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NETHERLANDS-BANGLADESH DEVELOPMENT CO-OPERATION PROGRAMME
DPHE-WATER SUPPLY AND SANITATION PROJECTS

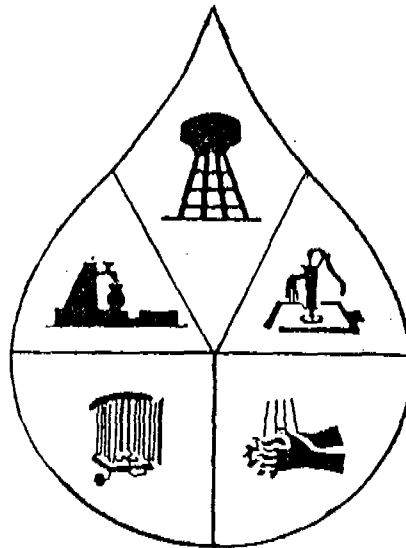
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BASIC MANAGEMENT TRAINING

FOR

SDE, DPHE, AND PWSS SUPERINTENDENT

OF 1ST AND 2ND BATCH TOWNS
UNDER 18 DTP



1st NOVEMBER - 4th NOVEMBER, 1993

VENUE : TRAINING ROOM

OFFICE OF THE PROJECT DIRECTOR, DPHE.
DUTCH ASSISTED PROJECTS
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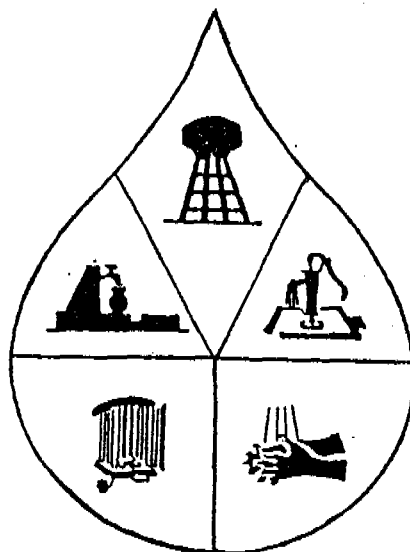
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P.O. Box 190, ~~ARABAKH~~, ~~TELEK-1000~~
Tel. (070) 874911 ext 141/142
BW 12282
LO: 202.6 958A

DPHE.

Department of Public Health Engineering
18 District Towns Water Supply, Sanitation and Drainage Project

Course : BASIC MANAGEMENT TRAINING FOR SDEs,DPHE AND SUPERINTENEDENTS of 1st & 2nd Batch Towns Under 18 DTP.										
	08.30-09.15	09.15-10.00		10.30-11.15	11.15-12.00	12.00-12.45		13.45-14.30	14.45-15.30	15.30-16.15
1st Day 1.11.93	Opening ceremony Pre Test	The 18 DT Project Mr.S.A.K. M.Shafique (P.D)		Principles of Water Supply (Mr.Basher)	The PWSS and its functions (Mr.Zaman)	Establishment of PWSS (Mr.Basher)		Principles of Management (Dr.Anwar)	Planning (Dr.Anwar)	
		GGG 105		GGG 300	OBG 101	OBG 300		OBM 001	OBM 100	
2nd Day 2.11.93	Organizing (Mr.Zaman)	Directing (Dr.Anwar)		Controlling (Dr.Anwar)	Coordination (Mr.Zaman)			Motivation (Dr. Anwar)	Role of Pourashava (Mr.Alauddin, PS to Sec.)	Authority (Mr. Zaman)
	OBM 200	OBM 300		OBM 400	OBM 220			OBM 310		OBM 320
3rd Day 3.11.93	Communication process (Ms.Qumrun)			Effective communication (Ms.Qumrun)	PWSS Environment (Mr.Zaman)	Customer Information (Mr.Zaman)		Causes of water loss (Mr.Monaf)	Introduction to Book Keeping (Mr.Rashid)	
	OBM 330			OBM 331	OBG 610	OBC 300		OBM 772	OBF 100	
4th Day 4.11.93	Financial Management (Mr.Rashid)			Performance indicators (Mr.Masud)	Management information system (Mr.Masud)			Post test and Closing		
	OBF 550			OBM 920	OBM 950					

Module : PRINCIPLES OF WATER SUPPLY	Code : GGG 300
	Edition : 05/09/1993
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<p>Throughout Bangladesh as in all countries, a public water supply system is important for the population. Good, clean, drinkable water helps contain the number of dangerous water-borne diseases and improves the standard of living as a whole, and that of hygiene in particular.</p> <p>Although rainwater may be used in individual cases, for public water supply :</p> <ol style="list-style-type: none"> a. springs; b. shallow wells; c. deep wells; d. lakes etc. <p>are the common sources of water.</p> <p>After water has been abstracted from the source it is treated to make it clean and drinkable. It is then transported to the distribution area by way of transmission mains.</p> <p>At this point very often water is stored in reservoirs in order to ensure that water will always be available, despite large fluctuations in the rate of consumption throughout the day. This also has the advantage of having water available for emergency purposes should there be a failure of the distribution system.</p> <p>A distribution system by means of :</p> <ol style="list-style-type: none"> a. primary water mains; b. secondary water mains; c. tertiary water mains, <p>allows the water to be distributed to the individual households.</p> <p>PWSS need revenues for paying their staff, electricity, chemicals, etc. and to form reserves from which the cost of replacing or extending parts of the system are met. These revenues are collected by selling water to the consumers. These either have to pay a fixed sum per month, or pay according to the amount of water that has actually been used. In the later case the quantity is normally measured by means of water meters, for instance in Dhaka.</p>	

Module : PWSS ITS - FUNCTIONS	Code : OBG 101
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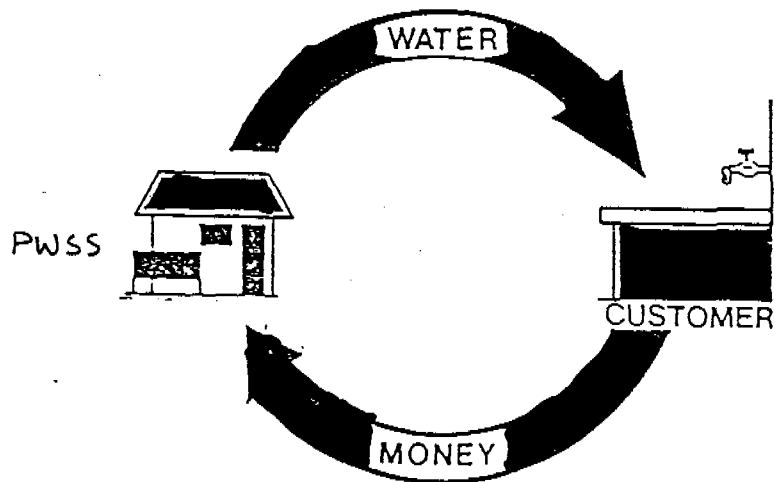
1. INTRODUCTION

Once a new water supply system has been constructed, it must be operated maintained, and developed. To do this an organization is needed : the Pourashava Water Supply Section (PWSS). The PWSS in Bangladesh are responsible for the supply of water to the consumer. The national development targets stipulate that an adequate water supply shall be available to 75% of the urban and semi-urban population by 2000. Consumers must pay for the water they consume. Therefore the PWSS are also responsible for the collection of revenues from water sales.

2. FLOWS IN PWSS OPERATIONS

PWSS operations can be characterized by two important flows :

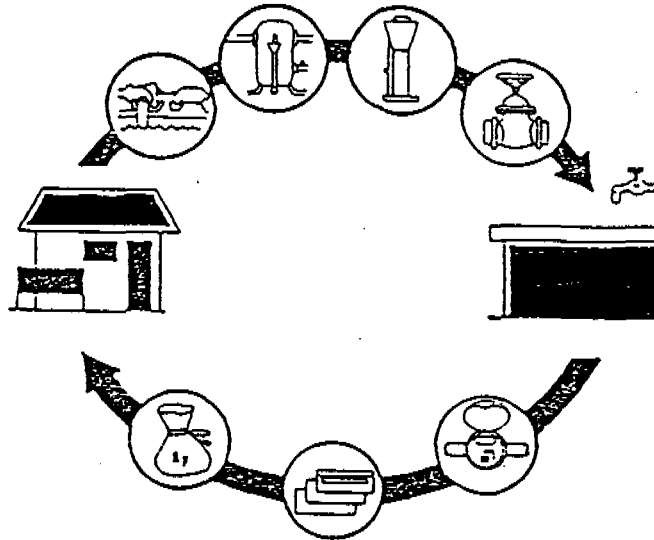
- flow of water from the source to the consumer, and
 - flow of money from the consumer to the PWSS.
- These flows are illustrated below.



The flow of water from the source to the consumer can be subdivided into a number of major processes/phases:

- withdrawal;
- treatment;
- transmission;
- distribution;
- consumption.

- To obtain a flow of money from the consumer to the PWSS a.o.:
- water use must be recorded;
 - bills must be prepared;
 - revenues must be collected.



3. WHAT ARE THE CHARACTERISTICS OF A PWSS ?

The PWSS supplies an essential commodity

People need water for many purposes, for example for drinking, cooking, bathing, cleaning, washing, and religious use. Without water people cannot live : water is an essential commodity. A TV or a motorbike are non-essential commodities : people can survive without them.

Consumers cannot control the quality of the product

People need water of good quality. This means, that they need water that is free from disease-causing elements. The consumers cannot control the quality of the water delivered to their houses. The consumer relies on the quality of the water. The PWSS must guarantee the supply of water of good quality.

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<p>Consumers are dependent on a regular supply</p> <p>There is only one PWSS per town. If there is a break-down in the supply of water, the consumer cannot go to another supplier of water; while traditional water sources often are contaminated. Consumers are dependent on the water supplied by the PWSS.</p> <p>The PWSS is a Public Enterprise</p> <p>Like in any enterprise, PWSS revenues must cover enterprise costs. However, the PWSS is a Public Enterprise and not a private enterprise. The PWSS must serve the public. Therefore PWSS policy should be based both on commercial principles and those of public service.</p> <p>4. SUMMARY</p> <p>The PWSS are responsible for :</p> <ul style="list-style-type: none"> - supply of water to the consumer, and - collection of revenues. <p>PWSS operations consist of two flows :</p> <ul style="list-style-type: none"> - water from the source to the consumer, and - money from the consumer to the PWSS. <p>The characteristics of a PWSS are :</p> <ul style="list-style-type: none"> - it supplies an essential commodity; - consumers cannot control the quality of the product; - consumers are dependent on a regular supply; - it is a Public Enterprise and not a private enterprise. 	

Module : ESTABLISHMENT OF THE PWSS	Code : OBG 300
	Edition : 06/09/1993
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1. INTRODUCTION

In some cities there is already some form of piped water supply. However existing systems are often small and deteriorated.

The establishment of a new water supply system will lead to major changes in water supply operations. There will be an increase in :

- quantity of water supply;
- number of connections;
- complexity of technical operations, including production, distribution and maintenance;
- complexity of administrative and financial operations;
- revenues from water sales.

In other cities piped water supply is a completely new public utility.

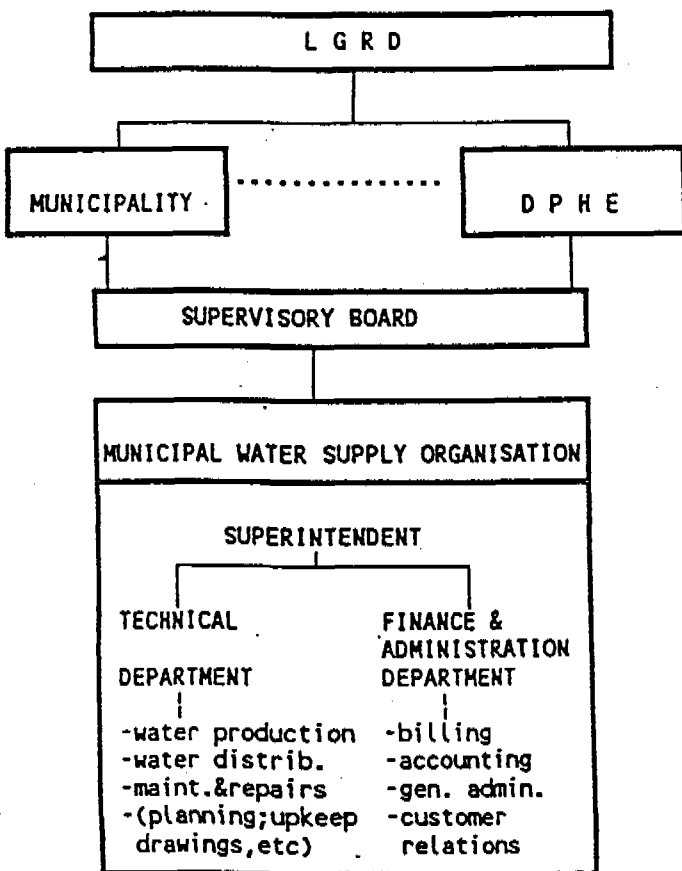
2. THE PWSS

The huge investment in the construction of a new water supply system requires that water supply operations are organized as an enterpreneurial activity. Management and staff of the PWSS must take initiatives, look for efficiency, be consumer oriented and promote effective water use.

In order to create best opportunities for the development of the new water supply system, an independent enterprise with its own legal identity shall be established : the Pourashava Water Supply Section (PWSS). The PWSS shall be managed by its own management staff, and administer its own funds.

Moreover the PWSS shall have its own administrative systems and procedures.

The highest body in the PWSS is the Supervisory Board which is formed by authorities of the Pourashava and the DPHE. The Pourashava Chairman is the Head of the Supervisory Board and the SDE, DPHE, 18-DTP is a member. This Supervisory Board approves enterprise policy, tariffs and budgets, and supervises PWSS operations. Within the guidelines of the Supervisory Board, management staff of the PWSS is responsible for day to day operations. The Superintendent is the Head of the PWSS. The Superintendent has power to make and implement plans, to procure materials, to employ staff, and to administer PWSS funds. However, the Superintendent remains accountable to the Supervisory Board for all his actions.



Organogramme for Municipal Water Supply Organization (PWSS)

3. Staffing

A newly established PWSS will need staff for the different jobs. Some jobtitles can be distinguished for a PWSS. The jobs are related to the different types of operations of the enterprise, such as :

- Jobs related to technical operations : Pumpdriver, plumber, tubewell mechanic.
- Jobs related to financial and administrative operations : Assistant Accountant, Bill clerk, customer relations officer, store keeper, peon
- Jobs related to management : PWSS Superintendent.

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<p data-bbox="272 426 1400 508">Not each job title requires one or more employees. In small enterprises with a limited work load, 1 employee may execute several jobs. However, qualified personnel must be recruited and appointed.</p> <p data-bbox="225 557 482 580">4. PWSS PREMISES</p> <p data-bbox="272 614 1415 802">A newly established PWSS will also require a proper office with adequate equipment, furniture and office materials. Moreover the PWSS will need transport facilities, a workshop for repair works, and a store for equipment, tools and spare parts. Facilities and initial capital shall be made available to the PWSS in order to enable it to procure these items as they are essential for the development of a professionally operating enterprise.</p> <p data-bbox="225 857 382 879">5. SUMMARY</p> <p data-bbox="272 914 1290 988">To establish a new PWSS a number of important aspects have to be considered : the legal identity, the production capacity, the organization structure, staffing, premises.</p>	

Module : PRINCIPLES OF MANAGEMENT INTRODUCTION	Code : OBM 001
	Edition : 04/09/1993
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1. INTRODUCTION

Why do organizations exist ?

There are many organizations around us. There are large ones like Pipe factories, Dhaka Medical College hospital, and Dhaka WASA. There are small ones like a carpenter's workshop or a garage. Organizations provide us with the goods and services we want and need. Aziz factories produce pipes, Dhaka WASA produces and distributes safe water, in DMC hospital sick people are cured. The carpenter's workshop makes chairs and tables, cars are repaired in the garage. Organizations have a goal. They exist because something must be done.

What have all organizations in common ?

They have people. Without people there is no organization.

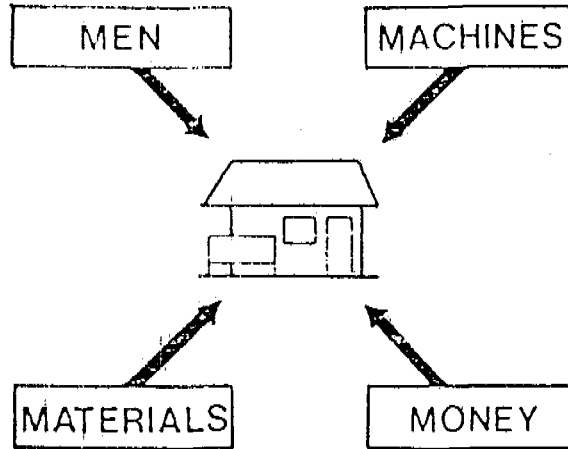
Do all people do the same work?

In AZIZ Pipe industry chemists, operators, and pipe cutters work together to make the pipes. In DMC hospital doctors, nurses, and maintenance staff work together to cure people. In Dhaka WASA pipe fitters, treatment operators, meter readers and store keepers work together to produce and distribute safe water. People also cooperate in the carpenter's workshop and in the garage. In organizations different people have different jobs and carry out different tasks.

Are there only people in the organization ?

Organizations are made up, not only of people, but also of machines, materials and money. AZIZ Pipe industry has machines, the hospital has operating theaters and heart monitoring equipment. A garage has a bridge, screw drivers, a billing machine. It also needs spare parts and lubricants.

In organizations people work with machines, and materials. See figure below.



So organizations need men, machines, materials and of course money. Money is needed to pay for such items as electricity, petrol, and stationery.

2. PRINCIPLES OF MANAGEMENT

Example

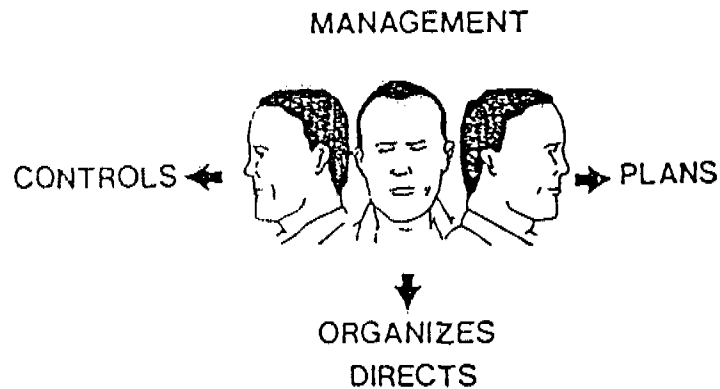
In a busy street in the center of Dhaka a truck breaks down. The truck hampers the traffic circulation and a long queue of cars builds up. Some helpful pedestrians are willing to push the truck to the road-side. What must they do ?

- first they must decide in which direction to push.
- next they must push at the same moment. Their efforts must be in tune.

In organizations different people carry out different tasks, but their activities are interdependent. Effective results can only be achieved through combined efforts. It is the task of the manager to coordinate the efforts of the people in the organization to do the work.

The principles of management are :

- planning;
- organizing;
- directing;
- controlling.



PLANNING

Planning is thinking and deciding in advance :

- what to do ?
- how to do it ?
- when to do it ?
- who is to do it ?

A complete plan also indicates what machines, materials and money are needed to realize the plan.

ORGANIZING

Organizing is making sure that all tasks necessary for successful operation of the enterprise are carried out. Staff are available to do their job. People in the organization know their responsibilities and know what they can decide by themselves and what is decided by their superior. They know how and with whom they should cooperate.

People work with machines and materials. Organizing is also ensuring that machines, and materials are available at the right place at the right time.

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<p>DIRECTING</p> <p>Plans can be perfect, people may know what to do, and how to cooperate. However, without the willingness and enthusiastic support of enterprise staff, the best plans will fail. Directing is guiding and motivating the staff of the organization towards effective performance.</p> <p>CONTROLLING</p> <p>On open sea a captain of a boat will regularly take his bearing to determine whether his boat is still on course. If the boat is off course he will order the helmsman to bring the boat back on course. Planning is looking into the future and deciding what has to be done, how, when and by whom. Controlling is looking backwards and seeing whether the activities have been carried out according to plan and if this is not the case to take the necessary corrective actions to guarantee the realization of the plan.</p> <p>3. SUMMARY</p> <p>The manager thinks and decides upon what the organization must realize in the future. He makes sure that all activities necessary for successful operation of the organization are carried out. He ensures that machines, materials, and money are available. The manager guides and motivates his staff in doing their job. Finally the manager will check whether the work has been done according to plan. The manager plans, organizes, directs and controls. If one of these activities is not being undertaken, the manager does not perform his task effectively.</p>	

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DIRECTING

Plans can be perfect, people may know what to do, and how to cooperate. However, without the willingness and enthusiastic support of enterprise staff, the best plans will fail. Directing is guiding and motivating the staff of the organization towards effective performance.

CONTROLLING

On open sea a captain of a boat will regularly take his bearing to determine whether his boat is still on course. If the boat is off course he will order the helmsman to bring the boat back on course.

Planning is looking into the future and deciding what has to be done, how, when and by whom.

Controlling is looking backwards and seeing whether the activities have been carried out according to plan and if this is not the case to take the necessary corrective actions to guarantee the realization of the plan.

3. SUMMARY

The manager thinks and decides upon what the organization must realize in the future. He makes sure that all activities necessary for successful operation of the organization are carried out. He ensures that machines, materials, and money are available.

The manager guides and motivates his staff in doing their job. Finally the manager will check whether the work has been done according to plan. The manager plans, organizes, directs and controls. If one of these activities is not being undertaken, the manager does not perform his task effectively.

Module : PLANNING	Code : OBM 100
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Section 4 : H A N D O U T S	Page : 01 of 05

1. INTRODUCTION

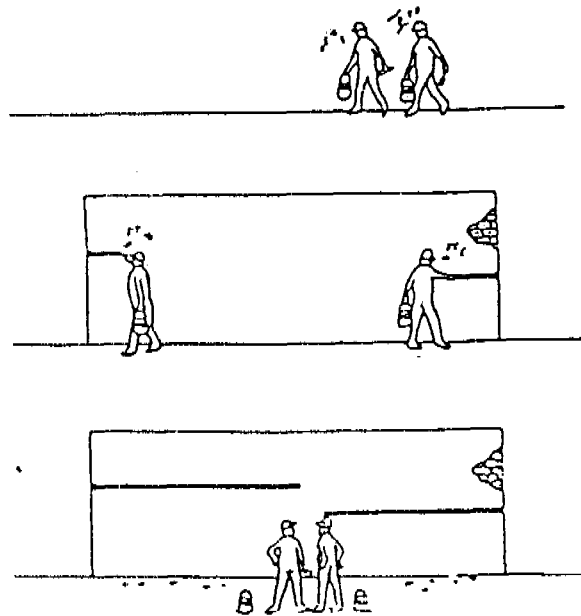
The tasks of the manager can be divided into:

- Planning;
- Organizing;
- Directing;
- Controlling.

Planning is the first activity. It precedes the other three. However, planning is not the most important activity. All activities of the manager are equally important, but the remaining three can only be performed correctly if the plans are good.

2. PLANNING IN THE PWSS

Everyone will agree with the saying: "Think before acting" Too often, however, the meaning of this saying is forgotten in daily life. Action often starts without prior thinking. See figure 1 below.



Once a new water supply system has been constructed it must be operated, maintained, and further developed. The national development targets stipulate that an adequate water supply shall be available to 75% of the population by 2000. Furthermore the PWSS must be financially autonomous, that is to say that PWSS revenues should cover all PWSS costs.

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<p>Staff of the PWSS work together to produce and distribute safe water (to meet the target of supplying the population with sufficient safe water) and to collect revenues from water sales (to meet the target of being financially autonomous). They must work in the same direction and their activities must be in tune. To obtain satisfactory results and synchronization of work, people in the organization must know what they are expected to do, how to do it and when.</p> <p>Planning is thinking and deciding in advance :</p> <p>WHAT : to do; HOW : to do it; WHEN : to do it; WHO : is to do it.</p> <p>WHAT : spells out the end result of the plan. The end results must be concrete and measurable, for example: 45 new houses connected to the supply system before the end of the year.</p> <p>HOW : defines the activities to be carried out to implement the plan.</p> <p>WHEN : indicates the starting date and completion date of each activity.</p> <p>WHO : indicates per activity the person who is responsible for carrying out that activity.</p> <p>3. WHICH PLANS SHOULD BE DEVELOPED FOR THE PWSS ?</p> <p>A large number different plans has to be made up for the PWSS,</p> <p>for example :</p> <ul style="list-style-type: none"> - OPERATION PLANS, concerning the regular supply of water and the regular collection of revenues. Operation plans ensure that daily operations are carried out effectively. - MAINTENANCE PLANS, indicating which maintenance activities must be carried out, when they must be carried out (once a week, once every six months), and by whom. - DEVELOPMENT PLANS, concerning the future development of the PWSS; how many new houses will be connected to the supply system in the coming year(s) (the plan's end result), which activities must be carried out to achieve this plan, and by whom. 	

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<p>- OTHER PLANS, Besides the above mentioned, plans should also be made for new constructions, for extension of the distribution system, for recruitment of new staff, for development of present staff, for training, for cash expenditures, for material use and procurement, etc. Individuals make plans for the next working-day or week.</p> <p>Planning is not a one-time activity. Planning is a recurrent activity. Each new situation triggers a new plan. This plan details : <u>what</u> to do, <u>how</u> to do it, <u>when</u> to do it and <u>who</u> is to do it.</p> <p>4. BUDGET</p> <p>Men, machines and materials are needed to implement plans. Therefore, a complete plan should not only indicate how many men are needed to implement the plan (who is to do it), but also what machines and materials are needed. The total cost or revenues of all this are laid down in the budget.</p> <p>A budget is a plan in money terms. A budget indicates :</p> <ul style="list-style-type: none"> - the revenues of a plan, and - the costs of men, machines, and materials to implement the plan. <p>Each plan has its own budget. Preparing the budget is part of the planning activity of the manager. Plans are only complete after preparation of the budget.</p> <p>5. SUMMARY</p> <p>The most important aspect of a plan is that it indicates what should be done, when and how and by whom. Each plan must be accompanied by a budget.</p>	

Module : PLANNING

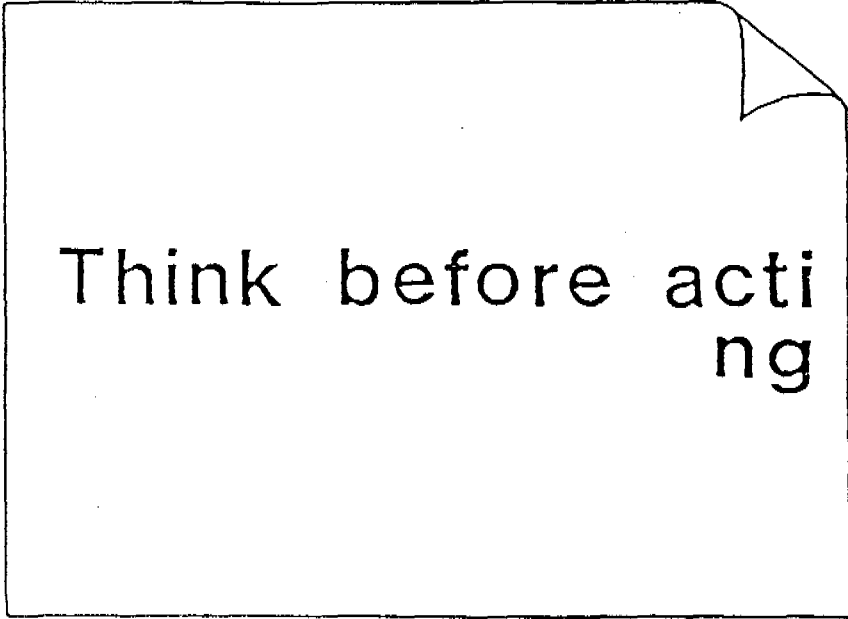
Code : OBM 100

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Section 4 : H A N D O U T (Exercise/E 1)

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What is wrong with this paper?



Think before acting

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Section 4 : H A N D O U T (Exercise/E 2)	Page : 05 of 05
<p>CONSTRUCTION OF PUBLIC HYDRANTS</p> <p>On 24 September 1993 you, Superintendent of the PWSS, are called by the Chairman of your town and he let you know that the Supervisory Board (SB) feels the need for the construction of six additional public hydrants in several slum areas of your town. Because of the urgent need for good service to the population, the Chairman instructs you to complete the construction as soon as possible.</p> <p>Directly after you return from your meeting with the Chairman you organize a meeting with your colleagues of the PWSS to plan the construction of public hydrants in line with the wishes of the Chairman.</p> <p>Task : Make a planning for the construction of six additional public hydrants.</p> <ul style="list-style-type: none"> - Think and decide <ul style="list-style-type: none"> . what to do (end result, must be concrete and measurable) ? . how to do it (activities)? . when to do it (starting and completion date of each activity) . who will do it (persons responsible for carrying out the activities)? 	

Module : ORGANIZING	Code : OBM 200
	Edition : 04/09/1993
Section 4 : H A N D O U T	Page : 01 of 02

1. ORGANIZATIONS NEED PEOPLE

There are many organizations around us. They exist because something must be done. Organizations have a goal. What have all organizations in common ? They have people. Without people there is no organization. In organizations different people carry out different jobs. They work together. In the PWSS pipe fitters, Pumpdrivers storekeepers and bill clerks work together to produce and distribute safe water and to collect revenues from water sales. It is the task of the manager to make sure that the people who are necessary for successful operation of the enterprise are available, that they know what is expected of them, and that they are able to execute their jobs effectively.

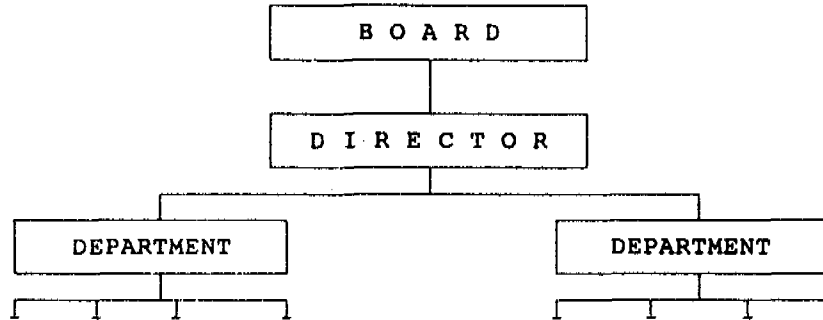
2. CAN ONE MANAGER ALONE INSTRUCT AND SUPERVISE ALL PEOPLE IN THE ORGANIZATION

One manager cannot instruct e.g 20 people and supervise their activities. This number is too high. In order to have effective guidance and supervision, departments are created. Related activities are grouped in one department and a head of the department is appointed. He is responsible for instructing and guiding his staff.

In a large organization many people work in one department. Their number can still be too high to be instructed and supervised by the department head. Smaller units - sections - are created within the department in which a smaller number of related activities are grouped. A section head is appointed and it is his duty to instruct and supervise the section staff.

In this way different levels - departments and sections - are created within the organization: a hierarchy is formed. The number of staff directly instructed and supervised by the director, the department head and the section head is then reduced.

Once different levels have been created within the organization, the paths of communication between the departments and sections must be established. Jobholders have to know how their tasks are related to the tasks of other jobholders. They should know by whom they are instructed and supervised and to whom they should report. This information is presented in a diagram ; the organization chart. See figure 1 below.



It is the task of the manager to make sure that the people in the organization know how to cooperate.

3. ORGANIZATIONS NEED MACHINES AND MATERIALS

Organizations are made up, not only of people, but also of machines and materials. In organizations people work with machines and materials to execute their job.

The manager must also see to it that the required machines and materials are available. He does not have to do all this by himself, but has to make sure that a material planning is made, that funds are available for procurement, and that the necessary machines and materials are ordered, stored, and transported. And further, that they operate according to plan.

4. Summary

Organizations have plans. Organizing is making sure that:

- people are available to realize the plans of the organization (recruitment and selection);
- they know what is expected of them (job descriptions);
- they are able to perform their jobs adequately (training);
- they know how to cooperate (clearly defined organization structure);
- the necessary machines and materials are available.

Module : DIRECTING	Code : OBM 300
	Edition : 08/09/1993
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1. INTRODUCTION

The four principles of management are planning, organizing, directing and controlling. Directing is a tool to influence the behaviour of people. It is concerned with the relationship between the superior and his sub-ordinates.

2. DIRECTING

Organizations may have perfect plans, the organizational structure may be effective, employees may know exactly what they must do and may have the necessary machines and materials to do their work. However, for successful operations more is required. Plans are carried out by the staff of the organization. Organizations, therefore, can only operate effectively when its employees work with care. Without the willingness and enthusiastic support of the employees, the best plan will fail.

The director, the department heads, and section heads need their staff to get the work done. Directing concerns the relationship between the superior and his sub-ordinates. Through directing the manager influences the way people behave in the organization and how they work.

Guiding people towards good job performance is not easy. Jobholders are individuals and their need for guidance may differ. The manager should give attention to individual needs for appraisal after a good performance. Bad performance can be corrected in many ways. Through appraisal and correction guiding people intends to give direction to activities and performances of employees.

Through incentives such as promotion, bonus, praise or degradation, reprimands, and the like, the manager motivates his sub-ordinates to work effectively. Sub-ordinates, however, must have confidence in the authority of the manager. They work better as they have more confidence in the manager's performance. Managers give instructions to their sub-ordinates. They should understand these instructions. Effective communication between the manager and his sub-ordinates is therefore important.

All jobholders should somehow be supervised. Even very confident job holders who function well in the enterprise, make sometimes mistakes without knowing it. Supervision is indispensable and should be attuned to individual needs.

Module : CONTROLLING	Code : OBM 400
	Edition : 11/09/1993
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1. INTRODUCTION

Controlling is to see whether the operations are carried out according to plan and if this is not the case, to take the necessary corrective actions to guarantee the realization of the plan. Planning without controlling is useless.

2. STEPS IN CONTROLLING

For 1993 PWSS Bhola, plans to make 1.200 new house connections at a rate of 100 connections per month (standard).
At the end of February the manager checks how many new houses have been connected to the system :
150 houses (a delay of 50 connections).

With his staff the manager analyses the reasons for the delay.

Reasons could be :

- Lack of labour.
- Lack of work supervision.
- Lack of materials.
- Delays in design making.

Now the manager could undertake one or several of the following corrective actions:

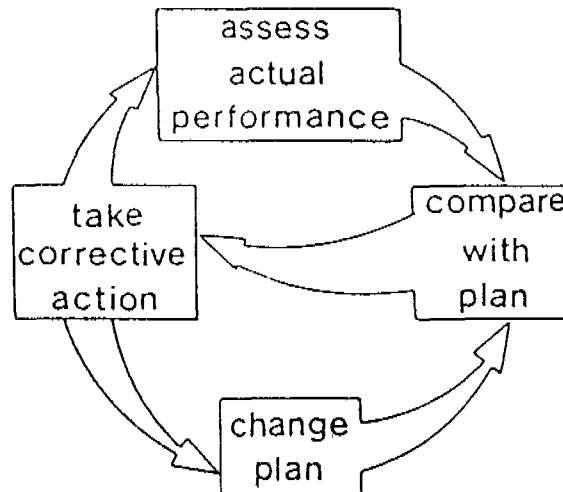
- Employ a new labour gang.
- Supervise the work more frequently.
- Improve the supply of materials.
- Employ an additional house surveyor to speed up design making.

What did the manager do ?

- Step 1: He assessed the actual performance (150 connections).
- Step 2: He compared the actual performance with the plan (a delay of 50 new connections) and identified the reasons for delay.
- Step 3: He took the necessary corrective actions to ensure plan realization.
- Step 4: When corrective actions will not lead to realization of the plan, then the plan is not feasible and must be changed.

This is illustrated below.

HOW TO CONTROL ...



3. PERFORMANCE STANDARDS

To control PWSS operations effectively, the enterprise should develop clear performance standards.

These standards specify the norms of required performance. Through performance standards PWSS staff know in detail what is expected of them. These standards also serve as a basis for comparing actual performance with planned performance.

Performance standards are set by the Superintendent of the PWSS or are imposed by central or local authorities. Performance standards concern the major operations of the PWSS. So there are many different performance standards. Examples are :

WATER QUALITY

Detailed standards for water quality which should comply with the standards of the World Health Organization (WHO). The standards should also specify at what intervals water quality should be checked (e.g. once per 24 hours, once per week).

MAINTENANCE OF SUPPLY SYSTEM

These standards specify what maintenance activities must be carried out per day, week, month, and year.

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BILLING OPERATIONS

Standards specify before which date bills should be sent to customers and before which date bills should be collected.

DEBTORS MANAGEMENT

The standard may specify the acceptable level of debtors portfolio (% of the turnover).

UNACCOUNTED WATER

This standard specifies the acceptable level for unaccounted water use. Above this level department heads must take action, e.g. leakage controls check metering, search for illegal connections.

FINANCIAL REPORTING

This standard specific which reports should be prepared before what date by the Finance Department.

CASH AUDITS

The standard may specify at what intervals cash audits should be carried out.

NEW CONNECTIONS

This standard may specify the acceptable time span between the registration of an application and the installation of a new connections (e.g. 5 weeks).

The PWSS Superintendent must exercise close supervision on PWSS operations, check whether performance standards are met. If this is not the case he must take the necessary corrective actions to guarantee that PWSS operations are carried out according to standards.

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4. THE PWSS NEEDS CLEAR PERFORMANCE STANDARDS

EXAMPLE

The Assistant Accountant supposes that only after a period of three months of non-payment, consumers must be disconnected from the supply system. The Superintendent, however, wants that consumers be disconnected after two months of non-payment.

The Superintendent controls the list of receivables of the enterprise and finds out that a consumer who did not pay during the last nine weeks has not yet been disconnected. The Superintendent gives a reprimand to the Assistant Accountant. The Assistant Accountant feels the reprimand to be unjustified and therefore he is disappointed.

The cause of the conflict is that the Superintendent's standard for disconnecting is insufficiently clear to the Assistant Accountant. He does not know clearly when to do what.

Managers are responsible for making the plans of the organization and setting the standards for work performance. Staff of the enterprise are responsible for realization of enterprise plans.

5. SUMMARY

To control performance effectively, standards are required. Without standards it is not possible to check whether targets/objectives/plans are realized. Controlling always consists of three, and sometimes of four steps:

1. Assessing actual performance.
2. Comparing performance against plan/standard.
3. Talking corrective actions (if required).
4. Adapting plan (if required).

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1. INTRODUCTION

In the PWSS different people carry out different tasks. Their activities are closely interrelated and only through combined efforts good results can be achieved. Their activities must be attuned to each other : they must be coordinated.

Activities in the PWSS are formally coordinated through :

- procedures;
- meetings.

However, formal coordination can only be effectuated through the willingness of the employees to cooperate.

2. COORDINATION

The two most important tools of formal coordination are procedures and meetings.

PROCEDURES :

There are many recurring situations within the PWSS. The flow of water requires regular checks and adjustments, the quality of the water must be controlled at fixed intervals, and the system must be maintained periodically.

The same is true for the flow of money from the consumer to the enterprise. Billing operations in April are similar to those in March. The amounts will differ, but the activities to be carried out are the same. This is also the case for procurement of material and for making house connections.

To tackle these constantly recurring situations quickly and efficiently, the PWSS has pre-planned "guides to action": procedures. Procedures specify which activities should be carried out, at what moment, and by whom. Procedures describe the work flow through the PWSS and link the activities of different staff members to each other. Procedures are important tools in the coordination of the activities of the different employees. The Superintendent makes sure that procedures are developed and that they are applied effectively in the PWSS.

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<p data-bbox="226 398 354 425">MEETINGS</p> <p data-bbox="226 452 1375 582">In organizations there is a permanent need of coordination. In meetings the activities of departments/sections are coordinated. Meetings should take place at regular intervals and not only when problems arise. Meetings should be carefully prepared, and an effective reporting system should be introduced.</p> <p data-bbox="178 636 402 663">3. COOPERATION</p> <p data-bbox="226 689 1375 743">Formal coordination will help the organisation to function effectively. However, the activities in the organisation are carried out by people.</p> <p data-bbox="226 770 1327 851">They must be willing to cooperate. Effective coordination and good cooperation together will lead to an effective enterprise.</p> <p data-bbox="178 904 338 931">4. SUMMARY</p> <p data-bbox="226 958 1327 1039">To operate effectively, the organisation requires not only formal coordination through procedures and meetings, but also a willingness of the employees to cooperate.</p>	

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<p style="text-align: center;">COOPERATION</p> <p>Task : Make puzzle.</p> <p>Goals :</p> <ol style="list-style-type: none"> 1. To identify aspects of coordination in solving a problem. 2. To make participants aware of their own behaviour which may contribute or obstruct the solving of a problem. <p>Group size :</p> <p>Each group will have six participants : five puzzle participants and one observer.</p> <p>Physical setting :</p> <p>Five tables which have been spaced far enough apart so that participants cannot see the puzzle elements of each other. On each table there will be an envelope with 30 puzzle elements.</p> <p>Instruction :</p> <p>The group must complete as quick as possible the five puzzles.</p>	

Module : MOTIVATION	Code : OBM 310
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<p>1. INTRODUCTION</p> <p>Organizations may have perfect plans, their organizational structure may be effective, employees may know what they must do and may be able to execute the assigned tasks adequately. However, for successful operation more is required.</p> <p>The director, the department heads, and sections heads need their staff to get the work done.</p> <p>Staff of the enterprise carry out the plans of the organization.</p> <p>Without their dedication and enthusiastic support the best plan will fail.</p> <p>Directing concerns the relationship between the managerial staff and the executing staff and involves influencing the way people behave in organizations. Important issues in directing are:</p> <ul style="list-style-type: none"> - how can enterprise staff be motivated? - has the manager sufficient authority? - does the manager communicate effectively with his sub-ordinates? <p>The enterprise needs its staff. Staff of the enterprise need their enterprise. They need their salaries to support their families, they want job security and they appreciate that they can apply what they have learnt. They have expectations.</p> <p>2. HOW CAN THE MANAGER MOTIVATE HIS STAFF ?</p> <p>The director keeps in mind that he is motivating people who have needs and expectations. To motivate his staff the director makes use of incentives. Incentives are those things which induce people to work well</p> <p>Examples of positive incentives are :</p> <ul style="list-style-type: none"> - increase in salaries; - promotion; - pleasant working environment (picture, calendars, plants); - appreciation given for a good job performance; - job enrichment: make the job wider and more attractive; - job rotation: change in jobs to prevent boredom; - enterprise-cooperative store supplying cheap commodities; - loan-facilities; - training course; - professional literature; - social outings; - attention to the families of the staff. <p>Examples of negative incentives :</p> <ul style="list-style-type: none"> - threat to be dismissed; - reduction of bonus or other negative financial incentives; - no promotion. <p>The director has many different incentive at his disposal and he selects incentives according to he needs of the employee and the financial capacity of the enterprise. If the budget of the enterprise does not allow for a raise in salary, there are other things which are appreciated by the staff. Money is not the only effective incentive.</p>	

Module : MOTIVATION	Code : OBM 310
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<p>3. SATISFACTION AND APPRECIATION</p> <p>One of the most important factors influencing work-satisfaction is the feeling to respected and to be truly appreciated. Of course, incidental appraisals for doing a good job mean a lot to employees, but a more structural promotion of work satisfactions in the enterprise can only be achieved by a systematic approach. People should know what is expected of them and they should have an idea whether they meet the requirements for their job.</p> <p>This basic human need should be acknowledged by the personnel department in arranging regular appreciation talks for individual jobholders.</p> <p>In normal situations once a year will do. However, when a jobholder is having difficulties in living up to the standards for this job, his efforts should be valuated more frequently in order to enable him to improve his attitudes, efforts, skills etc.</p> <p>In becoming a good jobholder, people need feed-back from the organization about their performance.</p> <p>4. SUMMARY</p> <p>To improve organizational effectiveness, motivated staff is a must. Motivation is influenced by positive and negative incentives. Promotion is a positive, reduction of bonus is a negative one.</p>	

Module : AUTHORITY	Code : OBM 320
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Section 4 : H A N D O U T	Page : 01 of 02

1. MANAGER HAS FORMAL AUTHORITY

The PWSS Superintendent has officially been appointed to manage PWSS operations. He directs and guides the staff of the PWSS and has the formal authority to do so : his staff must carry out his orders.

2. FORMAL AUTHORITY IS NOT ENOUGH

Formal authority, however, is not enough to direct the staff of the PWSS effectively. Formal authority must be complemented with :

KNOWLEDGE AND SKILLS

The Superintendent must have much know-how about PWSS operations. He is the decision-maker. He must know how to manage, plan, organize, direct and control the activities of the PWSS. Then the staff will have confidence in his way of working and his decisions.

A newly appointed Superintendent will probably have limited experience in managing PWSS operations. Through reading, training and asking questions to experienced managers of other organizations, the manager will develop his knowledge and skills.

INTEGRITY

Integrity refers to the person rather than his position.

Aspects of integrity include :

- respecting his staff;
- being predictable and objective;
- treating people equally;
- not hurting people's feelings;
- giving a good example;
- being honest.

Lack of integrity will negatively influence job-performance of enterprise staff.

PERSONALITY

There is not one "best" way to direct staff in the PWSS. Each manager has a personality of his own, habits, attitudes etc.

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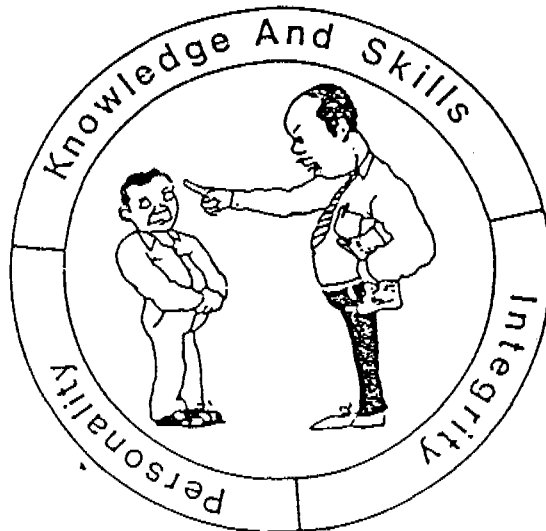
Consequently each manager must select the way of directing which suits him best.

It is important to see that personality of the manager directly influences the way staff behave in the organization. A manager who only gives orders, creates a "yes sir, no sir" situation. He should not expect his staff to come up with initiatives or proposals for improvement of the operations.

On the other hand if a manager never takes corrective actions in supervising his staff members, he should not be surprised if they do not react once he makes a critical remark.

But in all cases the manager should be able to inspire people and be determined to succeed. He will influence his staff positively, if he is a good communicator and a good listener.

So, there is more to authority than the formal attribution of power. This is illustrated below.



3. SUMMARY

Formal authority is not sufficient to direct PWSS staff effectively. The manager's formal authority must be complemented with knowledge and skills, integrity and personality.

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Section 4 : H A N D O U T	Page : 01 of 04

1. INTRODUCTION

During the whole day people communicate. Communication is the transmission of ideas, information, instructions and feelings from one person to another person. There is no organization without communication.

We have communicated since the day we were born, hence we take it for granted that we are good communicators. We believe that if we speak clearly then everyone will understand. We believe that if we use simple language people will understand.

2. COMMUNICATION PROCESS

You drive a car and you want to go from A to B. You see a pedestrian who wants to cross the road. He has already put one foot on the road. You clearly see that an accident will happen if both of you keep going. You have a good reason to communicate with the pedestrian.

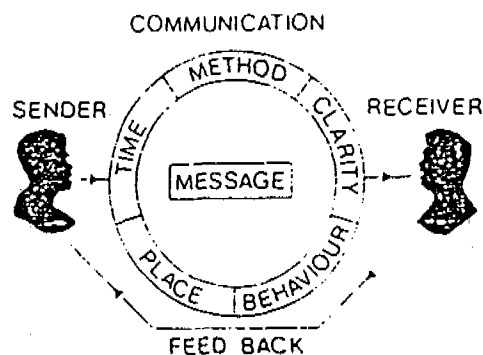
When you shout, he won't hear you. When you flash your lights he might not see it. So you have to select a better way to transmit the message that danger is in the air : you blow your horn. The pedestrian hears your horn and takes a step back. The communication (transmission of the information that there is danger) between the driver and the pedestrian is successful and an accident has been prevented.

The sender used his horn. We call this the method to send the message. The pedestrian must understand the message and its intentions. We call the pedestrian the receiver. Finally there is a proof that the receiver (the pedestrian) understood what the sender (the driver) wanted to express. The pedestrian took a step back. We call this control or feedback.

In all communication you will find :

- the sender;
- the message;
- the method;
- the receiver;
- control/feedback.

This is illustrated below.



3. THE METHOD

The sender must know what he wants to express and to whom. The sender must select the most effective method to send the message. The driver selected the horn instead of shouting or flashing the lights.

In selecting the method the sender must take into account :

- who is the receiver?
- how much does the receiver know and understand (language and knowledge)
- which method is most effective (horn or flashing lights) ?

Examples of methods of communication:

- speaking;
- writing (memo, letters, posters, overhead sheet);
- touching;
- gestures.

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<p data-bbox="204 415 368 439">4. CONTROL</p> <p data-bbox="252 467 1414 573">The sender must check that the message has been understood. He must ask the receiver to relay the message back to him to check his understanding. The question "Have you understood what I want ?" is not enough. The sender must ask direct questions related to the message.</p> <p data-bbox="204 625 368 650">5. SUMMARY</p> <p data-bbox="252 678 1414 757">If we want to make something clear to someone else, we must communicate. The communication process involves a sender, a message, a method, a receiver, and feedback, or control.</p>	

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INSTRUCTION FOR THE SENDER

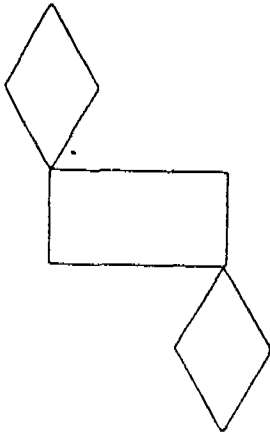
Task I

You have to instruct the man sitting in front of you (the receiver) to draw as quick as possible the same diagram as is shown in example I. You are only allowed to give oral instructions. You are not allowed to use your hands to make something clear or show the example. The receiver is not allowed to ask you any questions or to interrupt you. You communicate according to One Way Communication System: instructions only flow from you to the receiver. The trainer will tell you when to start.

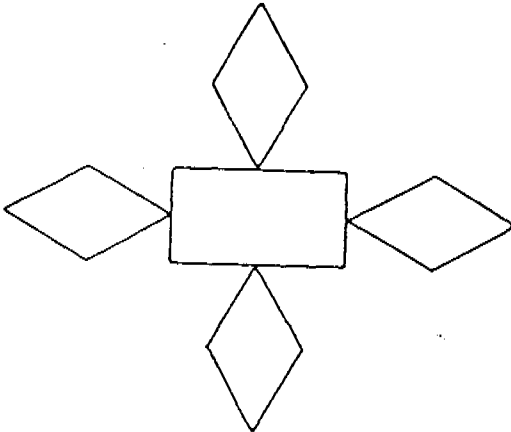
Task II

Again you have to instruct the man sitting in front of you (the receiver) to draw a diagram. Now example II serves as the example. However, this time the receiver is allowed to ask you questions if he needs so or interrupt your instruction whenever he feels necessary. You can answer the questions as you like. However, also this time you are not allowed to use your hands to make something clear, or to show the example. You are only allowed to speak. In this task you will communicate according to the Two Ways Communication System. The trainer will tell you when to start.

EXAMPLE I



EXAMPLE II



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<p>1. COMMUNICATION IS AFFECTED BY</p> <ul style="list-style-type: none"> - The clarity of the message. - The method. - Behaviour of the sender and receiver. - Place and timing of the communication. <p>2. CLARITY OF THE MESSAGE</p> <p>The Superintendent asks the Assistant Accountant to finish the balance sheet of the PWSS "AS SOON AS POSSIBLE". However, in his mind he wants the balance sheet at the least by five o'clock this afternoon. He must read the sheet before his meeting with the Chairman which will take place tomorrow morning at 10 o'clock. The Assistant Accountant interprets the message "AS SOON AS POSSIBLE" as tomorrow before 10 o'clock. The Superintendent's intention with "AS SOON AS POSSIBLE" differs from the interpretation by the Assistant Accountant.</p> <p>At five o'clock there is a conflict between the men. The conflict with its related deception could have been prevented through better, clearer communication. The Superintendent should have asked : "Can you prepare the balance sheet before five o'clock this afternoon?". The message should be precise.</p> <p>3. THE METHOD</p> <p>Most people retain information better when it is shown to them rather than by hearing or reading. Showing is not always possible but should be used if it is at all possible, because, as the saying goes, "a picture paints a thousand words".</p> <p>4. BEHAVIOUR</p> <p>You are in a bad mood. Then often people twist their words. You only speak in short sentences. You do not have the patience to say clearly what you want. Your bad temper means that the message you actually send, differs from the message you want to send.</p> <p>You give instruction to the Bill Clerk. At the same time you are writing a note to the tubewell mechanic.</p> <p>The Bill Clerk feels offended. He only thinks of your impolite behaviour and is therefore unable to understand what you explain. He is distracted by your behaviour. Your behaviour makes effective communication impossible.</p> <p>5. PLACE AND TIMING OF THE COMMUNICATION</p> <p>An employee arrives too late for work and you want to give him a reminder. If you do that in public he might be so embarrassed that his only reaction is : "Yes Sir".</p>	

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<p>You think that your message is clear, but you do not know the reasons for his absence. They might be valid. In this case the place would have made effective communication impossible. Other examples : Noisy conditions - hot or wet conditions etc.</p> <p>You have an important meeting with the Supervisory Board. Just before leaving the office you rapidly give instructions to the Assistant Accountant. You are in a hurry and you have no time to explain clearly what you want. The Assistant Accountant only understands a part of what you want. Bad timing makes effective communication impossible.</p> <p>Communication is not only the words you speaks or the instructions you write. Communication is much wider. Communication is largely affected by the place and timing. In other words : you have to choose the occasion carefully.</p> <p>6. PLANNING COMMUNICATION</p> <p>As we have seen, effective communication is very important to the organization. Therefore communication should be planned. Do you know clearly what you want to communicate? Do you know with whom you want to communicate ? Are you in a suitable state to communicate ? Did you select the method with care ? Did you select with care the place and time of the communication? How can you control whether the message has been correctly understood ?</p> <p>7. FAILURE IN COMMUNICATION</p> <p>Communication can easily fail because :</p> <ul style="list-style-type: none"> - your ideas are not clear; - your message does not describe you thoughts clearly; - you have chosen the wrong method to send the message; - you didn't consider the situation : the place or timing; - you do not control whether the message has been correctly understood. <p>8. SUMMARY</p> <p>To communicate effectively, the sender must ensure that the message is clear, the right method is used, the place and the timing are right and that he checks or controls whether his messages has been understood. All this means, that the sender must plan his communication.</p>	

Module : THE PWSS - ITS ENVIRONMENT	Code : OBG 610
	Edition : 04/09/1993
Section 4 : H A N D O U T	Page : 01 of 03
<p>1. INTRODUCTION</p> <p>Organizations provide people with the goods and services they want and need. Organizations exist because to do so, something must be done. Organizations do not work solely within the boundaries of their own premises. They constantly interact with the world outside these boundaries. The outside world is called : the environment of the organization.</p> <p>2. THE MANAGER AND THE ENVIRONMENT</p> <p>Managers look outside the boundaries of their organization. They must be aware of developments that take place in the environment of their organization. They react to these developments and relate them to the internal options of the organization.</p> <p>3. THE ENVIRONMENT OF THE PWSS</p> <p>PWSS operations are affected by developments which take place in the environment of the PWSS. The management of the PWSS cannot influence these developments but should react to them.</p> <p><u>Example</u></p> <p>GOB decided to construct a new low-cost housing project of 1.000 houses in your town. The manager of the PWSS reacts to this major development and determines in what way the housing project will influence PWSS operations.</p> <p>Consequences could be:</p> <ul style="list-style-type: none"> - extension of the distribution system to the project site; - start-up of a new PWSS office at the project site; - recruitment and training of new staff for operation and maintenance works; - development of special financial administrative procedures for the new house occupants. <p>PWSS operations are affected by :</p> <ul style="list-style-type: none"> - Government Policies and Regulations : <ul style="list-style-type: none"> . LGRD & C objectives; . tax regulations; . price restrictions; . public health regulations. 	

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<ul style="list-style-type: none"> - Market Conditions : <ul style="list-style-type: none"> . number of inhabitants; . the amount consumers can pay for water supply; . town development plan; . state of industrial development. - Material Supply : <ul style="list-style-type: none"> . availability of materials; . price of commodities; . terms of delivery. - Manpower Supply : <ul style="list-style-type: none"> . availability of skilled labour; . availability of specific expertise; . labour conditions. - Financial Sources : <ul style="list-style-type: none"> . financial assistance from government institutions; . availability of loans; . rates of interest. <p>4. SUMMARY</p> <p>Organizations exist because something must be done. They constantly interact with the world outside their boundaries. Managers react to the developments which take place in the environment of their organizations, such as :</p> <ul style="list-style-type: none"> - Government policies and regulations. - Market conditions. - Material supply. - Manpower supply. - Financial sources. <p>They relate these developments to the internal operations of their enterprise.</p>	

Module : THE PWSS - ITS ENVIRONMENT

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Section 4 : H A N D O U T (Exercise)

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Task : Write on this sheet a number of factors that affect PWSS operations.

Module : CUSTOMER INFORMATION	Code : OBC 300
	Edition : 13/09/1993
Section 4 : H A N D O U T	Page : 01 of 02
<p>1. INTRODUCTION</p> <p>People need safe water for drinking, cooking, bathing, washing, and religious use. The water enterprise needs consumers. Only through the sales of water, the PWSS will get the necessary funds to cover its expenses.</p> <p>PWSS staff should :</p> <ul style="list-style-type: none"> - Be aware of the consumers' need for water and the need of the enterprise for revenues. - Not wait for new consumers to apply for a connection, but should be active in attracting new consumers. - Should promote the consumption of safe water and should inform future customers of the advantages of the consumption of safe water and the conditions of water supply. <p>2. INFORMATION NEEDS OF CUSTOMERS</p> <p>People need information on a large number of different subjects, for example on :</p> <p>Water Supply</p> <p>Consumers must know that through the consumption of safe water the occurrence of water borne diseases is considerably reduced.</p> <p>Examples of these diseases are : typhoid, diarrhoea, and skin diseases. They should know that the water delivered to the houses is regularly controlled.</p> <p>Water Tariff</p> <p>Consumers must pay for the water they consume.</p> <p>Each month the consumer will receive a bill for the water consumed.</p> <p>People want to know how much they will spend on water. The PWSS should not only present the information on the water tariff in terms of Tk.per m³. The tariff should also be explained in a form which can easily be understood by the consumer : e.g. a family of 3 adults and 4 children which uses water for drinking, cooking, bathing and washing, spends in average Tk.100 per month.</p>	

Module : CUSTOMER INFORMATION	Code : OBC 300
	Edition : 13/09/1993
Section 4 : H A N D O U T	Page : 02 of 02

3. INFORMATION SUPPLY TO CUSTOMERS

The PWSS (the sender) must inform the general public (the receiver) of the different aspects of water supply (the messages). The PWSS must select with care the methods to send the messages. Examples of these methods are :

- A brochure for future consumers with detailed information on conditions of water supply.
- Advertisements in the local newspaper with general information.
- Water promotion teams which give direct information to the public on the advantages of the consumption of safe water.
- Information through the local authority (Ward Commissioner) on house connection construction plans.

Due to the variety of messages to be transmitted and the size of the areas to be covered, the PWSS will not select a single method of communication, but will opt for a mixture of methods.

The PWSS communicates with the general public. Therefore the language used in water promotion/information material should be simple and the layout of the materials should be attractive. Simple language and an attractive layout improve the clarity of the message.

4. SUMMARY

To satisfy the information needs of (future) customers on health, costs, procedures, etc. the water enterprise can be active in general ways :

- Publications;
- Announcements;
- Lectures;
- Plans.

In doing so, the enterprise must avoid technical language, since the information is intended for the general public.

Department of Public Health Engineering

Module : CAUSES OF WATER LOSS	Code : OBM 772
Section 4 : H A N D O U T	Edition : 23/09/1993
Page : 01 of 04	
<p>1. Introduction</p> <p>One alternative to reduce the amount of the electricity bills is to reduce the volume of water losses. By reducing the losses, the amount of water available for the consumers will be increased and can be used to meet the demand for water. In order to be able to reduce the volume of water loss as much as possible, we must first locate and determine the causes and the sources of the water losses. Water losses can be categorised as physical and non-physical losses and this module deals with:</p> <ul style="list-style-type: none">- Definition of physical and non-physical water losses;- Various causes of physical water losses;- Various causes of non-physical water losses;- Calculation of water loss through a hole of $\frac{1}{2}$". <p>2. Causes of water loss</p> <p>Water losses can be categorised according to their cause:</p> <ol style="list-style-type: none">a. Physical water losses are losses that can be detected physically. These are the losses through leakage in the distribution system; For instance the water that leaks away from the system through cracks in pipes or leaking valves.b. Non-physical losses are the losses that can not be detected physically. These are the losses through wastage, illegal connections, errors in meter reading and administration, faulty meters, etc. <p>The most important physical water loss is LEAKAGE and the most important non-physical water loss is WASTAGE.</p>	

Department of Public Health Engineering

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<p>3. Physical losses</p> <p>Physical losses are caused by technical and environmental factors, such as:</p> <ul style="list-style-type: none">* insufficient coverage of pipes and fittings* poor compaction of sand and soil around the pipes* differential settlement of the pipe bed* HC connection point* extremely poor quality clamp* poor workmanship* poor quality of HC fittings* land erosion* broken or burst pipes* corrosion of pipes and/or fittings* leaking valves* lack of thrust blocks <p>Summarizing, the physical losses can originate from the corrosion process, bad workmanship, low quality materials, serious flooding and erosion, excavation, heavy load, or internal causes such as water hammer.</p> <p>4. Non-physical losses</p> <p>Non-physical losses are caused by various factors, such as:</p> <ul style="list-style-type: none">* poor quality of in-house plumbing* overflow of roof tanks* carelessness of consumers* irregular water supply* intermittent water supply* poor quality in-house pipes and fittings* water supply free of charge or very cheap* poor monitoring of water supply authority* errors in meter reading* errors in billing* delayed registration of new customers* wrong estimate of consumption of water* illegal connections* water theft* PWSS water consumption for Operation & Maintenance	

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The use of water for O&M is put here as a non-physical loss because generally the PWSS is not accounting for the water used for flushing, cleaning, etc.

Summarizing, the non-physical losses originate from various sources, such as:

- customers
 - * (un)awareness
 - * carelessness
 - * overflow of roof tank
 - * poor in-house plumbing and materials

- human factors
 - * lack of training
 - * lack of discipline
 - * lack of sense of responsibility
 - * lack of incentives

- inefficient and poorly managed administration
 - * billing procedures not efficient
 - * lack of by-laws and procedures
 - * existing rules and regulations are not adhered to
 - * lack of sanctions
 - * water supply free of charge or too cheap
 - * poor billing and collection efficiency

- poor equipment and lack of facilities
 - * lack of watermeters
 - * lack of measuring instruments
 - * damaged measuring instruments
 - * poor efficiency of pumps and distribution system
 - * irregular and intermittent supply

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5. Calculation of water loss

To calculate the volume of water lost through a hole in a pipe, the following basic formulas are used:

$$Q = A * v$$

in which: A = cross section of the hole (m²)
 v = Velocity of water flowing through the hole (m/s)
 Q = volume of water loss through hole (m³/s)

and:

$$v = \sqrt{2 * g * h}$$

in which: g = gravity acceleration coefficient (m/s²)
 h = pressure head (mwc)

Example:

Given: A leakage in a pipe through a hole with a diameter of ½" and a pressure head of 15 mwc.

Question: How much water is lost through the hole in a time span of 1 hour and during a daily production of 12 hours ?

Answer: The leakage can be calculated as follows:

$$Q = A * v$$

$$d = \frac{1}{2}'' = 12.7 \text{ mm} = 0.0127 \text{ m}$$

$$A = \frac{\pi}{4} * d^2 = \frac{3.14}{4} * (0.0127)^2 = 0,0001265 \text{ m}^2$$

$$v = \sqrt{2 * g * h}$$

$$g = 9.81 \text{ m/s}^2$$

$$h = 15 \text{ mwc}$$

So: $v = \sqrt{2 * 9.81 * 15} = 17.16 \text{ m/s}$

and: $Q = 0.0001265 * 17.16 = 0.00217 \text{ m}^3/\text{s}$

Lost per hour: $0.00217 * 3600 = 7.812 \text{ m}^3$

Lost per 12 h: $7.812 * 12 = 93,750 \text{ m}^3$

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Module : INTRODUCTION TO BOOKKEEPING	Code : OBF 100
	Edition : 09/10/1993
Section 4 : H A N D O U T	Page : 01 of 05
1. Introduction	
Why do we need bookkeeping ?	
To execute the operation and maintenance of a PWSS, many activities need to be executed. These activities include:	
<ul style="list-style-type: none">- preparing bills- distributing bills- collection of revenues- payment of salaries- etc., etc.	
In order to be able to manage the PWSS operations well, the Superintendent requires information on the performance of the PWSS. The information he needs must be:	
<ul style="list-style-type: none">- in writing- systematic- clear and correct- easy to understand	
Therefore bookkeeping is required. Bookkeeping is a means to register and group the financial transactions taking place in the PWSS in such a way that it provides the required information. The basis of registration are the source documents. Source documents are documents concerning the transactions taking place in the PWSS. All transactions, without any exception, need to be recorded. Registration takes place at various locations in the PWSS and each staff member fills in specific source documents. The functions of such source documents are:	
<ul style="list-style-type: none">- to account for the activities executed by the staff member concerned- to form the basis of registration in bookkeeping.	

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2. Principles of Bookkeeping

In order to achieve good results, the following divisions have to be made:

- source documents (debit/credit and journal vouchers)
- recording the source documents to primary as well as final books of accounts (collection & disbursement register and general ledger)
- preparation of trial balance

Good bookkeeping has to meet the following criteria:

- systematic
- practical
- flexible.

Systematic

A system is a method by which we do something. For proper bookkeeping a good system is needed. By using the system properly, unnecessary expenditures can be avoided.

Practical

Practical means realistic. Practical bookkeeping is bookkeeping which is related to the organization and not irrelevant. If the system is practical it can be implemented easily.

Flexible

Flexible means easy to be adjusted in the case of changes, such as additions or reductions. Flexible bookkeeping is bookkeeping that can be used under all circumstances and conditions.

Example: The PWSS Superintendent decides, that the water bills should not be paid any longer at the cashier's counter, but should be paid directly to the Bank. In a good bookkeeping system not much has to be changed in the accounts. Only in the Collection & Disbursement Register an extra column for "Bank" will be sufficient.

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<p>What is meant by: Accounts, Collection & Disbursement Register, General ledger ?</p> <p><u>Accounts</u></p> <p>Accounts are recording and classifying transactions in such a way, that it can be realized by any person at any time and they reflect the true position of the business enterprise. There are very many different types of financial transactions taking place in the PWSS, for instance:</p> <ul style="list-style-type: none">* purchase of ballpoints, rulers, paper, staplers, etc.* payment of salary to pumpdriver, tubewell mechanic, bill clerk, etc. <p>Registration of each transaction separately is not very practical and will be very difficult to control. To overcome this problem, the financial transactions are registered in groups. For instance the purchases of pens, paper, rulers, etc. are grouped into "purchase of stationary". Groups of financial transactions are called accounts.</p> <p><u>Collection & Disbursement Register</u></p> <p>Financial transactions are registered recorded on a daily basis or according to date and serial number of Debit/Credit Voucher in the Collection & Disbursement Register.</p> <p><u>General ledger</u></p> <p>The accounts registered in the Collection & Disbursement Register are transferred at the end of the month to the General ledger.</p>	

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Section 4 : H A N D O U T	Page : 04 of 05
<p>Guidelines for debiting and crediting accounts</p>	
<p>The basic activity of bookkeeping is debiting and crediting accounts in accordance with the transactions which have taken place. There are three different types of accounts in bookkeeping:</p>	
<ul style="list-style-type: none">- Personal accounts : Person related- Real accounts : materials/assets related- Nominal accounts : exist as a concept, but not physically, for instance House rent, telephone bills, etc.	
<p>How to determine Debit/Credit ?</p>	
Personal accounts	: Who receives : Debit : Who pays : Credit
Real accounts	: What comes in : Debit : What goes out : Credit
Nominal accounts	: Expenses/Loss : Debit : Income/Profit : Credit
<p>3. Summary</p>	
<ul style="list-style-type: none">- Bookkeeping is necessary in the PWSS, because the Superintendent requires information on the financial performance in a written form which is systematic, clear and easy to understand.- The activities in bookkeeping include:<ul style="list-style-type: none">* registration of accounts in the Collection & Disbursement Register on a daily basis;* transfer of the accounts from the Collection & Disbursement Register to the General ledger, and cross check on a monthly basis;* preparation of reports and information.- Good bookkeeping is systematic, practical and flexible.	

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E X E R C I S E

1. On September 20, 1993 your PWSS purchased a Honda motorbike with 100 c.c. engine for Tk. 75,000/= . You received the motorbike on that day and payment was also made.

How do you register this purchase in the bookkeeping system ?

2. On September 25 the newly purchased motorbike hit a rickshaw and experienced some damage. The motorbike was brought to a workshop for repair. The cost of repair paid by the PWSS was Tk. 400/= .

How do you register this damage in the bookkeeping system ?

3. On September 25 the PWSS received an amount of Tk. 150/= from Mr. Monowar Chowdhury as an instalment on his debt.

How do you register this payment in the bookkeeping system ?

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Module : BUDGETING USING NO LOSS ACCOUNTING SYSTEM	Code : OBF 550
	Edition : 14/10/1993
Section 4 : H A N D O U T	Page : 01 of 06
<p>1. Definition</p> <p>Budgeting is an inseparable part of an organization. It ensures smooth performance of any programme. Budgetary system will take care of financial planning function of PWSS. PWSS budgetary system will regulate incomes and expenditures, assets and liabilities in a planned manner.</p> <p>2. Objectives</p> <p>PWSS budgetary system has the objectives to plan and control:</p> <ul style="list-style-type: none">- the income and expenditure;- the capital expenditures particularly concerning to development activities;- the financing to ensure adequate working capital. <p>3. Procedure and process of budgetary system</p> <p>Procedure and process of PWSS budgetary system would involve the following :</p> <ul style="list-style-type: none">- in the month of May (beginning), PWSS budget shall be prepared;- proposed budget shall be discussed in the Supervisory Board of PWSS prior to approval;- budget must be approved by the Pourashava before 31st May each year;- both revenue and development budget of PWSS will be prepared in specified form;- budget must be reviewed with the actual by the Superintendent and PWSS Supervisory Board on quarterly basis and causes of Variance should be investigated to take appropriate measures.- on regular basis, revised or supplementary budget should be prepared to reflect actual income and expenditure of PWSS.	

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Module : BUDGETING USING NO LOSS ACCOUNTING SYSTEM	Code : OBF 550
	Edition : 14/10/1993
Section 4 : H A N D O U T	Page : 02 of 06
<p>4. Budget forms</p> <p>The budget forms for PWSS include both incomes and expenditures. Budget forms are prepared in such a manner that it can accommodate future changes of any middle size PWSS. Budget will be prepared by the PWSS Assistant Accountant in consultation with PWSS Superintendent. There are three budget forms :</p> <ul style="list-style-type: none">a. Water Sales Budget.b. Income Budget.c. Expenditure Budget. <p>a. <u>Water Sales Budget</u></p> <p>It provides detailed water sales budget by dia and meter. Although at present there is no meter system in the Pourashava, yet budget by meter is provided to accommodate the future needs. The bill register will have dia wise actual demand/income analysis for each month. This will help to find out budgeted dia wise connections in future.</p> <p>b. <u>Income budget</u></p> <p>It will be used to estimate item wise income of PWSS for the budget period. All types of possible incomes of WSS, based on the present trend of receipt will be included in this form.</p> <p>c. <u>Expenditure budget</u></p> <ul style="list-style-type: none">i. staff related expensesii. operation and maintenance related expensesiii. office related expensesiv. development or asset acquisition related expensesv. provisions and reservesvi. grand total	

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Module : BUDGETING USING NO LOSS ACCOUNTING SYSTEM	Code : OBF 550
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5. Break-even analysis

The object to recognize PWSS as a financially self-supporting unit and to operate it on "no loss basis" the method for fixing water charge rate should be based on the equation where PWSS's total income equates with its total expenses and provisions.

In general PWSS expenses are of variable and fixed nature. In addition to the expenses, PWSS will have certain risk and expansion elements in the form of old debt, water loss, expansion, price escalation etc. Which should be considered to arrive at a no loss situation. Water charge rate calculation must, therefore, take into account all factors, where its total income arising out of water charge must equate with all variable expenses, fixed expenses and provisions. This equating point of total income to total expenses and provisions is known as Break-even point. PWSS's future water rate calculation must be based on this 'Break-even Analysis'.

**POURASHAVA WATER SUPPLY SECTION
EXPENDITURE BUDGET FOR THE YEAR 1993-94**

EXPENDITURE	BUDGET FOR 1993-94	1992-93 BUDGET	92-93 ACTUAL
1. STAFF RELATED EXPENSES:			
Salaries			
Bonus			
SUB TOTAL:			
2. WATER SUPPLY RELATED EXPENDITURE			
Electricity			
Fuel, Oil etc			
Repairs and Maintenance (PH)			
Repairs & Maintenance (PL)			
Repairs & Maintenance (TW)			
Other Maintenance			
SUB TOTAL:			
3. OFFICE RELATED EXPENSES:			
Printing & Stationery			
Postage			
Travelling & Conveyance			
Miscellaneous expenses			
SUB TOTAL:			
4. DEVELOPMENT			
Furniture			
Machinery			
SUB TOTAL			
5. PROVISION			
Depreciation			
Bad debt			
Sub Total:			
GRAND TOTAL (All sub total)			

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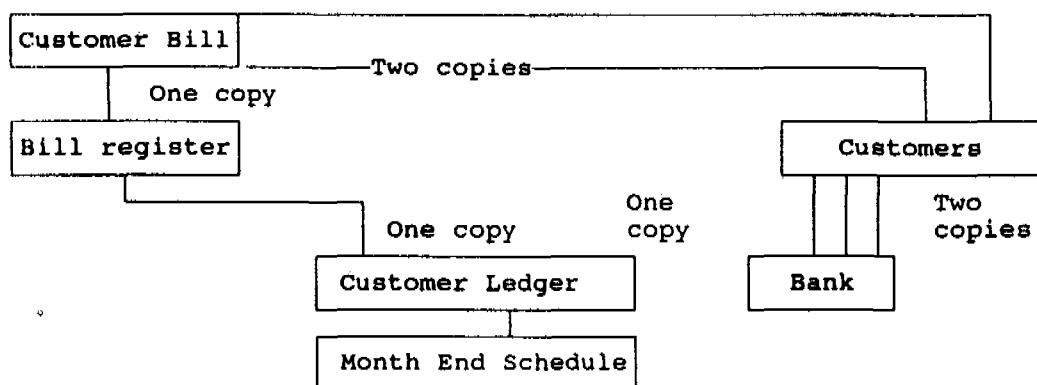
Module : BILLING, BILL COLLECTION/ADMINISTRATION	Code : OBF 560
	Edition : 04/10/1993
Section 4 : H A N D O U T	Page : 01 of 04
<p>1. What is bill</p> <ul style="list-style-type: none">- A bill is a documentary evidence given to the customer to pay certain some of money. <p>2. Objectives</p> <ul style="list-style-type: none">- Following are the objectives of the Customer Accounting :- individual bill must be issued promptly covering all dues receivable from the customer.- simplified system should be established to ensure that the bills are regularly issued and collections are done through banks.- PWSS billing system should be such that month end incomes are ascertained by class of customers and consumers by dia.- Month-end default consumers list will be prepared to ascertain ageing of each customer's balance and bad debts, if any, are there. <p>3. Functions</p> <ul style="list-style-type: none">- Customer Accounting aims to perform the functions of customer billing, to maintain individual consumers account and to prepare outstanding position of each consumer as on a particular date. <p>4. Related Form/Register</p> <ul style="list-style-type: none">- There are in all three (3) customer Accounts related register and ledger. These are named below :<ul style="list-style-type: none">- Consumers Bill (Forms)- Bill Register (Register)- Customer Ledger (Register) <p>All above stated forms and registers should be maintained by billing clerk of PWSS.</p>	

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Module : BILLING, BILL COLLECTION/ADMINISTRATION	Code : OBF 560
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5. Function Flow

- Internal flow of bill for processing customers accounting is as follows



6. Processing procedures

Billing

- Bill will be issued in triplicate. First and second copies to be issued to customer for depositing payments to Bank. After acknowledging the payment, bank will return original copy to the customer and duplicate copy to PWSS will write bill register.
- All particulars of the customer must be available from the bill.
- A cut-off date for billing should be established covering bill time from 21st of previous month to 20th of current month.
- Bill for each month must be prepared, completed and despatched within 21st to 30th of each current month to ensure that bills are reaching to all customers within their pay period.
- Due date of bill payment should be fixed up to 15th of next month. Any payment made after 15th of next month for a current month's bill should incur surcharge @ 5 percent of the water charge.
- All bills must be prepared and checked by the Assistant Accountant and signed by Superintendent of PWSS.
- All bills must be collected through duly appointed bankers. No cash collection of bill to be allowed.

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Module : BILLING, BILL COLLECTION/ADMINISTRATION	Code : OBF 560
	Edition : 04/10/1993
Section 4 : H A N D O U T	Page : 03 of 04
7. Weekly Bank Collection Statement	
<ul style="list-style-type: none">- Selected bank/banks must collect money from consumers against bill and must realize surcharge from the customer after expiry of due date.- All bank collections must be recorded by the bank in one specified non-cheque collection bank account.- A weekly statement of the bank collection account should be submitted by the bank to PWSS on the first day of the week after collection- If there is more than one collection bank account, the balance of all these accounts will automatically be transferred to the central bank account at the month end.	
8. Bill Register	
<ul style="list-style-type: none">- This is a legal demand register to ascertain the monthly billing.- On the basis of bills issued, one <u>bill register</u> for PWSS should be maintained to ascertain monthly total income under each income head.- Income recorded in this bill register will provide month end income by head.- Amount under bill register will be analyzed and water charge income will be posted in the register by dia.- Total income under different heads should be directly posted to the debit side of customer's receivable account and credited to respective income account in the General Ledger.- Individual customer's total bill amount will be debited to respective customer account in the customer ledger giving respective folio number of the bill register.	

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Module : BILLING, BILL COLLECTION/ADMINISTRATION	Code : OBF 560
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9. Customer Ledger

- On the basis of connection order and other references, each customer account must be opened in the customer ledger. Customer ledger will contain all particulars of the customer.
- On the basis on monthly bills, particular columns and debit particulars of customer ledger to be recorded.
- After recording the bill information a counter checking done referring to bill register.
- After having the weekly bank collection statement, credit entries to customer ledger should be given. Counter check may be confirming that all collections are duly accounted for by the PWSS.
- At the end of each month total debit and credit should be balanced and balance amount to be recorded indicating the year to date receivable of the customer concerned.
- In case of default a notice to consumer must be served as reminder. The management should know the balance position of each customer's account.
- Default customer schedule, Ageing schedule and Bad debt schedule should be prepared by assistant accountant with the help of the balances appearing in the customer ledger at the end of each year.

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Module : FINANCIAL MANAGEMENT (NO LOSS ACCOUNTING SYSTEM)	Code : QBF 570
	Edition : 09/10/1993
Section 4 : H A N D O U T	Page : 01 of 04
<p>1. Introduction</p> <ul style="list-style-type: none">- PWSS 18-DTP will have separate set of books of accounts for recording all financial transactions or operations exclusively incurring within the PWSS. Accounts will be based on "<u>double entry</u>" principle and also on "<u>accrual basis</u>". At the end of each financial year, the entire financial operations or the final accounts of PWSS will be integrated to general accounts of the Pourashava. <p>2. Framework of PWSS Financial Management System</p> <ul style="list-style-type: none">- Framework of PWSS financial management system includes all works in relation to financial planning, actual financial performance recording and controlling the day-to-day financial and accounting functions of PWSS. Above stated functions are as follows :<ul style="list-style-type: none">a. The financial planning functions includes :<ul style="list-style-type: none">- budget- break-even-analysisb. Actual financial performance recording The actual financial performance recording is the real accounting areas where following accounting works will involve :<ul style="list-style-type: none">- customer accounting- collection accounting- disbursement accounting- inventory accounting- fixed asset accounting- general ledger accounting- annual closing and integration- reporting.c. Controlling The controlling functions of PWSS financial management system include :<ul style="list-style-type: none">- delegation of financial powers.- internal control through check, coordination and audit.	

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Module : FINANCIAL MANAGEMENT (NO LOSS ACCOUNTING SYSTEM)	Code : OBF 570
	Edition : 09/10/1993
Section 4 : H A N D O U T	Page : 02 of 04
<p>3. Broad Accounting Features</p> <ul style="list-style-type: none">- The accounting features have five steps as given bellow:<ul style="list-style-type: none">a. source documentb. books of primary / original entryc. journalisationd. books of final entry i.e general ledgere. trial balance. <p>4. Specific Aspects of PWSS Accounting System</p> <ul style="list-style-type: none">- Under PWSS Accounting system following specific aspects should be taken care:<ul style="list-style-type: none">a. capital and revenue nature of transaction;b. nature of accounts and double entry principle;c. opening and current transaction;d. chart of accounts. <p>a. <u>Capital and Revenue Transactions</u></p> <p>It is known that all financial transaction incurred as opening or as current transactions will be recorded in different accounts of PWSS. These transactions are of two types namely capital nature and revenue nature. Transactions for which benefits received or given extend for more than one year is known as capital nature. Whereas transactions for which benefits received or given are short lived and do not extend for more than one year is of revenue nature. Summary balance of all revenue transactions indicate profit or loss incurred by PWSS and appear in Income and Expenditure Account. However, summary balance of all capital transactions indicate the financial viability of PWSS and these will appear in the Balance sheet.</p> <p>b. <u>Nature of accounts and Double Entry Principle</u></p> <p>In all there are three (3) types of accounts which are known as :</p> <ul style="list-style-type: none">- personal account;- real account;- nominal account. <p><u>Personal Account</u> means account of any person or organisation like Rahim Account or Sonali Bank Account.</p> <p><u>Real Account</u> means account which related to any material or matter exist physically i.e Building account, Cash account, Furniture account.</p> <p><u>Nominal Account</u> means account which although exists as a concept but not physically. Examples of this type of accounts are Rent account, Telephone Expenses account, Water Charge account etc.</p>	

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Module : FINANCIAL MANAGEMENT (NO LOSS ACCOUNTING SYSTEM)	Code : OBF 570
	Edition : 09/10/1993
Section 4 : H A N D O U T	Page : 03 of 04
<p><u>Real account</u> what comes in is <u>debited</u> what goes out is <u>credited</u></p> <p><u>Nominal account</u> all expenses and loss are <u>debited</u> all incomes and profits are <u>credited</u></p> <p>c. <u>Opening and current transaction</u></p> <p>Accounts are maintained generally for a period of twelve (12) months. It may start for a specific date and end on a particular date. As for example 1/1/91 to 31/12/91 or 1/7/92 to 30/6/93. It always happens that balance sheet of last year to the current year as opening transaction. Examples of these transactions are cash balance, bank balance, values of fixed assets, unpaid liabilities of last year etc. Accounts can not be completed if opening transaction are not included with the current periods transaction. It is therefore, necessary to account for all balances of last years.</p> <p>Balance sheet as opening transactions of the current year for incorporating these with current transactions by passing <u>journal voucher</u>.</p> <p>d. <u>Chart of Account</u></p> <p>Besides above stated specific aspects of accounting system, there must be specified <u>list of accounts</u> to be used by PWSS for head wise consolidation of financial transactions. This list of accounts is called <u>head of accounts or chart of accounts</u>. Head of accounts are divided into following four broad groups :</p> <ul style="list-style-type: none">- <u>balance sheet</u> Head falling under <u>asset and liability</u> groups.- <u>income and expenditure</u> head falling under <u>income and expenditure</u> groups. <p>5. Book-Keeping</p> <p>Preparing source documents and recording all information appearing the source documents, in the books of original entry or subsidiary records is called book-keeping. The following source documents and books of accounts will be maintained by PWSS.</p> <p>I. <u>Source documents</u> Water bills Weekly bank collection statement Credit voucher Petty cash voucher Accrual list Purchase requisition</p>	

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Module : FINANCIAL MANAGEMENT (NO LOSS ACCOUNTING SYSTEM)	Code : OBF 570
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<p>Goods receiving report Requisition slip Issue voucher Return voucher Supplies invoice Journal voucher</p> <p>II. <u>Books of accounts</u> Bill register Subsidiary ledger Collection register Disbursement register Advance register Inventory register Fixed assets register General ledger</p> <p>III. <u>Journal voucher / direct posting</u> All transactions appearing in the books of original entry are posted in general ledger by : Journalisation or Direct posting</p> <p>Journalisation is done by preparing journal voucher. Direct posting is done by posting to the general ledger directly from books of original entry.</p> <p>IV. <u>Trial balance</u> All debit and credit transactions of PWSS would be posted invariably in general ledger. By summarizing and balancing all the accounts of the general ledger, a list is prepared which is known as trial balance.</p> <p>V. <u>Reporting</u> At the end of the financial year all accounts balances from general ledger are listed in the trial balance, to confirm that the total of debits and credits of different accounts appearing in the ledger are equal. For reporting purpose, all balances of accounts of revenue nature are listed under income and expenditure account. All balances of capital nature are listed under the balance sheet.</p>	

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Module : PWSS FINANCIAL MANAGEMENT SYSTEM	Code : OBF 580
	Edition : 07/10/1993
Section 4 : H A N D O U T	Page : 01 of 05
<p>1. Introduction</p> <ul style="list-style-type: none">- Improvement and expansion of the Water Supply system and provision of limited sanitation was taken up as target of Dutch Assisted DPHE Water Supply and Sanitation projects. The overriding objective of the project is to build a dependable and safe water supply system in the project towns. The need for financially viable water supply system and sustainable financial management practices for the Pourashava were identified as crucial area. Thus as a part of Institutional Development Programme of the projects, the Programme Office (PO), with the object to build the planned to design and implement an uniform financial management system. This financial and accounting system Manual has incorporated the financial and accounting system to be implemented in PWSS. <p>2. Objectives</p> <ul style="list-style-type: none">- Keeping in view the above stated aims and targets this financial and accounting system manual has been prepared primarily to meet the following objectives :<ol style="list-style-type: none">1. to implement the financial and accounting system in the PWSS;2. to build a financially viable water supply system within the Pourashava;3. to introduce a self sustainable financial management in PWSS;4. to introduce double entry accounting system in PWSS; and5. to provide off-job and on-the-job training to the PWSS accounts staff. <p>3. Existing Financial Management System</p> <ul style="list-style-type: none">- The majority of Pourashava have no separate PWSS Financial Management. It is carried out on an adhoc basis. Book-keeping are improper and double entry system is not followed. No separate budget exists for PWSS. Internal Control and delegation of financial powers are not effected. Inventory and fixed assets management, break-even concept and regular reporting do not exist. <p>4. Rationale of New PWSS Financial Management System</p> <ul style="list-style-type: none">- The PWSS needs strong financial management. PWSS must be recognized as a financial-ly self supporting unit of Pourashava. It must operate on "No loss Basis". The PWSS must replace the old system by implementing a new financial management system.	

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Module : PWSS FINANCIAL MANAGEMENT SYSTEM	Code : OBF 580
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<p>5. Framework of PWSS Financial and Accounting System</p> <ul style="list-style-type: none">- Framework of PWSS Financial and Accounting system includes all functions relating to planning, performance recording and controlling the day-to-day financial and accounting functions of PWSS. The categories of functions will be :<ul style="list-style-type: none">a. financial planning.b. actual financial performance recording.c. controlling. <p>6. PWSS Superintendent's position in the Financial Management Organisation</p> <ul style="list-style-type: none">- PWSS Superintendent will be placed directly under the Supervisory Board for handling the day to day financial work of PWSS in cooperation with the PWSS Accountant and with assistance of subordinate staff under accountant. <p>7. PWSS Superintendent's Duties and Responsibilities</p> <ul style="list-style-type: none">- PWSS Superintendent will be responsible for following duties :<ul style="list-style-type: none">- He must upgrade his skill for handling Financial Management affairs of PWSS.- He will be responsible for implementing PWSS Financial Management System.- He must control and coordinate the PWSS Financial and accounting system and manage it efficiently.- He must report to the management with accurate and timely financial report. His failure will effect PWSS adversely. <p>8. Features of Financial and Accounting System</p> <ul style="list-style-type: none">- Financial and Accounting System will involve seven (7) main steps through which the financial and accounting transactions would pass through.<ul style="list-style-type: none">- Expected Income and Expenditure Planning.- All accounting transactions of any category would originate from the transacted information or data which as a rule would be documented in <u>Source Documents</u>.- All source documents would be recorded in the <u>Books of prime or original entry</u> and in <u>Subsidiary Ledgers/Registers</u>.- The double entry aspect of each transaction would be adopted by the way of journalisation with the help of <u>Journal Vouchers</u> or by <u>Direct posting</u>.	

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- All debit and credit aspects of each transaction would be posted to respective heads of accounts in the Book of Final Entry, which means, in the General Ledger.
- Balance of each account appearing in the General Ledger would be extracted and the first report named Trial Balance would be prepared for completing all other closing reports. Reports shall be extracted from subsidiary books of updating management with extra information.
- Controlling all financial and accounting transactions under proper procedures for avoiding irregularities.

9. Flow Diagram of Overall Financial and Accounting System

- In the light of framework and features discussed above three main functional categories of PWSS financial and accounting system are as follows
 - a. Planning functions include
 - . Budgetary control.
 - . Break-even analysis to fix water charge.
 - b. Performance recording functions include
 - . Customer accounting.
 - . Collection accounting.
 - . Disbursement accounting.
 - . Fixed asset accounting.
 - . General Ledger accounting (summarizing)
 - . Annual closing.
 - c. Control functions include
 - . Control through reports, for the Management Information System (MIS).
 - . Control through delegation of financial powers.
 - . Control through internal check, coordination and audit.

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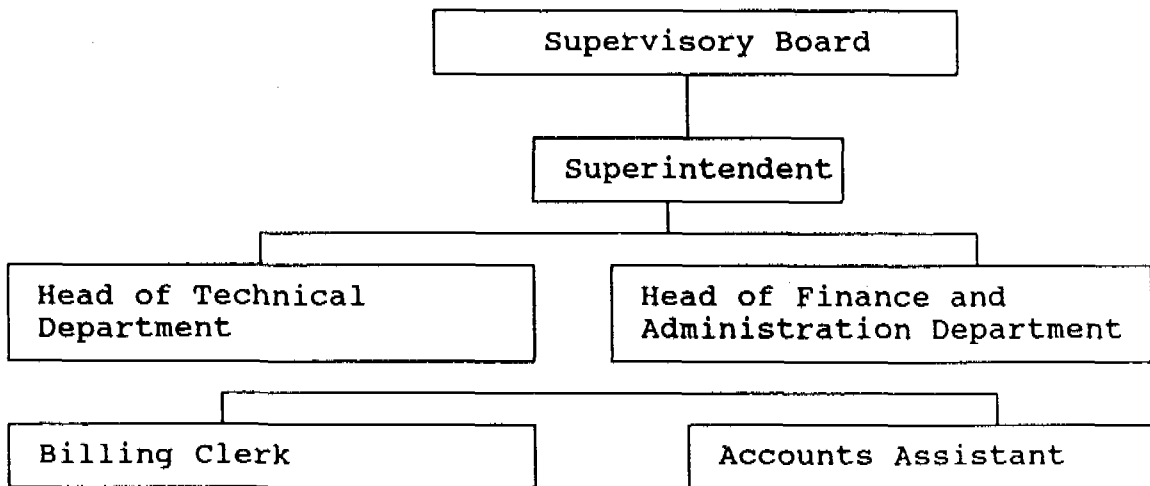
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10. Trained Accounts staff under Financial Management

- PWSS need strong financial management to have financially self supporting water supply unit in Pourashava. It will operate on "no loss basis". Trained PWSS Accountant /Assistant accountant would be placed directly under the PWSS Superintendent for handling day to day financial works of PWSS independently. Accounts staff employment policy would be as follows :

<u>Number of consumers</u>	<u>Accounts staff number</u>
Consumers up to 800	One Asstt. Accountant, one bill clerk, one peon
For every additional of 500 consumers	One additional bill clerk or Accounts Assistant will be appointed.

PWSS SUPERINTENDENT'S POSITION IN PWSS ORGANOGRAMME IS GIVEN BELOW



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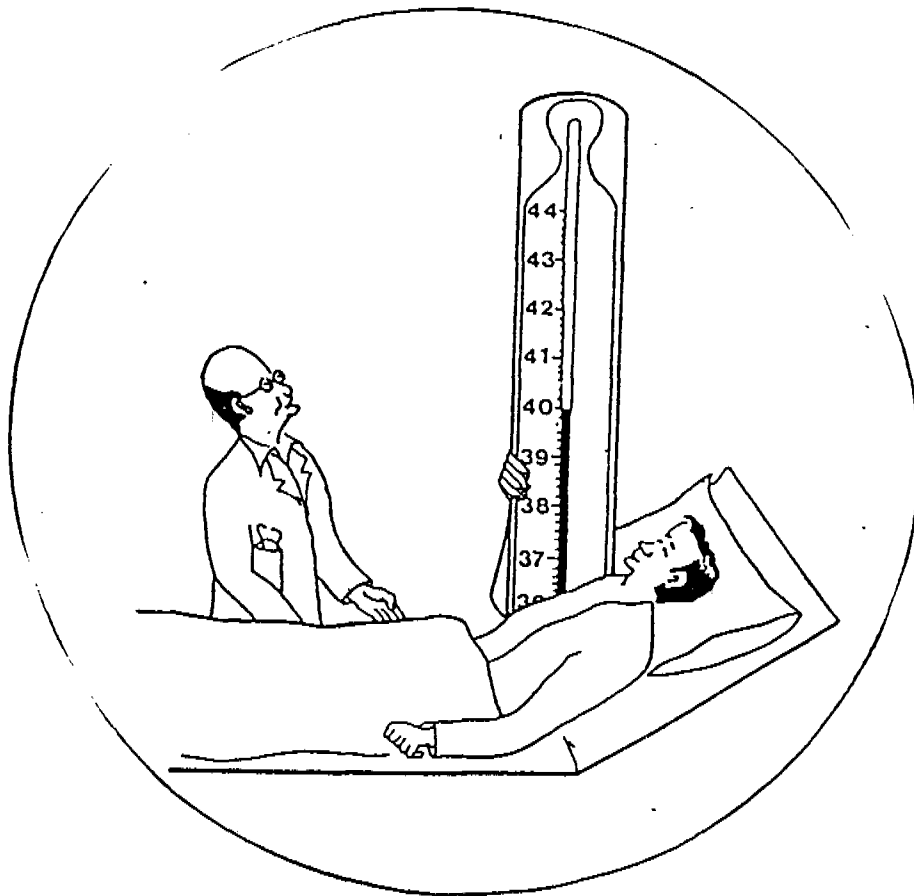
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<p>11. Implementation of PWSS Financial and Accounting System</p> <p>The PWSS Financial and Accounting system will be implemented through Dutch Assistance . The introduction will take place in two phases. These phases are defined by first priority and second priority areas.</p> <p><u>The First Priority will cover</u></p> <ul style="list-style-type: none">- Budgetary control for the purpose of planned incomes and expenditures.- Customers accounting to ascertain actual income arises through billing.- Collection accounting to realize fund for meeting PWSS expenses.- Disbursement accounting for all expenses met by cheque and cash. <p><u>The Second Priority will cover</u></p> <ul style="list-style-type: none">- Break-even analysis for fixation of water charges- Inventory accounting- Fixed asset accounting- All control functions of PWSS	

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<p>1. Introduction</p> <p>The PWSS has certain targets to be reached:</p> <ul style="list-style-type: none">- to distribute safe water to the population with:<ul style="list-style-type: none">. sufficient quantities. quality according to standard. reliable continuity. efficiency;- to collect payments for the distributed water from the consumers which is sufficient to cover the costs for Operation and Maintenance of the PWSS.- to raise the service levels in order to fulfil the future demand for safe water of the population. <p>These targets can not be reached immediately, but step by step, from week to week and from month to month. Therefore Plans are made to ultimately reach the targets. These plans need to be implemented. Although the PWSS are trying hard to reach these targets, most of them did not reach them yet in Bangladesh, due to various reasons. Anyway it can be concluded, that there are "healthy" PWSS that reach above targets already, but that there are also "unhealthy" and "ill" PWSS not able to reach the targets yet.</p> <p>The PWSS Superintendent must be able to diagnose the PWSS whether it is "healthy" or "ill", meaning whether or not it is on schedule to reach its targets as stated above.</p> <p>2. How does the PWSS Superintendent diagnose whether the PWSS is "healthy" or "ill"?</p> <p>Example:</p> <p>A doctor (physician) makes use of a thermometer to measure the temperature of the body of a patient. The meter gives a value of 40 °C. The temperature of the body of a healthy person is normally 37 °C (temperature indicator). The doctor concludes that his patient is ill: the deviation of the temperature of the body of the patient is 3 °C above the normal temperature. The reason why the patient is ill is not being given by the thermometer. The doctor still needs to analyze the cause of the illness, after which he can decide on the therapy to cure the illness.</p> <p>Performance indicators for the PWSS are like the thermometer.</p>	

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Figure 1: Performance indicators are like a thermometer.



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A performance indicator is a "tool" like the thermometer, that can measure the "temperature" of the PWSS in order to know whether the PWSS is "healthy" or "ill". For instance, the target of a PWSS is to cover 60% of the population of the Pourashava with piped water supply. But according to the list of customers not more than 45% has been connected through house connections and public hydrants. This 45% figure is the "temperature" of the PWSS, comparable to the temperature of 40 °C which was measured with the thermometer.

The 45% figure for coverage reached by the PWSS is a performance indicator for the PWSS. As is the case with the thermometer, the indicator does not give the reason why the PWSS is "ill" (why the PWSS only reaches a coverage of 45%).

The PWSS Superintendent, like the doctor in the example, still needs to analyze the causes of the illness and find out why the PWSS reached a coverage of 45% only. After he knows the causes he can decide on the "therapy" needed to cure the illness. As such the Superintendent has to function for the PWSS as the doctor functions for his patient.

3. What is intended with performance indicators for the PWSS?

Performance indicators for the PWSS are a tool ("thermometer") to assess the factors in the PWSS that show the results or the performance that should have been reached by the PWSS at a certain point of time. With the performance indicators the Superintendent is able to diagnose whether the PWSS is "healthy" or not in performing its tasks and whether it will reach the set targets or not.

4. What is the objective for the use of performance indicators for the PWSS?

The objective to use performance indicators for the PWSS is to assess the facts concerning certain activities in the field of Operation and Management of the PWSS in such a way that a diagnosis can be established concerning the fitness of the PWSS. In case the PWSS turns out to be "ill", then the causes will be analyzed and corrective measures will be implemented. By using performance indicators the PWSS can be monitored whether or not it is on schedule with the planned targets concerning:

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<ul style="list-style-type: none">- service level:<ul style="list-style-type: none">. quantity;. quality;. continuity;. efficiency;- collection of sufficient revenues to cover the costs- preparedness and capability for future development/investments- controlling that the PWSS is not floating away from its targets <p>In case that the monitoring reveals, that the PWSS does not reach the set targets on schedule, then the Superintendent must analyze the causes to be able to take corrective measures.</p> <p>Example:</p> <p>One possible performance indicator is the revenue collection compared to the revenue demand. The PWSS may have set the target at 80% collection efficiency. The PWSS has 1500 paying customers. The staff of the PWSS consist amongst others of one Assistant Accountant and one bill clerk. The Assistant Accountant reports, that the collection efficiency of last month was 40% only.</p> <p>The Superintendent realizes, that 40% is far below target and analyzes the causes:</p> <p>Question: Is there sufficient staff for billing and collection? Answer: Yes, the PWSS uses flat rates, so billing is not necessary, and collection is organized through the Bank.</p> <p>Question: Do all customers receive water in sufficient quantities and of good quality? Answer: Yes, they do.</p> <p>Question: Are non-paying customers disconnected from the system? Answer: No, We never disconnected a customer before.</p> <p>Conclusion: The collection efficiency is low because there are no sanctions on non-payment of the bills.</p> <p>Therapy: The PWSS Superintendent decides to design a procedure for disconnecting non-paying customers and to organize a promotion campaign to make this new procedure known to all customers.</p> <p>In case the PWSS does not use performance indicators, then the Superintendent is not able to know to what extent the PWSS deviates from the targets and he will not be able to decide on the corrective measures needed to be taken. As a result the PWSS will never reach its targets.</p>	

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<p>6. What are the criteria for performance indicators for the PWSS?</p> <p>Basically there are two types of indicators:</p> <ul style="list-style-type: none">- rough indicators which do not give much information. Example: nett profit of the PWSS over the financial year 1992-1993.- detailed indicators which give much information. Example: Pressure measuring at the pumphouse (at frequent intervals during production hours). <p>There can be identified very many performance indicators for the PWSS. Which indicators are really needed and worthwhile depends on the size and the structure of the PWSS. The criteria on which to choose performance indicators are:</p> <ul style="list-style-type: none">- the performance indicator must indicate the performance of the PWSS in relation to (one or more of) the targets;- there must be a limited quantity of different indicators;- the indicator must be able to be quantified- the indicator must give a clear picture of the condition of the PWSS;- indicators must not be overlapping each other or contradictory to one another. <p>7. When will the Superintendent use performance indicators?</p> <p>Every PWSS must reach targets. These are reached step by step, from day to day from week to week and from month to month. Each staff member fulfils the tasks under his/her responsibility in the framework of activities to reach those targets. Ultimately the Superintendent is responsible for reaching the targets. Therefore he must be able to know at all times to which extent the various targets are being reached. In other words, he must be able to measure at any particular moment whether the PWSS is healthy or not. However, it will not be efficient nor necessary to use all performance indicators continuously. The use of performance indicators shall be in line with the planning and the budgets, for instance weekly, monthly, quarterly and yearly. Several indicators may be used monthly, while others are needed weekly or once yearly only.</p>	

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8. Examples of performance indicators that are useful for the Superintendent

The performance indicators for the PWSS can be grouped as follows:

- Quantity
 - . percentage of total population having a house connection
 - . percentage of total population using public hydrants
 - . percentage of total population using handtubewells
 - . total percentage of population served
 - . production hours per day
 - . percentage of customers receiving water less than 8 hours per day
- Quality
 - . does PWSS have equipment to measure pH and Cl-content
 - . frequency of Cl-content measurement
 - . does PWSS have equipment to measure bacteria in the water (E-coli)?
 - . frequency of E-coli measurement
 - . frequency of quality tests by laboratory
 - . frequency of customers complaints regarding colour, smell or taste of the water
- Continuity
 - . frequency of major breakdowns of pumps(longer than 12 hours)
 - . frequency of power failure
 - . availability of stand-by generator
- Efficiency
 - . O&M costs per houseconnection
 - . availability of bulk watermeter
 - . percentage of houseconnections without watermeter
 - . percentage of leakage and wastage
- Revenues and Costs
 - . ratio of Revenues divided by Costs
 - . profit margin on water sold
 - . actual expenditure divided by budgeted expenditure to date
 - . bill collection efficiency

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<ul style="list-style-type: none">- Organization and Staff<ul style="list-style-type: none">. percentage of staff with written job descriptions. organogramme of PWSS. percentage of permanent staff. periodic coordination meetings. written minutes of meeting - Future Development<ul style="list-style-type: none">. investment costs per new connection. investment costs per additional m³ production capacity <p>9. Summary</p> <ul style="list-style-type: none">- Targets to be reached by PWSS are in the fields of:<ul style="list-style-type: none">. service level. revenues and costs. organization and staff. future development - The plans to reach these targets are implemented step by step. The Superintendent must be able to assess at any moment whether the PWSS is on schedule with implementing the plans (healthy) or not ("ill"). - To assess the condition of the PWSS, performance indicators are used. These function like a thermometer functions for a doctor. Performance indicators do not indicate the causes why a PWSS is not on schedule, these must be analyzed by the Superintendent in order to decide on a therapy to cure the deviations. - To establish performance indicators, criteria are to be identified related to the targets of the PWSS. - Performance indicators can be grouped in four groups:<ul style="list-style-type: none">. related to the service level;. related to revenues and costs. related to organization and staff. related to future development.	

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<p><u>1. WHAT IS MIS</u></p> <p>The Management Information System or MIS is a tool by which the management can compare their past & present performances, identify inefficient areas, take corrective measures and plan for the future</p>	
<p><u>2. WHAT IS M-MIS</u></p> <p>M-MIS is the Monthly Management Information system for the PWSS under 18 & 12 DTP.</p> <p>This is specially designed for use of the PWSS</p> <p>M-MIS is developed into a one page format. This is to be filled-up each month by the PWSS Superintendent, analyzed and based on the result, management decisions are to be taken.</p>	
<p><u>3. WHAT IS Q-MIS</u></p> <p>Q-MIS is the Quarterly Management Information System. It is an elaborate one and contains the performance Indicators. Monitoring would be done centrally at PO. This is specially meant for the P.O's use.</p>	
<p><u>4. USE OF MIS</u></p> <p>MIS can provide the PWSS management with the readily available information which are needed for controlling and taking appropriate action/ decision.</p>	
<p><u>5. OBJECTIVES OF MIS</u></p> <ul style="list-style-type: none">- To control the implementation of the planned targets for the PWSS.- To maintain the achieved level of service- To improve efficiency.- To plan for the future.	

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<u>6. OBJECTIVES OF M-MIS</u>	
<ul style="list-style-type: none">- PWSS to take their own decisions- improve performance aiming at achieving sustainability i.e. to run the PWSS atleast at "NO LOSS" basis	
<u>7. OBJECTIVES OF Q-MIS</u>	
<ul style="list-style-type: none">- PO to advice PWSS for taking corrective measures based on the project objectives- Plan for the future	
<u>8. NEED OF INFORMATION</u>	
<p>The PWSS has targets that need to be reached and PWSS Superintendent is responsible to reach these targets. For controlling and decision making reliable information is needed. The information contains data from the Technical Department as well as from the Finance & Administration Department. With these information the PWSS Superintendent compares the progress with the planned targets and recommends corrective measures to be taken.</p>	
<u>9. PERFORMANCE INDICATORS</u>	
<p>Performance Indicators or PI is a measuring device by which one can measure and compare the extent to which a set objective is achieved. This can be compared with a thermometer.</p> <p>Bar Charts have been introduced in the M-MIS by which one can see at a glance the financial position of the PWSS and compare it with the previous position as well as the planning (budget)</p> <p>PIs has been introduced in the Q-MIS.</p> <p>In Q-MIS, PIs are grouped in to two major groups.</p> <ul style="list-style-type: none">- Physical- Financial	

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10. M-MIS FORMAT

M-MIS format is developed in to 3 main reporting criteria, these are :

- Physical
- Financial
- Water supply services

11. Q-MIS FORMAT

Q-MIS format is developed into 5 major reporting criteria, these are :

- Physical
- Financial
- Service level
- Organizational
- PI

12. DATA FILLING

Data filling must have actual support and linkage with the available books, registers, ledgers, logs and other records maintained by the PWSS.

13. REPORTING

M-MIS report to be prepared by the PWSS Superintendent. Report should be submitted to the chairman & SB members by the 7th of each month. One set of the report should be sent to the PO for record.

Report should contain the following

- (a) Filled-in M-MIS format
- (b) Bar-charts
- (c) Comments and recommendations based on information and performance of the PWSS

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14. FEEDBACK AND ACTIONS

The pourashava Chairman, SDE DPHE, Superintendent of the PWSS within their authorities should taken necessary steps to accelerate corrective measures based on the M-MIS report targeted to run the system on "NO LOSS" basis

If necessary, PO would assist/ recommend actions on matters which PWSS cannot solve.

15. CONCLUSION

MIS is a useful tool for management which helps the decision making process

It is said that if you cannot measure anything, you cannot also manage it. MIS provides the basic yardstick for measurement which we call the Performance Indicators.

PI can easily measure the difference between the desired target and actual performance.

MIS ,in turn, assist in strengthening the Institution and increase the managerial capabilities.

Initial start may take some time but once you are used to it, you cannot think without it.

16. EXAMPLE

Data and information for a medium sized Pourashava (X) is given in ENCLOSURE A.

- Fill in the missing data
- Draw Bar Charts
- Prepare a report for the SB (with comments and recommendations if any)

17. SPECIAL ENCLOSURE

Guide lines for M-MIS was circulated along with the M-MIS format long time back. This is again enclosed for ready reference.