the assistance of the UNDP financed project DP/BHU/81/003 an improved vehicle body building section of BGTS was established in 1983. Upon completion of the establishment of the above-mentioned BGTS section, which was equipped with the necessary machine tools and well-trained man-power, the next logical step, a maintenance and overhauling section of BGTS was considered by the Royal Government. A draft project document was prepared by the Royal Government, submitted to UNDP/UNIDO for evaluation/comments on 11 December 1983. After thorough substantive review by UNIDO the modified draft project document was signed by UNIDO and returned to UNDP Thimphu on 26 March 1984 for their endorsement. On 6 June 1984 the Royal Government and the UNDP/Resident Representative endorsed the final version of the project document and released it for implementation by the executing agency.

This project bears the following number: DP/BHU/83/028/A/01/37 and the title "Strengthening the Maintenance and Overhauling Department of BGTS".

The total UNDP approved inputs were US\$276,500. In the course of the project implementation UNDP raised the project budget to US\$404,898, which means an increase of 50% on top of the original approved allotment, whereas the Royal Government contribution of NU 1.050 mln was increased to NU 1.130 mln (US\$882,815). The Royal Government's share was mainly utilized for the construction infrastructure (Workshop buildings and offices) and equipment.

UNIDO as the executing agency expresses its gratitude to the UNDP as the financing institution to this project, to the Royal Government of Bhutan for their trust to UNIDO to execute this institution building project, to the National Director and his staff for their sincere and efficient co-operation in the successful implementation of the project and to the expatriate experts and consultants for their utmost dedication in carrying out their assignment.

This document represents the agency's terminal report containing its final assessment, findings and recommendations.

I. OBJECTIVES AND LOGIC OF THE PROJECT

A. Development Objectives:

This project was designed with the purpose to back-up the country's effort to make use of its technical potential to increase the efficiency of the public transport system which is essential for Bhutan to meet the growing demands for both passengers and goods transportation and thus support the acceleration of the development of the country's economy. The project was also intended to help to ensure the effectiveness of the transport systems, which will become an important catalyst in the development of the national economy. It is also aiming at the upgrading and strengthening of the management of the Royal Government Transport Service.

B. Immediate Objectives:

Specifically the aim of this project was:

- to attain a strengthened and well-established maintenance, overhauling and repair facilities within the BGTS and to enhance technical competence of the staff, as well as to improve the organization of work;
- to adequately equip the maintenance and overhauling workshop of the BGTS Phunsholing with necessary and up-to-date machine tools and accessories, and to import training both abroad and on the job;
- to attain at the end of the project a well established maintenance and overhauling department in the BGTS Phuntsholing, capable to provide daily and preventive maintenance of the fleet to ensure effectiveness of the transport systems;
- to introduce cost effectiveness in maintenance and overhauling activities, so as to improve the profitability of the BGTS by commercialization of the facilities (this objective was added in the course of the project implementation)

C. Outputs of the Project:

The project was intended to produce following outputs:

- an improved maintenance and overhauling department in the BGTS Phuntsholing capable providing day-to-day and preventive maintenance, overhauling, resoling and repairing facilities for the BGTS fleet;
- a well equipped maintenance and overhauling workshop capable carrying out all necessary services;
- well trained staff to assure those services which are needed to keep the BGTS fleet fully operating.

D. Logic of the Project:

Bhutan is a land-locked and mountainous country with extreme ascents and descents.

The population is scattered in all over the regions of the country. Farmers and cattle breeders represent the majority of the inhabitants. They are living in arable land which is mostly situated in unapproachable slopes. They carry their agricultural products on their backs and walk down the hills to reach the street connecting the villages with the cities which are normally representing the business centres of the country.

For a distance of 60 km one will need 15 hours walking time and by bus the farmers can shorten their travel time into 2 hours only. This shortcut action means a big help to enhance the business activities which are supporting the development of the country's economy.

The public transport service is run by Bhutan Government Transport Service (BGTS) which was established in 1968. In most parts of the country transportation of passengers and goods comes only through BGTS which at present owns a fleet of approx. 80 vehicles of different types and condition. Records show a high percentage of accidents which occur every year with a considerable loss for BGTS: 80% due to break-down, 15% to steering problems and 5% to other causes. Available data indicate that life average of BGTS vehicles is 2 years or 50 000 to 70 000 km. Engine repairing is done on the floor, without any engine stand, while an instrument to check and to record the condition and performance of the buses is available. Buses coming back from the operation day are never checked since there is lack of quality control and skilled supervisory staff; they are not greased since there is no greasing station and not properly washed since there is no washing station.

To ensure a proper and correct handling of vehicles, the maintenance and overhauling departments need to be up-graded and strengthened both with proper equipment, skilled and efficient staff. Of the five BGTS stations within the country, only Phuntsholing has a maintenance and overhauling department, the other stations being organized with one or two mechanics and rudimentary tools. However, the Phuntsholing station was not sufficiently staffed and equipped to carry out any preventive or major maintenance and overhauling.

As BGTS is expected to run the shop as an independent business unit, there was no financial allocation for it under the Fifth Plan Budget. The investment of this unit is, therefore, entirely dependent on its operational resource generation. The Royal Government has sought UNDP assistance towards the provision

of a modest amount of equipment for the improvement of the maintenance and overhauling departments, as well as the training of personnel and expatriate consultants in the field of automotive workshops.

II. INPUTS

A. Government Inputs:

- Land where upon 3 new buildings have to be constructed: one for maintenance (540 m²), one for overhauling (100 m²) and one to house a brake test stand (70 m²); two workshops to be up-graded.
- Counterpart staff consisting of one mechanical engineer and 20 skilled workers.

B. UNDP/UNIDO Inputs:

- Expatriate experts component: US\$154,583. One Chief Technical Adviser in the field of automotive industry - 18 m/m. One maintenance and overhauling foreman - 6 m/m. One automotive maintenance expert - 3 m/m. Headquarter staff, technical monitoring
- Subcontract component: US\$3,002. A very small and short subcontract assignment is awarded to TATA factory India.
- Training component: US\$48,611. Individual fellowships at MICO and TATA, India for training in fuel pump injection, overhauling, machine workshop and quality control. One studytour in the field of automotive repair and overhauling techniques.
- Equipment component: US\$237,639. An additional amount of expendable and non-expendable equipment necessary to run the maintenance and overhauling departments.
- Miscellaneous component: US\$2,500. A very small provision to cover miscellaneous expenses.

III. ACTIVITIES CARRIED OUT AND OUTPUTS PRODUCED

A. Initial Conditions:

Upon completion of the bus body building project to modify and adjust the existing bus body design to the existing road condition, the Royal Government of Bhutan submitted the request for assistance in maintenance and overhauling BGTS vehicles to the UNDP. Although this project was considered as a follow-up of the bus body building project, the set-up of the workshop is quite different and the required technical manpower of the latter varies from the first mentioned above. At the beginning of the project BGTS did neither have enough well trained technical staff nor appropriate equipment, nor the necessary building to house the workshops.

Civil works (ground leveling, foundation, erection of structures, roofing, walling, flooring, painting, electrification and drainage) which were originally planned to start in September 1984 could only commence in February 1985. The construction was expected to be finalized in 1985, but due to the lack of funds it was a bit delayed. In the middle of 1985 the CTA started to carry out on-the-job training of technical staff to do the day-to-day maintenance and overhauling of BGTS fleet.

B. Project Implementation:

If the previous project DP/BHU/81/003 has managed to concentrate its activities in modifying and adjusting the design of the bus body, used in passengers and goods transport by BGTS, to the existing road condition, the recent project DP/BHU/83/028 has made the day-to-day maintenance and overhauling of BGTS vehicles as its main task.

The Government, in this respect the Bhutan Government Transport Service of the Ministry of Communication and Tourism started the civil construction on 28 February 1985 to build three additional buildings for the overhauling, day-to-day maintenance and brake testing station and to up-grade two workshop units and completed the civil works on 30 June 1985.

The Chief Technical Adviser, Mr. L. Gavrilovic, who had been the CTA of the previous bus body building project, arrived at the project site on 19 June 1984. He worked in Bhutan until December 1985. He assisted in the planning of the workshop of the machine tools lay-out, organization chart, work programmes and in forecasting the future activities.

Supported by Mr. C. Kaloppa, a maintenance foreman, who was fielded at the project site in a split assignment between 15 July 1985 to 14 August 1986 and Mr. V.A. Lumeyag, a machine shop expert, who worked in Bhutan from 24 April 1987 to 29 October 1987 and hand-in-hand with the national workshop staff in Phuntsholing, the project has carried out the following activities:

- prepared specification of necessary equipment;
- installed, repaired, calibrated and commissioned equipment delivered to or at the disposal of BGTS.

- designed and manufactured simple but indispensable equipment, such as mandrel for spur gear cutting, fly cutter holder, portable drill machine key, boring tool for wheel hub machining and portable sand blasting machining, on the spot to alleviate the work of the workshop skill workers;
- conducted theoretical, as well as practical on-the-job training of national technical staff in the familiarization of machine tool setting and operation, the proper utilization of precision instruments, the use of proper tools for a certain job, the correct utilization of the existing equipment, such as hydraulic press, reamers, connecting rod, aligning devices for bending and twisting work, the selection of cutting tools for various operations, reading and interpretation of sketches and mechanical drawing, preparation and planning of a job to be done, basic knowledge of the materials properties, basic concept of fits and tolerance, measuring tools handling techniques, grinding operations using a post grinding tool attachment in the lathe machine, screw cutting external and internal, surface finishing, quality inspection of the machine tool parts, machine shop safety and workshop organization and management; the national technical staff were not only trained to do the job using appropriate tools, but they were also made familiar in handling machine tools, maintaining and repairing them to avoid equipment breakage and business stoppage; the reclamation of worn-out parts by using metalizing gun and manufacture technique of simple spare or replacement parts, were also demonstrated and made familiar to the national technical staff;
- selected candidates for a job training abroad;
- established standard rate of cost for repair maintenance and overhauling of vehicles, reclamation of worn-out parts and other automotive services to attain a cost effectiveness of the BGTS workshop;
- a guideline and a practical training has been provided by the last expert.

IV. ACHIEVEMENT OF IMMEDIATE OBJECTIVES AND UTILIZATION OF PROJECT RESULTS

Based on the final review and on-the-spot evaluation of the participants of the final Tripartite Review Meeting the immediate objectives a) and c) have been fully met while the immediate objective b) and d) have still been lagging behind.

- a) With the co-operation of 3 expatriate experts, especially under the dedicated guidance of the last automotive repair and maintenance expert, a well organized maintenance and overhauling department within BGTS with necessary physical infrastructure, completed technical core staff and capable management has been established. The workshop is able to render services to BGTS fleet and to outside clients.

- b) The BGTS maintenance and overhauling departments have been well equipped with up-to-date machine tools and accessories, but not adequately equipped yet, because in fact they still need a bigger lathe to enable them to manufacture spare or replacement parts by their own. Training of skilled man power in different categories will be continued under the Human Resources Development Programme, which is co-ordinated by the Royal Civil Service Commission.
- c) This objective is connected with and gives in fact an explicit definition of point a). The project has indeed achieved the objective. Maintenance of 20 to 25 buses per day, 4 to 5 engine overhauling per month and major repair of gear box, differentials, front axles, suspensions, steering have been carried out in the well-established workshop with an improved skilled man power.
- d) The introduction of cost effectiveness and commercialization of the BGTS workshop in Phuntsholing was initiated in the course of the project implementation and it was meant as a revised objective. The realization, however, has not been fully done. A business initiative and feeling are still required. Despite this small shortcoming the project on the whole has contributed a lot to the Bhutan Government Transport Service in particular and to the people of Bhutan in general:
- the BGTS vehicles are properly maintained;
 - the BGTS is able to provide efficient transport to the public with safety, comfort and at reasonable prices;
 - the BGTS workshop management has been improved;
 - the BGTS skilled workers have been up-graded;
 - outside clients are able to have their cars, bus or trucks repaired and overhauled in the BGTS workshop.

V. FINDINGS

A. Problems and Solution:

Every project has its own problems; some are big and the other are small, but the problems are there to be solved. In respect of this project the only problem which hampered and delayed the implementation of the project was the procedure of the delivery of equipment. But if one could see the real condition of Bhutan, which is a landlocked and mountainous country, one would accept this problem as justifiable. The equipment delivery can only be made by surface transport through Calcutta, where the UNDP has an outposted officer, to take care of all UN and its agencies consignment for East-India, Bhutan and Nepal. The custom clearance in Calcutta takes a period of time and the forwarding action from Calcutta to the place of destination will again take at least 2 months depending on the availability of transportation and the actual situation of the

restricted area to be passed by. To travel through the restricted area one should obtain a special permission of the Government of India.

To solve this problem the national counterpart in co-operation with the expatriate expert, upon receipt of the arrival's confirmation of a consignment, usually undertook a travel to Calcutta to finalize the custom formalities and to transport the equipment to Phuntsholing, Bhutan by truck, which they drove down from Phuntsholing to Calcutta. This action has proved to be very efficient and it could help to shorten the delay of equipment delivery, which usually affects the on-the-job training activities and the planned activities of the project in general.

B. Project Completion:

Three expatriate experts in co-operation with 11 full-time national counterparts have brought the project into completion. The management in its report dated 10 August 1987 and stated that they did not anticipate further extension of the project, as well as the assignment's term of the expert. In the current status of the BGTS workshop the UNDP and UNIDO as executing agency were confident that the project and all its equipment could be handed over to the national counterpart, who would continue to manage the workshop for the benefit of BGTS in particular and the country in general.

C. Continuity of the Project:

Under this competent management and a core of well-trained technical staff the project would be able to continue its activities as outlined in its objectives. Correct cost effectiveness and commercialization of the workshop, which were still to be strengthened, would support the actual continuity of the project in the future. Since the number of BGTS fleet was reasonably reduced, the excess capacity should be utilized to service public's vehicles, to help to guarantee the continuity of the project.

VI. CONCLUSIONS AND RECOMMENDATIONS

1. High appreciation should primarily be given to the UNDP and the BGTS staff for their very cordial and fruitful co-operation in the implementation of this project. The success achieved by this project should also be credited to the expatriate experts Mr. L. Gavrilovic, Mr. C. Kalappa and Mr. V. Lumayag, whose enthusiasm and profound dedication have enabled the project and BGTS to overcome many difficulties and to establish an up-to-date and competent busbody building unit, maintenance and overhauling departments in the BGTS workshop, Phuntsholing. Their attachment to the country and their awareness of its development process and shortfalls have contributed tremendously to the successful achievement of the project.

2. The social impact of the project is highly appreciated by the Government of Bhutan, as well as by the BGTS management in the sense that the acquired preventive maintenance technology has helped to minimize enroute breakdowns inspite of low standard road surface in Indian territory and the mountainous terrain in Bhutan, that the public are able to travel by BGTS buses with more safety, confidence and reliability than at any time in the past, and that the departure and arrival punctuality of the buses has been improved due to less breakdowns and increased safety measures. BGTS is proud of its excellent safety record compared to other fleet operators of the region. The latter is considered to be the most successful and biggest achievement of the project for the public.

3. With the completion of the project the BGTS is confident that the workshop in Phuntsholing is able to give a good and qualified service to its own fleet and to private vehicles on a commercial basis.

4. The idea of commercialization of the BGTS workshop's excess capacity is strongly recommended, in order to realize a self-reliance and self-sufficiency through self-supporting activities. For this purpose national staff should be trained in the field of business administration including cost effectiveness, business competitiveness in respect of quality of service and attractiveness of service cost. The training activity should be co-ordinated with the Royal Civil Service Commission under Human Resource Development Programme.

5. Since the objectives of the project have been satisfactorily achieved it was stated in the last Tripartite Review Meeting in Phuntsholing, that BGTS management did not anticipate further extension behind the agreed deadline. However, as the skill of the national staff in the field of reconditioning of worn-out parts and in the manufacture of simple spare and replacement parts is not sufficient yet, a small and well aimed technical assistance in this specific field should be organized for the benefit of the BGTS, as well as the endusers.

Expatriate Experts:

The following expatriate experts rendered technical assistance under the project cycle at various stages:

No.	Name	Country	Field	From	To
1.	Gavrilovic, L.	YU	Automotive Expert	10/06/84	19/12/85
2.	Kalappa, C.	India	Foreman Maint.	15/07/85	15/10/85
3.	Lumayag, V.A.	PHI	Machineshop Expert	24/04/87	31/10/87

Fellowships:

Eight (8) national staff were trained abroad; they were:

No.	Name&Designation	Place of Training	Duration
1.	Birja Raj Gurung Section Officer	TELCO, Jamshedpur India	30/12/85 to 24/01/86
2.	C.K. Darnal Section Officer	TELCO, Jamshedpur India	24/02/86 to 22/03/86
3.	Tashi Penjor Asstt. Foreman	TELCO, Jamshedpur India MICO, Calcutta India	30/12/85 to 24/01/86 27/01/86 to 08/03/86
4.	Deoraj Rai Asstt. Foreman	TELCO, Jamshedpur India	30/12/85 to 24/01/86
5.	Prithiman Tamang Asstt. Foreman	TELCO, Jamshedpur India	30/12/85 to 24/01/86
6.	Deoraj Baraily Asstt. Foreman	TELCO, Jamshedpur India	24/02/86 to 22/03/86
7.	Tulshiram Pradhan Asstt. Foreman	TELCO, Jamshedpur India MICO, Calcutta India	24/02/86 to 22/03/86 24/03/86 to 12/04/86
8.	Gangaram Pradhan	TELCO, Jamshedpur India MICO, Calcutta India	24/02/86 to 22/03/86 24/03/86 to 12/04/86

ANNEX IIA

NOW DP/BHU/83/028

DP/BHU/81/003

UNITED NATIONS  NATIONS UNIES

BHUTAN

1

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Country BHUTAN Project No. IMPROVEMENT OF BHUTAN GOVERNMENT TRANSPORT SERVICE Page 1 of Project Title (BGTS) BODY BUILDING SECTION Period ending

NON-EXPENDABLE PROPERTY CONTROL RECORD

HQ Req. Pct.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
78/1		1	EA	FAXIL UNIT CONSISTING OF: 1 GESTETNER STENCIL DUPLICATOR 420 MODEL Ser.NO. 52A9960 1 GESTETNER SCANNER 444S MODEL Ser.NO. 33.658 1 STENCIL FILE CABINET (COMBI UNIT)	3,370.-	15-8-00867	1	6	79			transferred from DP/BHU/77/004
78/3	1	1	EA	VEHICLE: MAHINDRA MODEL FC-160/4WD MMU REG. NO: BEG 0091 SERIAL NO.: 22075-G ENGINE NO.: 7603007-F CHASSIS NO.: - " -	5,396.-	15-8-00897	1	3	79			- " -
78/2	3	1	EA	VEHICLE: MAHINDRA MODEL CJ-4A/4WD JEEP WAGNETTE WITH METAL BODY RHD 101" SERIAL NO.: 163969 ENGINE NO.: FA-00942 CHASSIS NO.: - " -	4,639.-	15-8-00897	1	3	79			- " -
79/4	4	1	EA	VEHICLE: VW GOLF DIESEL CLD, 4-DOOR CHASSIS NO.: 1793H95138 ENGINE NO.: CK381613 REG.NO.:	5,701.-	15-9-00269	1	7	79			- " -
83/1	48	1	SET	ROLLING TOOL AND REPAIR KIT	600.-	15-3-0803	1	1	84			
83/1	41	3	EA	DRAFTING TABLES CADET WITH BAORD 92 x 130 cms 36.22 x 51.18	1,290.-	15-3-00776	3	12	84			
	42	3	EA	DRAFTING MACHINES JOLLY FOR BOARD 92 x 130 cms 36.22 x 51.18 WITH ALUMINIUM SCALES 30/40cms	incl.	- " -	3	12	84			

Country BHUTANProject No. DP/BHU/81/003Page 2 of _____

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Project Title IMPROVEMENT OF BHUTAN GOVERNMENT TRANSPORT SERVICE
BODY BUILDING SECTION

Period ending _____

NON - EXPENDABLE PROPERTY CONTROL RECORD

HQ Req. Ref.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
83/1	28	1	EA	MODEL MEP-TV ABRASIVE CUTTING OFF MACHINE	1,019.-	15-3-0918	1	1	84			
83/1	31	1	EA	PATTERN NO. PF 237 BLACKSMITHS HAND FORGE	552.-	- " -	1	1	84			
83/1	38	1	EA	"ESSEM" (INDIGENOUS), HAND OPERATED, ALL STEEL FABRICATED, SWING BEAM TYPE SHEET FOLDING MACHINE COMPLETE WITH STANDARD ACCESSORIES	2,390.-	15-3-00741	1	1	84			
83/1	5	1	EA	"GR" BAND SAWING + FILING MACHINE OF 24" THROAT CAPACITY COMPLETE WITH ALL STANDARD ACCESSORIES AND ELECTRICAL EQUIPMENT S/N 3748/184	5,346.-	15-3-00775	1	12	83			
83/1		2	EA	GENERAL DUTY WELDING CUTTING HEATING OUTFIT, COMPLETE OUTFIT	896.-	15-3-00711	2	3	84			
		1	EA	ROTARY SHEET METAL FORMING MACHINE, DEEP THROAT COMB FORMER W/O ROLLS	776.-	- " -	1	3	84			
		1	EA	PRECISION BALL BEARING LATHE GRINDER	974.-	- " -	1	3	84			
83/1	35	2	EA	"VANKOS" HYDRAULIC JACK WITH REMOTE CONTROL, HYDRAULIC PUMP AND PRESSURE GAUGE TYPE RC-5/150 CJ CAP. 5 TONNE	461.-	15-3-00705	2	1	84			
	33	1	EA	"INDEF" BRAND CHAIN ELECTRIC HOIST OF 2 TONNE CAP. WITH 4 MTRS LIFT	1,154.-	- " -	1	1	84			
83/1	24	3	EA	MULTI PURPOSE MACHINE BENCH VICE SIZE 4"	516.-	15-3-0710	1	1	84			
		1	EA	" " " " " " SIZE 6"	278.-	- " -	1	1	84			
	39	1	EA	MUBES HAND LEVER SHEARING MACHINE G/3L	432.-	- " -	1	1	84			
	25	1	EA	HEAVY DUTY BLACKSMITH ANVIL 500 kg	504.-	- " -	1	1	84			
83/1	40	1	EA	STAR BRAND - STEEL BODY DOLLY SHEARING MACHINE 2500x3.25MM COMPL. WITH ACCESS.	10,557.-	15-3-00761	1	1	84			

Project Title IMPROVEMENT OF BHUTAN GOVERNMENT TRANSPORT SERVICE Period ending _____
(BCTS) BODY BUILDING SECTION

NON - EXPENDABLE PROPERTY CONTROL RECORD

MO Req. Ref.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
83/1	11	1	EA	GECO DOUBLE ENDED PEDESTAL GRINDER MODEL DD-10 WITH ACCESSORIES	1,065.-	15-3-0759	1	5	84			
	36	1	EA	BATLIBOI UNIVERSAL MILLING MACHINE MODEL FA-3U WITH ACCESSORIES	14,379	- " -	1	1	84			
		1	EA	DELTA BANDSAW BRAZING MACHINE 3 KVA	241.-	- " -	1	1	84			
	2	1	EA	KIRLOSKAR POWER HACKSAW MACHINE MODEL COBRA NO. 9 COMPLETE	1,723.-	- " -	1	5	84			
	9	1	EA	EIFCO HIGH PRECISION DRILLING MACHINE MODEL P4/38 WITH ACCESSORIES	2,154.-	- " -	1	5	84			
	32	2	EA	INDEF HERCULES HOISTS CHAIN PULLEY BLOCK 2 TON WITH 4mm LIFT	623.-	- " -	2	5	84			
	10	2	EA	EIFCO BENCH TYPE DRILLING MACHINE MODEL BDM/HD WITH ACCESSORIES, PUMP, LIGHT FITTINGS, 13mm DRILL CHUCK	2,063.-	- " -	2	5	84			
		2	EA	EIFCO FLEXIBLE SHAFT GRINDER MODEL MFS-15	760.-	- " -	2	5	84			
	3	1	EA	WELDING TRANSFORMER DELTA MODEL DTD/200	491.-	- " -	1	5	84			
	4	1	EA	WELDING TRANSFORMER DELTA MODEL DTD/300	666.-	- " -	1	5	84			
	6	2	EA	PORTABLE SPOT WELDER GUN DELTA MODEL DSG 1.5 KVA	553.-	- " -	1	5	84			1 not recd.
	8	1	EA	SPOT WELDER DELTA MODEL DS-10	729.-	- " -	1	5	84			
	1	1	EA	BATLIBOI AIR COMPRESSOR MODEL BDPS-11 WITH STARTER AND PRESSURE CONTROL SWITCH	1,511.-	- " -	1	5	84			
		1	EA	DELTA BRAND SPOT GUN MODEL. DSG 1.5 KVA	272.-	- " -	1	5	84			

ANNEX IID

NOW DP/BHU/83/028

Country BHUTAN Project No. DP/BHU/81/003 Page 4 of Project Title IMPROVEMENT OF BHUTAN GOVERNMENT TRANSPORT SERVICE Period ending
(BCTS) BODY BUILDING SECTION

NON-EXPENDABLE PROPERTY CONTROL RECORD

HQ Req. Ref.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
		4	EA	DISTILLED WATER PLANTS 8 lit. CAP. COPPER ELECTRICALLY OPERATED	1,317.-	15-9-00589						
		1	EA	INDUSTRIAL SEWING MACHINE WITH ACCESSORIES	1,874.-	15-0-00243	1					Transferred from DP/BHU/77/004
83/1	13	2	EA	WOLF MODEL AG7 PORTABLE GRINDER	557.-	15-3-0832	2	9	83			
	16	2	EA	WOLF MODEL EJ3C HAND-DRILLING MACHINE	234.-	- " -	2	9	83			
	17	2	EA	WOLF MODEL SD4C " " "	255.-	- " -	2	9	83			
	18	2	EA	WOLF MODEL EG2C " " "	202.-	- " -	2	9	83			

ANNEX IIE

UNITED NATIONS  NATIONS UNIESCountry BHUTAN Project No. DP/BHU/83/028Page 5 of

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Project Title STRENGTHENING THE MAINTENANCE AND OVERHAULING
DEPARTMENT OF BGTS, THIMPHUPeriod ending

NON - EXPENDABLE PROPERTY CONTROL RECORD

NO Req. Ref.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
84/1		1	EA	VALVE REFACER VS 80, MACHINE 6311-S-262	1,703.-	15-4-0924	1	12	84			
84/1		1	EA	ENGINE HOIST, CAPACITY 2000KG NO. 3185	617.-	15-4-1010	1	2	85			
84/1		1	EA	HYDRAULIC WORKSHOP CRANE, TYPE UH 30	1,854.-	- " - A	1	2	85			
84/1		2	EA	PARELLEL TYPE MULTIPLE BATTERY CHARGER DC OUTPUT: 40A AT 15V, AC INPUT 5A 115V60Hz	816.-	15-4-00949	1	2	85			
		2	EA	TIRE INVERTER-SPREADER 63" HEIGHT 22" WIDTH	1,672.-	- " -	2	2	85			
		2	EA	ECONOMY AC AND DC MULTIMETER	95.-	- " -	2	2	85			
		3	EA	MULTI-PRESS BUCKET PUMP, 35 LB CAP.	1,211.-	- " -	3	2	85			
		2	EA	PORTABLE HIGH PRESSURE CLEANING PUMP WITH ELECTRIC MOTOR	733.-	- " -	2	2	85			
84/1	1	1	EA	MATRA CONNECTING ROD TESTING DEVICE, MODEL BC501 INCLUDING STANDARD ACCESSORIES	1,278.-	15-4-00984	1	3	85			
	2	1	EA	MATRA CONNECTING ROD ALIGNING DEVICE, MODEL BC503 INCLUDING STANDARD ACCESS.	434.-	- " -	1	3	85			
84/1	1	2	EA	KARCHER HOT WATER HIGH-PRESSURE CLEANER MODEL HDS 760	3,712.-	15-4-1002	2	3	85			
	2	1	EA	KARCHER VACUUM CLEANER MODEL NT200	155.-	- " -	1	3	85			
84/1		1	EA	UNIT STEINBOCK HYDRAULIC GEAR BOX JACK	1,326.-	15-4-0982	1	6	85			
84/1	19	1	EA	ONE VALVE SPRING TESTER VF	937.-	15-4-1134	1					
84/1	136	1	EA	WOODWORKING THICKNESS PLANER, COMBINED MACHINE 7 WORKING MOD. 162/L	4,000.-	15-4-1279	1	6	85			
84/1	19	1	EA	HYDRODYNAMIC BRAKE A-12 COMPLETE	13,573.-	15-4-1127	1	5	85			
	19a	1	EA	VALVE SEAT GRINDING MACHINE MODEL PEG-10	735.-	- " -	1	5	85			

Country BHUTAN Project No. DF/BHU/83/028
Project Title STRENGTHENING THE MAINTENANCE AND OVERHAULING
DEPARTMENT OF BOTS, THIMPHUPage 6 of
Period ending

NON - EXPENDABLE PROPERTY CONTROL RECORD

HQ Req. Ref.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
84/1				BERCO BORING AND HONING BARS:								
	1	1	EA	SRI/A (A99.67500) CYLINDER HONING BAR EXTRA OUTFIT	3,227.-	15-4-01111	1	5	85			
	2	1	EA	AP/150 (A99.67500) CYLINDER BORING BAR	3,830.-	- " -	1	5	85			
84/1	08A	1	EA	BRAKE TEST STAND BREKON 3.13 u W/ACCESS.	9,109.-	15-4-01213	1	5	85			
	66B	1	EA	UNIVERSAL TWO-CHANNEL RECORDER	1,069.-	- " -	1	5	85			
85/1	8	4	EA	WOLF 8364 d.e GRINDING MACHINE. C/W PEDESTAL	925.-	15-5-00422	4	7	85			
	9	2	EA	VIKING W25 HYDRAULIC CRANCE	2,225.-	- " -	2	7	85			
85/1	4	2	EA	MULTIPLE BATTERY CHARGER DC	738.-	15-5-0421	2	8	85			
	13	4	EA	INVERTER SPREADER 63" HEIGHT 22" WIDTH	3,011.-	- " -	4	8	85			
	14	4	EA	12-PC PORTABLE TRUCK TIRE SERVICE SET	1,159.-	- " -	4	8	85			
	15	4	EA	GENERAL DUTY WELDING/CUTTING/HEATING OUTFIT	1,493.-	- " -	4	8	85			
	19	2	EA	ABRASIVE CUTOFF SAW, 12" WHEEL DIA.	514.-	- " -	2	8	85			
85/1	12	4	EA	172HD + 0-15/100 TOOL TROLLEY WITH TOOL ASSORTMENT	1,833.-	15-5-00420	4	10	85			
85/1	2	2	EA	TDS.23/30 HD (9 SPEED) HEAVY DUTY PEDESTAL DRILLING MACHINE, 3 PHASE ELECTRICS, COMPL WITH STANDARD EQUIPMENT AND ACCESSORIES	5,152.-	15-5-00423	2	8	85			
	3	4	EA	300 AMP OIL COOLED WELDING TRANSFORMERS, PIC-ARC MODEL PT300 COMPLETE	4,130.-	- " -	4	8	85			
	18	4	EA	BENCH DRILLING MACHINE, CAPACITY 16MM	1,357.-	- " -	4	8	85			

ANNEX IIG

Country BHUTANProject No. DP/BIHU/83/028Page 7 of _____Project Title STRENGTHENING THE MAINTENANCE AND OVERHAULING
DEPARTMENT OF BCTS, THIMPHU

Period ending _____

NON - EXPENDABLE PROPERTY CONTROL RECORD

HQ Req. Ref.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
84/1	1	2	EA	COMPAC HYDRAULIC JACK MODEL 10 t-3	1,140.-	15-5-0401	2	10	85			
	2	2	EA	COMPAC HYDRAULIC PRESS HP 60	3,229.-	- " -	2	9	85			
	3	2	EA	COMPAC HYDRAULIC PRESS HP 125	5,905.-	- " -	2	9	85			
	6	1	EA	RODAL/3 a a00.64133	1,048.-	- " -	1	5	85			
	7	1	EA	RODAL/4 a00.64168	580.-	- " -	1	5	85			
	8	1	EA	RODAL/O a00.64228	708.-	- " -	1	5	85			
85/1	1	2	EA	ELGI AIR COMPRESSOR MODEL TC1000, TWO STAGE AIR-COOLED, DRIVEN BY AC ELECTRIC MOTOR	2,795.-	15-5-0424	2	3	86			
	10	2	EA	ELGI HIGH PRESSURE CAR WASHING MACHINE MODEL WM501T WITH AC ELECTRIC MOTOR	1,110.-	- " -	2	3	86			
86/1	17	1	EA	HEAVY DUTY ELECTRIC SHEAR 230V, 7 GA MILD STEEL CAP, 8 GA STAINLESS STEEL CAP 3834A52	1,110.-	15-6-0308						
86/1	15	1	EA	ASTRA RABBIT MODEL 300 HIGH SPEED ABRASIVE CUT OFF MACHINE POWERED BY A 5 H.P. (3.7KW) MOTOR WIRED FOR OPERATION ON 440/3/50HZ	1,212.-	15-6-00334	1	12	86			
86/1	3	1	EA	280S SYNCHRO CABINET METAL TURNING LATHE	10,135.-	15-6-0658	1					
	11	2	EA	TDS 23/30 HEAVY DUTY PEDESTAL DRILLING MACHINES	4,828.-	- " -	2	12	86			
86/1	1	2	SET	ARBORS FOR MATRA CONNECTING ROD TESTING DEVICE MODEL BC 501	1,396.-	15-6-0659						
	2	1	EA	BAUER ENGINE ASSEMBLY STAND FOR BUS AND TRUCK ENGINES, TYPE BA 1200	2,951.-	- " -	1	12	86			
	6	2	EA	BOGE AIR COMPRESSOR TYPE SBM 915-25/1000, COMPLETE WITH STAR DELTA SWITCH & ELASTIC SUPPORT	13,307.-	- " -	2	1	87			

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Country BHUTANProject No. DP/BHU/83/028Page 8 of _____UNITED NATIONS  NATIONS UNIES

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Project Title STRENGTHENING THE MAINTENANCE AND OVERHAULING
DEPARTMENT OF BGTS, THIMPHU

Period ending _____

NON - EXPENDABLE PROPERTY CONTROL RECORD

HQ Req. Ref.	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
86/1	7	3	EA	TECALEMIT HIGH PRESSURE LUBRICATOR, MOBILE MODEL KAOLUB	2,614.-	15-6-0659	3	1	87			
	10	2	EA	LOEWE MULTI-STAGE-CENTRIFUGAL PUMP, MODEL AUTOFLUX VAN 3/9, COMPLETE WITH CONNECTION FOR PRESSURE HOSES, HIGH PRESSURE HOSE, SAFETY WASH GUN, AIR BREAK CONTACTOR	4,411.-	- " -	2	1	87			
	13	4	EA	COMPAC HYDRAULIC JACK MODEL 10 T - 3	2,752.-	- " -	4	1	87			
	14	4	EA	TECALEMIT HIGH PRESSURE PEDEL OPERATED LUBRICATOR, TYPE 2112	1,792.-	- " -	4	1	87			
86/1	(101)	2	EA	TATA TORQUE MULTIPLYING WRENCH 000 589 37 63	1,371.-	15-6-0657						
86/1	21	1	EA	RICOH PPC COPIER FT-3020	2,941.-	15-6-0660						

ANNEX IIB

BHUTAN

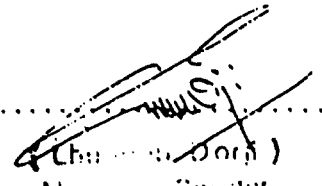
Project No. DP/BHU/83 028

Page _____ of _____

Project Title SEE PAGE ONE

Period ending 31 DECEMBER 1987

NON-EXPENDABLE PROPERTY CONTROL RECORD

QTY eq. of	Item No.	Qty.	Unit	Description	US Dollar Equivalent	P.O./Shipping Advice Ref.	Received			Condi- tion	Qty. on hand	Remarks
							Qty.	M	Y			
1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<p>WE CERTIFY THAT THE QUANTITIES OF NON-EXPENDABLE EQUIPMENT RECEIVED, LESS THE QUANTITIES OF NON-EXPENDABLE EQUIPMENT WRITTEN-OFF, REFLECT THE PHYSICAL COUNT OF THE ITEMS ON HAND AS AT <u>31 DECEMBER 1987</u>.</p>												
PROJECT MANAGER UNIDO				OR		DATE:						
RESIDENT REPRESENTATIVE						DATE:						
GOVERNMENT COUNTERPART						DATE:						
				 (Chhime Dorji) Member, Director Bhutan Industrial Development Service THIMPHU, BHUTAN								

ANNEX III

UNIDO

SEMI FINAL REVISION

COUNTRY	PROJECT NUMBER AND AMEND	P.P.C.S.A	DATE PRINTED
BHUTAN	DP/BHU/83/028/J/01/37	J13/14	88/03/25
PROJECT TITLE			
STRENGTHENING THE MAINTENANCE AND OVERHAULING DEPARTMENT OF BGTS			

PROJECT PERSONNEL EXPERTS POST/TITLE	TOTAL		82-86		1987		1988	
	M/M	\$	M/M	\$	M/M	\$	M/M	\$
11-01 EXPERT IN AUTOMO	18.0	106,881	18.0	106,881				
11-04 FOREMAN FOR MAIN	6.4	34,092			6.4	33,467	625	
11-05 EXP. IN MAINTENA	3.0	4,152	3.0	3,500		652		
11-XX	27.4	145,125	21.0	110,381	6.4	34,119	625	
13-00 ADM. SUPPORT PERSONNEL								
15-00 PROJECT TRAVEL		452		452				
16-00 OTHER PERSONNEL COSTS		5,832		2,404		3,428		
1X-XX	27.4	151,409	21.0	113,237	6.4	37,547	625	
21-00 SUBCONTRACTS		6,441		6,441				
28-00 SURRENDER PY OBL		3,439		3,439				
2X-XX		3,002		3,002				
31-00 INDIVIDUAL FELLOWSHIPS		15,025		15,025				
32-00 STUDY-TRS/UNDP GROUP T		1,484		1,484				
38-00 SURRENDER PY OBL		550		550				
3X-XX		15,959		15,959				
41-00 EXPENDABLE EQUIPMENT		434		434				
42-00 NON-EXPENDABLE EQUIPM.		260,541		244,447		11,063	5,031	
48-00 SURRENDER PY OBL		18,708		18,579		129		
4X-XX		242,267		226,302		10,934	5,031	
51-00 SUNDRIES		2,261		1,816		445		
TOTAL	27.4	414,898	21.0	360,316	6.4	48,926	5,656	

REMARKS
O/C