

7.4.3 JOB DESCRIPTION PROGRAMME FOR THE DISTRIBUTION SECTION

(1) GENERAL

NUWA itself has its own well specified career path for its staff; naturally they are applicable to the staff of DSMB, as it is a branch of NUWA. All these efforts are meant to streamline DSMB as far as the present economic, and administrative setup permits, and to be accountable, above all, the domestic consumers.

At the time when rehabilitation of distribution system is being planned, this is an opportune moment to conduct a basic study on job criteria in the distribution section. The job analyst anticipates cooperation and participation from all the staff of DSMB, from BM to every personnel concerned at the job sites, without which no meaningful result will arise from the attempt. This is critical.

This is an effort to build up a better system from the bottom, i.e. from the work sites, whereas scrutinizing of DSMB's organizational structure is carried out from-top-to-bottom direction.

After all, human resources themselves are the vital factor to run the enterprise. Job Description does not create work efficiency by itself. Still a good job description will help establish a better working environment and motivate the staff by clarifying what is expected of them.

(2) METHODOLOGY

1) Introduction

To begin with, in order to smooth up the procedure, the section chief of the administration section should function as a programme coordinator to work with the job analyst. His experience in writing job descriptions for treatment & source section is also highly valuable.

Our aim is to formulate a better functioning distribution section, for which precise job analysis is required. Hence, job descriptions should be more specific than common job descriptions found in describing NUWA career paths. It should provide the precise duties and tasks of a job, and show its relationship with other specific jobs within the section and other sections. The treatment section is being provided with such a job description.

2) Format

The set format we are going to use shall include the following items:

job title: organizational unit: accountability: job summary: duties and responsibilities: interaction.

In this report, the description will be shown in the draft stage. When it is actually used with some change in language, the identity of a new writer, a management staff who will give approval and the dates when it is prepared be recorded for future reference.

3) Job Analysis

a. collection of information:

There are four major areas from which information shall be gathered.

- i) identification of the job, ii) the principal tasks of the job,
- iii) degree of skills, knowledge etc. to be required, and iv) working conditions.

b. approach.

Questionnaires are to be prepared prior to observation at job site and a checking the employee log, if there is any. Interviews are conducted in between to augment the value of information.

7.4.4 DATABASE

1) The third file shall be prepared by the staff of administrative section as a material for the first on-the-job training programme.

2) The contents of the third file will be expanded in future to be used as an information source for water use in DSMB's service area, not to speak of the ordinary use of taking care of the staff and his family's welfare. Eight hundred household connections against about 55,000 domestic connections are a reasonable sampling size through which DSMB can monitor the trend of domestic consumption.

3) The name of the employees should be identical in every document.

a) If it is appropriate, the order of the first, middle and the last name in the full name is to be fixed in the registry file in NUWA's recorder, so that within NUWA there won't be no confusion about it. In doing so, due consideration to ethnic and religious sensitivities should be given.

b) Orthography of names, if it is established, may be introduced with the help of the University of Dar-es-Salaam, Departments of Literature and Sociology. The following interchangeable uses of alphabet are often observed in the lists:

MW↔MU, M + consonant↔MU + consonant, TH↔T, O↔U, KH↔H.

7.4.5 REHABILITATION PROJECT

(1) GENERAL

All the training courses which are discussed in this section are meant for upgrading the performance level of the concerned staff, including in certain cases, getting them to be accustomed to the new equipment which we propose to introduce.

The need to train the concerned staff will arise with the commencement of the first stage of rehabilitation projects. The training programme ought to go hand in hand with the progress of structural change of the distribution and maintenance sections. Among the four projects to be carried out, repair sub-section of leakage control section, mapping section and meter installation work in metering section does not require any specific courses, apart from ordinary on-the-job brushing-up.

All the 24 staff members of the survey sub-section of leakage survey section and all the 24 staff members of pipe cleaning section are supposed to be recruited from fresh-out-of-school, eager-to-learn and adaptable candidates of a younger generation.

The section engineers and the experts assigned to the leakage control section, and air scouring and scraping & lining sub-section of pipe cleaning section in the task force, and training officer of DSMB are jointly responsible for conducting the initial training courses for their respective fields of operation. They are:

- 1) to set the goal of each training course,
- 2) to make the preliminary syllabi of the respective courses,
- 3) to set the optimum combination of classroom study and on-the-job site training,
- 4) to identify the best method of instruction in each case,
- 5) to check into any possibility of introducing AV training aids, like the ones the Canadian team is using,
- 6) to get hold of physical facilities of training like classrooms, job sites suitable for training,
- 7) to plan the training schedule,
- 8) to select instructors and coordinators besides themselves, if the case arises,
- 9) to prepare a preliminary budget for holding courses,
- 10) to establish monitoring, and feedback channels to keep up the courses in good shape, and
- 11) to organize the publicity of the activity both internally and externally.

During the session, it is also the section engineer's business to learn from the process and from the different culture, besides planning and carrying out the training programmes.

In the following sections, the gist of the training courses is put forward, leaving the rest to the hands of the engineers, the experts and the training officer.

(2) GUIDANCE COURSE

The lecture on the principle, the framework etc. of the rehabilitation work would be delivered to all the staff members who are to be assigned to this project.

(3) LEAKAGE CONTROL SECTION

Among the units in this section, two sub-units of the leakage survey unit, i.e., 1) the block formation sub-unit, which consists of a team of six members, and 2) the survey sub-unit, which is made up of three teams of six members each, need to receive training.

1) the block formation sub-unit

Though the work involved is nothing but of a mundane nature, the goal of the training is to let the team members understand the concept of block formation, how it functions, and in which way it contributes to the ultimate goal of rehabilitation.

2) the survey sub-unit

On top of the above mentioned themes to be taught in the beginning of the programme for orienting young recruits, the training course for this sub-unit would provide them with full knowledge of the sensors using sound or ultra-sonic waves and other instruments and skills in operating them.

The staff of the high-tech equipment unit of the maintenance section would join this course.

(4) PIPE CLEANING SECTION

The section consists of 1) the air scouring sub-section and 2) the scraping & lining sub-section. Two teams form 1) and six teams make-up 2); each sub-section is headed by an engineer.

1) A practical training course would be organized to have the team members master the use of air scouring machine.

2) A practical training course would be organized to have the team members master the use of scraping and lining machines.

(5) METER READER

Meter readers seem to need a lot of reading practice of water meter, which has several pointers on its dial. But once accustomed to it, a peculiar method of reading wouldn't be an obstacle which has been the major cause of reading errors. (If meters which allow digital reading are introduced in future, the above mentioned worry may be dismissed.) After all, it is a meter readers' duty to keep updating readings record. Though big errors may be cancelled out by comparing the previous record with the latest one, they should be taught, since DSMB's credibility with its customers starts with the accuracy of meter reading.

(6) MAINTENANCE SECTION

1. High Tech Equipment

The staff in charge of the unit would be trained at the manufacturers' plants on how to service the instruments. Then he is to share his knowledge and skill with his selected colleagues at DSMB's workshop.

2. Meter Shop

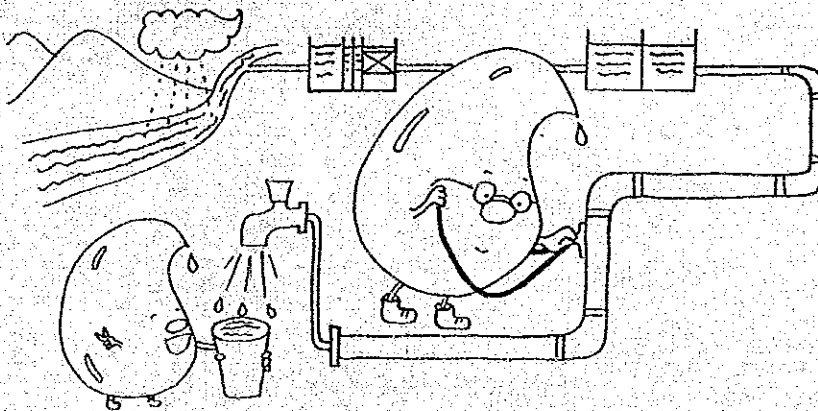
Meter repair foreman would get training at the manufacturer's repairing plant for two months before he takes charge of his workshop at DSMB. It is not at all difficult to assemble a meter. It consists of some dozen gears and half a dozen pointers and is fixed to both a dial and a frame with around ten screws. Hence, the assembly line is not complicated. Emphasis in the training, therefore, is placed on repairing, cleaning of the internal mechanism and strainer, adjusting of gears, and testing. In the long run, manufacturing of parts will be put on an agenda.

CHAPTER 8

CONCLUSION AND RECOMMENDATION

JICA
JAPAN
INTERNATIONAL
COOPERATION
AGENCY

TECHNICAL COOPERATION BETWEEN TANZANIA & JAPAN



THE STUDY ON REHABILITATION OF DAR ES SALAAM WATER SUPPLY SYSTEM
STARTED FROM DEC. 1989 TO FEB. 1991.

CONCLUSION AND RECOMMENDATION

CONCLUSION

1. The water supply system of Dar es Salaam is in very bad condition - insufficient water supply, low pressure, deteriorated facilities, leakage from pipelines - and rehabilitation is urgently required.
2. The basic approach in the rehabilitation plan is to utilize the existing facilities to the maximum and to enhance the utility of such facilities. At the same time, it is aimed to enable the parastatal organization charged with water supply, NUWA, to become self-reliant and capable of sustainable development on its own resources.
3. With the exception of the Upper Ruvu system which has been rehabilitated recently and which is out of scope of this Study, all facilities of the city's water supply system are to be rehabilitated by 1995. The work will involve contractual works for repairs to a part of the water treatment works at Lower Ruvu and Mtoni, leakage control along the transmission and distribution pipelines, connection of existing pipes, laying of new primary and secondary pipes and creation of a middle water pressure zone. Further, it will also involve leakage control measures, mapping, pipe cleaning, meter installation, collection of arrears and recovery from illegal connections.

The underground leakage prevention project to be conducted in-house by NUWA will be a long-term project and will produce many intangible benefits also, depending on the efforts expended into it, and based on this, contractual works for increase of water pressure should be undertaken.

4. The project should result in 80 % of the population, i.e., 1.2 million people, benefiting from improved supply, with the increase in the per capita water supply being of the order of 27 liters per day.
5. The cost breakdown of the rehabilitation project for the target year of 1995 is as follows :

(Unit : T.Shs. million)

	Contractual Works	In-House Works	Total
Foreign Currency	3,297	2,237	5,534
Local Currency	1,757	388	2,145
Total	5,054	2,625	7,679

6. Financial resources to cover the capital and operations and maintenance costs for this project will come from water charges and recovery of money from bad debts and illegal connections. In the short-term, even if the identification of all illegal connections and full recovery of payment arrears is

accomplished, obtaining hard loans is almost impossible. However, even if 70 % of the above is accomplished, there is the possibility of obtaining soft loans. Further, if 60 % of the above is accomplished, it will become possible to obtain financial assistance from the government. Therefore, NUWA should make all efforts to ensure that the above targets are met.

7. In order for NUWA to balance its books, it will be required to revise the water tariff annually, with the increase required in the case of the rehabilitation project not being done at 32 % and in the case of the rehabilitation project being done at 20 %. The corresponding nominal inflation rate is expected to be 30 %, which is greater than the lowest salary increase rate of 17 %.
8. NUWA employees should be motivated by means of incentives, and the salaries of lower paid employees should be raised and a productivity-linked bonus scheme should be initiated. Towards this end, a task force should be established to go into the matter and action taken at the earliest.
9. The agency responsible for implementation of these measures will be NUWA. For this project, the personnel requirements are - 7 engineers, 140 technicians, 8 surveyors/draftsmen, 26 drivers, 19 crane operators. NUWA will have to arrange for transfers within the organization, training and recruitment of new employees.

RECOMMENDATION

1. Even if this rehabilitation project will be completely implemented, there will be a major demand-supply imbalance by the year 2000. To counter this, it is required that a long-term water supply expansion plan be drawn up, up to the year 2020, for which implementation should start by 2000.
2. The water resource capacity expansion of Mtoni should be based on the overall water resource development of the Ruvu river.
3. The manpower requirements as well as the requisite training for the leakage prevention project should be taken care of.
4. The indigenous production of alum and other chemical coagulants should be achieved.

REFERENCES

1. Report on The Dar es Salaam Water Distribution System, UNDERWOOD McLELLAN & ASSOCIATES LIMITED, Saskatoon, Canada, August 1977.
2. Report on Dar es Salaam Water Supply System Rehabilitation, WATER AND POWER CONSULTANCY SERVICES (INDIA), New Delhi, India, September 1984.(CIDA)
3. Report on Dar es Salaam Water Supply, NATIONAL URBAN WATER AUTHORITY, 1985(?).
4. Preliminary Technical Design for the Rehabilitation of Dar es Salaam Water Supply System, COMPAGNIA GENERALE PROGETTAZIONI E INSTALLAZIONI S.p.A., Italy, 1986(?).
5. Water Supply System Rehabilitation and Improvement - Technical Report and Cost Estimate, LODIGIANI S.p.A., Milan, Italy, April 1986.
6. Coast/Dar es Salaam Regions Water Master Plan, CBA ENGINEERING LTD, Vancouver, Canada, February 1979.
7. Upper Ruvu Intake Problems, Prof. SKOKLEVSKI Z and Dr. MATONDO JI, University of Dar es Salaam, May 1985.
8. Report on Proposed Dam in Mzinga, Sir Alexander Gibb & Partners, 1952
9. Report on Future Sources of Water Supply for Dar es Salaam, HOWARD HUMPHREYS & SONS(EAST AFRICA), Nairobi, Kenya, October 1967.
10. Dar es Salaam Water Supply Extensions - Upper Ruvu Scheme Stage V - Feasibility Study Report, H.P.Gauff K.G., Nairobi, Kenya, 1972(?).
11. Rehabilitation Study on the Lower Ruvu Water Treatment Plant, Tanzania, Core & Storrie Limited, Toronto, Canada, 1986 (CIDA)
12. Review of the Status of the Lower Ruvu Water Treatment Plant, Tanzania, Core & Storrie Limited for Stothert Management Limited, December 1988.
13. Urban Water Supply - Study on Cost and Tariffs - Supplementary Report, VIAKAB, Stockholm, Sweden, February 1985, (SIDA)
14. Study of Existing Financial System, Crown Agents, 1986
15. Recommendations for the Dar es Salaam Water Supply System, UNITED RESEARCH INCORPORATED, Boston, U.S.A., 1968 or 1969.
16. Measures to Strengthen NATIONAL URBAN WATER AUTHORITY - Discussion Draft, November 1987
17. 1st Annual Report and Accounts for the Period Ending 30th June, 1983, NATIONAL URBAN WATER AUTHORITY, August 1984
18. 2nd Annual Report and Accounts for the Period Ending 30th June, 1984, NATIONAL URBAN WATER AUTHORITY, ?
19. 3rd Annual Report and Accounts for the Period Ending 30th June, 1985, NATIONAL URBAN WATER AUTHORITY, ?
20. Report of Auditors as at 30th June, 1986, NATIONAL URBAN WATER AUTHORITY,

21. Accounts Operating Manual, NATIONAL URBAN WATER AUTHORITY,
22. The Dar es Salaam Master Plan, consisting of Main Text, Five Year Development Programme and Technical Supplements, MARSHALL MACKLIN MONAGHAN LTD., Ontario, Canada, October 1979
23. 1988 Population Census: Preliminary Report, Bureau of Statistics, 1988.
24. The Urban Water Supply Act, 1981
25. NUWA Function and Job Description, NATIONAL URBAN WATER AUTHORITY, 1989
26. Dar es Salaam Sewerage and Sanitation Study, Vol 1, Master Plan Summary and Recommendations, October 1980, PEAY, MARWICK MITCHELL AND COMPANY. London, UK and HOWARD HUMPHREYS (Tanzania)
27. Dar es Salaam Water Supply Systems - Rehabilitation and Improvement - ,February 1988, LODIGIANI S.p.A., Milan, Italy

