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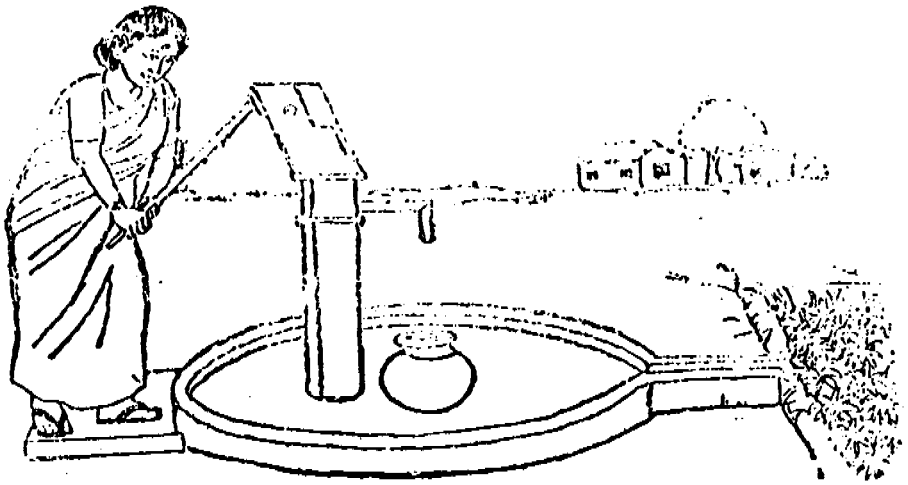
ASSESSMENT OF KARDEX SYSTEM FOR HANDPUMP PROGRAMME



DEPARTMENT OF RURAL DEVELOPMENT
MINISTRY OF RURAL AGRICULTURE
IN COOPERATION
WITH
WATER AND ENVIRONMENTAL SANITATION
UNICEF

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WATER MISSION

MARCH 1989

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EXECUTIVE SUMMARY :

Handpumps have proved to be a remarkable solution to the complex problem of rural water supply in India. Particularly the India Mark II, has proved to be a boon to the rural masses, and almost all village level installations are of this type. (Though the design of this pump is simple; it, in its present form, is not totally reparable at the village level. Attempts are being made to develop a handpump design, which is totally maintainable at the village level.) It has been generally observed that the present design calls for 2 to 3 repairs in an year. Apart from this the pump needs some 'Above-ground' nursing, at regular intervals for its efficient operation. This calls for a well defined system of handpump maintenance, with participation from user and servers. A Kardex system, which in fact is a sofisticated data management book/register, was introduced as an important MIS tool for the handpump programme in rural India.

The Kardex system was put under trial, in five districts of four states; to find out its strengths, and shortcomings. The evaluation of this demonstration project, and its augmentation for larger implementation was the basic purpose of this report. This report has been based on a detailed investigation carried out by a central team. The major findings of this evaluation are,

1. The nomenclature and operating codes of the organization setups in all the sample states (states where demonstration projects have been operating) differ from each other.
2. Inspite of the above fact, the Kardex system has found a place in the organizations , and psyched the administration in admitting the desirability of it or a similar system.
3. Every state has a system of maintaining various type of registers/books, which is a parellel to the Kardex system.
4. These parellel systems, apart from their Mass-strength in being operational in the entire state, and so also their orientation to fulfill the routine reporting needs of the administration; have diluted the utilisation of Kardex system.
5. It does not mean that the parellel systems , which are largely operational in the sample states are a complete solution to the problem of handpump programme management. What

probably is required, and which has been proposed in this report, is a system that incorporates positive features of all these systems.

6. It is strongly felt that, there is a need for re-allocation of responsibilities & duties at various levels of the administration, for the handpump programme.

This report, apart from conducting a diagnostic evaluation of the demonstration projects, also proposes a complete system of related data mangement, and programme operation and evaluation; based on modified Kardex and books/registers, for better management of the handpump programme. The salient features of the recommended system are,

1. The functions at various levels of the handpump programme administration are clearly identified, and corresponding proposals for the personnel and facilities are made.
2. The proposed setup can be accommodated in ~~all prevailing types of state administrations.~~ the different kinds of administrative setups existing in various states.
3. The record-keeping mechanism of the Kardex is modified to incorporate 'Time indexed / sorted', as well as 'Individual pump indexed / sorted' information.
4. The system provides for aquisition of operational data, and formulae/criteria for performance evaluation.
5. The proposed system provides a 'Finance-like' precise mathematical model for accounting of material and activities relating to the handpump programme.
6. At first glance the system may look a bit complex, but on closer scrutiny one would realise that, it can be made to work with some training and administrative will for desirable impact on the handpump maintenance programme.

It is understood that, after formal acceptance of the system, preparation of a detailed system documentation and training material will be undertaken.

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF ABBRIVIATIONS :

AE	: Assistant Engineer.
AEE	: Assistant Executive Engineer.
BDO	: Block Development Officer.
CE	: Chief Engineer.
CRD	: Commissioner Rural Development.
DC	: District Collecter.
DDO	: Divisional Development Officer.
DEE	: Deputy Executive Engineer.
EE	: Executive Engineer.
JE	: Junior Engineer.
SE	: Superintending Engineer.
PA(PD)	: Personal Assistant to Collecter.
MDO	: Mandal Development Officer.
SDO	: Sub-Divisional Officer.
CBO	: Control Block Office.
DRD	: Dept. of Rural Development, Ministry of Agriculture, Govt.of India.
MPO	: Mandal Panchayat Office.
PHED	: Public Health Engineering Dept.
TM	: Technology Mission (for drinking water).
TWAD	: Tamil Nadu Water Supply & Drainage (Board).
UPO	: Union Panchayat Office.
UNICEF	: United Nations Children's Fund.
UNDP	: United Nation's Development Programme.
ZP	: Zilla Parishad.
NIDC	: National Industrial Development Corporation.
HP	: Handpump.
IAS	: Indian Administrative Services.
MIS	: Management Information System.
VLOM	: Village Level Operation & Maintenance.
AN	: Assembly Number (Code).
PN	: Part Number (Code).
SHQ	: State Head-Quarter.
DHQ	: District Head Quarter.
DC	: District Code
BC	: Block Code
VC	: Village code.
PC	: Pump Code.

BACKGROUND

EVALUATION OF KARDEX BASED HANDPUMP PROGRAMME

MONITORING SYSTEM :

1.0 BACKGROUND :

Majority of Indian population (about 75 %) stays in villages. Traditionally the village people have been depending on convential water sources like open wells, village ponds, rivers, streams, canal etc; for their water needs. The reliability of these traditional sources has been observed to be suspect, under pressures of unfavourable climet and increasing demands. It is also observed that a lot of human labour, mainly that of children and women, is wasted in fetching water from far off sources. The available water from these sources has been observed to be harmful to the users and a causative factor for disablement in many parts of the country. In view of these facts and recent runs of consecutive droughts (1956-57) in many parts of India, the Govt. embarked on a massive programme of rural water supply with a missionary zeal.

In this context, the handpump in rural areas of India is becoming largely accepted as a reliable and safe mode of water supply. In initial stages of the handpump programme, available type of handpump designs, in India, were mostly for shallow tubewells. Whereas, the new generation tubewells were deep tubewells. This led to a search for the reliable deepwell handpump design. Consequently India Mark II emerged as an ideal pump to fulfill the water needs of the Indian rural population. Inspite of immense advantages of the handpumped water supply, it has not been an easy task to make the rural community change their traditional beliefs, habits, and other prejudices. In certain parts the people have tended to look at handpumps with certain degree of reservation, which can easily change to rejection, if enough efforts to make handpumps into the most reliable and safe proposition are not made. Initially Govt. departments went on constructing tubewells and installing handpumps, without any definite arrangement for maintenance and repairs. It was found that more than 80 % of the pumps were inoperative within a couple of years after their installation. As a result of this, the Govt; as a matter of policy, started focusing on the maintenance and repair of handpumps.

The Dept. of Rural development, Ministry of Agriculture; issued a notification vide No.-

11013/5/86/RWS, dated 21st Oct.1986; constituting a working group for formulating operation and maintenance norms for rural water supply schemes. The norms evolved by the committee were to be followed throughout the country. In the committee's report, published in April 1987, the prevailing handpump monitoring and maintenance systems in various states were reviewed, and recommendations of new norms were made under following heads,

- physical,
- staffing and personnel,
- performance monitoring & evaluation, and
- financing.

In view of this overall emphasis on the maintenance, repair, and monitoring of these services; an urgent need for a basic data capture mechanism was felt. The Kardex system was developed with full cognizance to this need and the norms evolved by the working group.

1.1 The Kardex system :

The Kardex is a brand name under which its suppliers, the Remingtons had supplied the HP installation & repair record keeping system. The Kardex was basically a centralised information recording system, consisting of a steel cabinet with sliding trays containing pockets with cards, on which information could be entered and anlysed. It provided a speedy reference to a particular card or group of cards, as the names, titles, other information pertaining to the identification of pumps are always visible without any need for shuffling the entire pack of cards. Effortless slide withdrawal and proper pocket support made the manouevr very easy. Sliding trays could be completely removed from the cabint if required without any difficulty. The cards were housed in protective pockets with transperant celluloid edges, hence remain clean, and do not get dogeared through constant use. Vividly coloured signals along the titled edge could also be used to highlight vital facts about the pumps. The Kardex formats were developed to maitain an information base on the details of every installation and its repair/maintenance. An analysis card to critically review various facts of operation and maintenance of every HP, was also provided in the system. A sample of the set of formats used in the Kardex system are attached at Annexure no.1/vol.1

The Kardex system was launched with a larger purpose of making avialable an efficient data capture mechanism for the computerised management information system.

1.2 Demonstration Projects :

It was proposed to introduce the Kardex system on a trial basis in five districts of following four states of India,

i. Andhra Pradesh,
ii. Tamil Nadu,
iii. Karnataka, and
iv. Orissa.

The districts selected for introducing the Kardex system with their respective handpump population were as follows,

Name of dist.	State	No.of HPs
Periyar	Tamil Nadu	1934.
Dharmapuri	--- do ---	3172.
Bidar	Karnataka	2400.
Mayurbhanj	Orissa	3500.
Medak	Andhra Pradesh	3500.

At the time of launching of the demonstration project, only Tamil Nadu had a handpump numbering system, whereas Karnataka and andhra Pradesh were in the process of introducing a system. The state governments concerned had agreed to extend the necessary support to these projects, which were sponsored by UNICEF.

1.3 Training :

After the Kardex cabinets were delivered by UNICEF to the five districts, a two day orientation course was planned to be arranged at Madras, where fourteen (14) trainees consisting of four (4) from Tamil Nadu, two (2) from Orissa, three (3) from Andhra Pradesh, two from Karnataka, and one each from the chief engineer's office of the chosen states; were to be given briefing on the system with exercises. The participants were to consist of people of the rank of Executive and Assistant engineers.

1.4 Evaluation and augmentation of the system :

It was planned to evaluate the pilot projects and augment the system in light of the findings of a full fledged study conducted on them. A large scale implementation of the augmented system was planned to follow.

OBJECTIVES

2.0 OBJECTIVES :

As was planned, a full fledged evaluation of the demonstration project, put in operation in five districts of the four sample states, was to be conducted, to make a situation analyses, and recommendations, for MIS augmentation or redefinition for the Handpump programme. This report is the outcome of this study, which was carried out with reference to the TOR (Terms of Reference) drawn up by the handpump programme coordinator of UNICEF's WESS (Water and Environmental Sanitation Section). A copy of the TOR is attached at Annexure no.2/vol.1. Major objectives of the study are to provide information for developing MIS (Management Information System) for handpump programme, and to make recommend ~~alterproposals for~~ standardization of monitoring procedures, formats at different levels. The study aims at an assessment of ongoing Kardex system, identify its strengths, constraints, and possible enhancements.

The major objectives of the study can be categorised, as to findout,

- overall MIS practices, being followed by the pilot project districts and their state counterparts,
- the degree of utilisation of the Kardex system,
- adequacy of Kardex for the intended purpose,
- identification of criteria for ideal location for Kardex cabinets,
- expectations of the administration from the system, & overall appreciation and inclination to the use of the system at various levels, and
- possibilities and ways of introducing computerisation at appropriate level(s).

The ultimate objective is to make recommendation for an enhanced system for larger implementation all over the country.

APPROACH & METHODOLOGY

3.0 APPROACH AND METHODOLOGY :

Under the guidance of the Adviser, National Water Technology Mission; an evaluation committee consisting of following officials from stated organizations was formed for this study.

Name of official	Organization (with designation)
1. Mr.M.I.Haq	Adviser, TM, DRD, GOI.
2. Mr. Esa Ovaskainen	Handpump coordinator, UNICEF.
3. Mr. Kumar Jagtiyani	Project Officer,UNICEF.
4. Mr.P.Kumar	Ch.Manager, NIDC, New Delhi.
5. Mr. C. Ganapathi	Asst.Adviser,DRD,GOI.
6. Mr.A.C.Mudgerikar	Consultant (MIS), UNICEF/DRD.

The evaluation committee designed a comprehensive questionaire addressed to various levels of the state administration associated with the handpump monitoring programme. The questionaire was prepared to assess the impact of on-going Kardex system on the operations at various levels viz;

- state headquarter,
- district,
- block, and
- village.

It was also aimed at finding out the additional needs of the administration for the programme monitoring. The questionaire was to provide a basis, for further deliberations on the issue between a central field team and the various state officials. The field team consisted of a nominee, Mr. Ganapathi, Asst. Adviser of the DRD,GOI; and Mr.A.C.Mudgerikar, Consultant (MIS), UNICEF. The field team was deputed to visit the sample states headquarters , districts, and atleast one block and village from each of the districts, for an on-site assessment of Kardex units, and overall operations pertaining to the maintenance of handpumps. The team, as scheduled, undertook these visits in the months of December 1988 and January 1989.

The entire study, its findings and the recommendations thereof presented in this report are a result of the findings of the field team and subsequent deliberations of the evaluation committee.

3.1 The sample for study :

As already spelt-out in section 1.0; choice of the sample for this study was obvious. The demo. projects with their associated offices, involved in the handpump programme, were the targets of this study. As is

elaborated in the subsequent chapters, all the samples have organizational and operational, simillarities and dissimillarities. Therefore it is pertinent that the study be carried out in light of the organizational setup and its operational practices.

3.2 Framework for the study report :

The committe was fully aware that the evaluation of the pilot projects had to be in context of the various kinds of administrative setups adopted by the state governments, and therefore the field study report presented in the next chapter is devided into three heads viz;

- ORGANIZATION,
- OPERATIONS, AND
- FIELD OBSERVATIONS;

for each of the four sample states. The subsequent chapter provides a dignostic study of the prevailing situation in the sample states, and this is followed by a chapter on the recommended system, which the committee feels would better serve the purpose of monitoring the handpump programme in India.

THE FIELD VISITS & SITUATION STUDY

4.0 THE FIELD VISITS AND SITUATION STUDY

4.1 State: Andhra Pradesh

4.1.1 Organization setup:

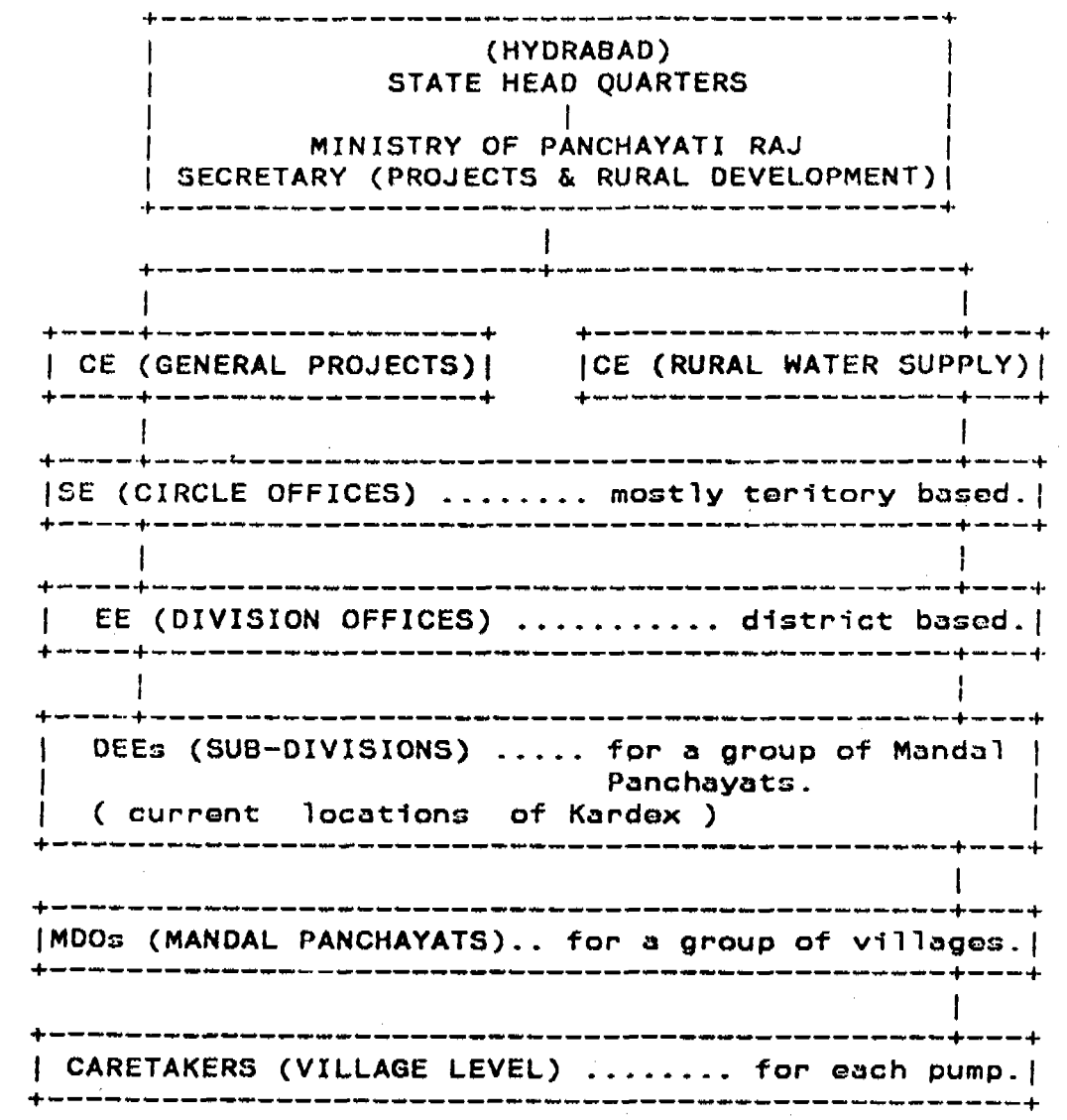
The state of Andhra Pradesh has adopted a system of 'Panchayati Raj' for all rural development activities. The rural water supply and other developmental activities are controlled by the Panchayati Raj ministry. The administrative control of the entire operations is with the Secretary, Rural development & projects. The rural water supply and general project cells under the ministry are headed by two Chief Engineers. The entire state operations are controlled through eleven Circle offices headed by Superintending Engineers. Depending on the extent and area of operations every district is divided into number of Divisions headed by Executive Engineers. District administrations are under the administrative control of the District Collector (DC) assisted by Divisional development officers (DDO), heading each of the divisions. Under a district all villages are grouped into each number of group grampanchayats known as " Mandal Panchayats "(MP). Each Mandal Panchayat has an public elected 'Mandal Panchayat President' (MPP). For the execution and maintenance of rural water supply schemes a number of MPs are grouped together to form a Sub-division headed by a Deputy Executive Engineer from the Panchayati Raj cadre.

The pilot district, Medak is divided into three divisions headed by Executive engineers, Zilla Parishads; for water supply and general development projects in the related villages. Apart from the Deputy Executive engineers controling the rural development operations in their predefined territories, one more officer of the same rank controlls the divisional stores. Under the pilot project plan for the Kardex system, the district administration was given five cardex units. The present field study was limited to Sangareddy division, which consists of five (5) sub-divisions and forty five (45) MPs. The Kardex units have been installed in following sub-divisions,

1. Zaheerabad,
2. Narayankhed,
3. Medak,
4. Patancheru, and
5. Siddipet.

All DEEs at the sub-divisions are assisted by appropriate number of Assistant Executive Engineers

ORGANIZATION SETUP IN STATE OF ANDHRA PRADESH WITH A SPECIAL REFERENCE TO HANDPUMP MAINTENANCE :



DETAILS OF KARDEX PILOT PROJECTS IN THE STATE :

NAME OF DISTRICT : MEDAK
NUMBER OF KARDEX CABINETS SUPPLIED : 5
NUMBER OF DIVISIONS : 3
SUB-DIVISIONS WHERE THE CABINETS ARE LOCATED :
MEDAK,
NARAYANKHED,
SIDDIPET,
ZAHEERABAD, AND
PATANCHERU (RAMKRISHNAPURAM)

(AEEs), Assistant Engineers and/or Junior Engineers. At each Mandal Panchayat office an handpump mechanic is appointed for repair of Handpumps in the related villages. Presently the mobile repair vehicles (four in case of Sangareddy) are under the overall control of the divisional EE, with the operational controls with the DEE, divisional stores. The DEE, stores; is supported by

one (1) work inspector,
two (2) helpers, and
one (1) watchman,

for the functioning of the divisional stores. Apart from the sub-division and Mandal Panchayat level setups, the department has also decided to train one caretaker for every Handpump. The caretakers participation and services are voluntary without any remuneration.

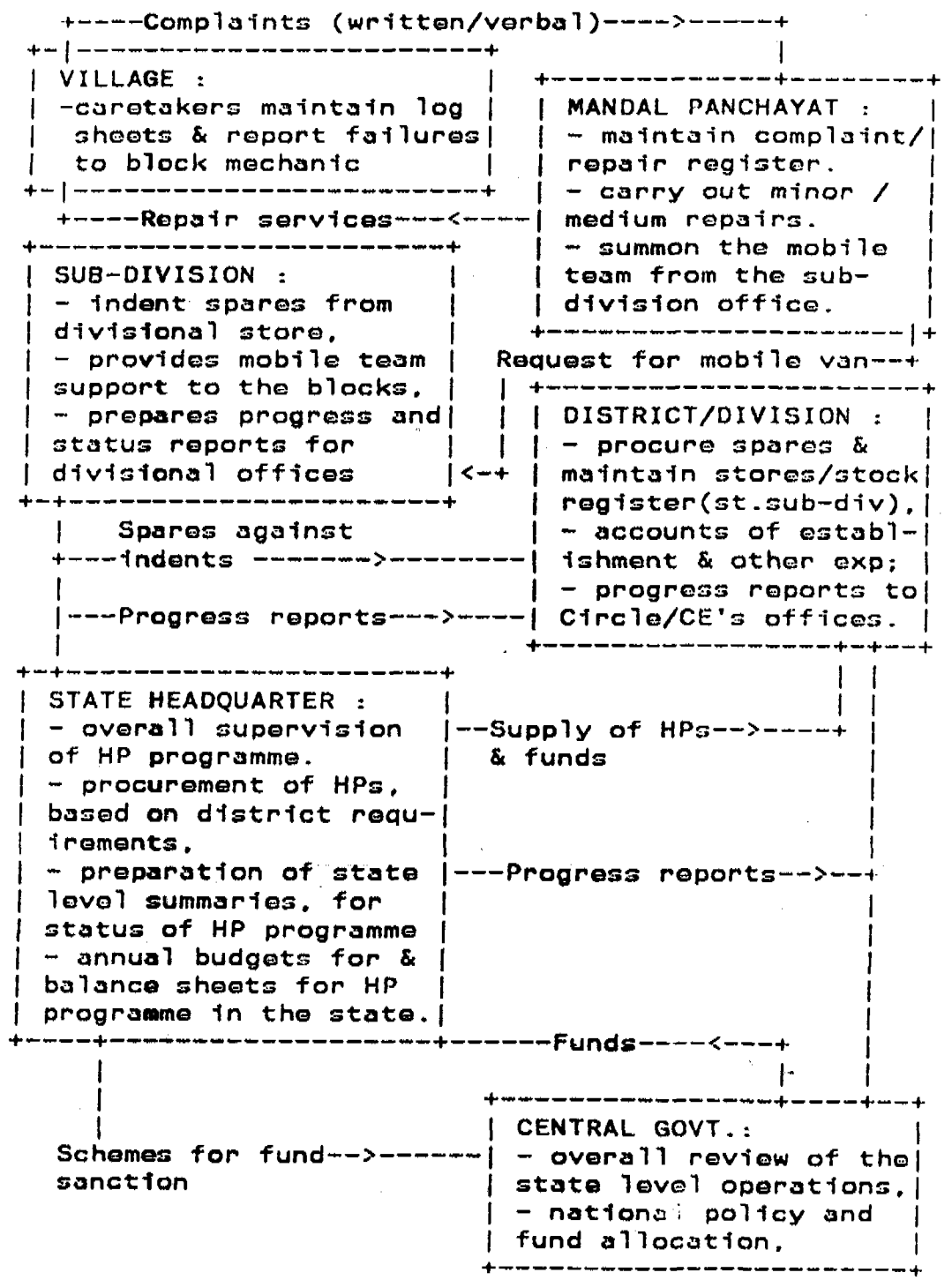
4.1.2 Operations :

Operations under the divisional Executive engineers are not limited to execution and maintenance of rural water supply schemes, but also includes other developmental projects under the control of Panchayati Raj.

For procurement of new units, the divisional EEs forward their requirements of HPs to their respective Circle SEs, to the CE (WS) at the state head-quarter. The district level requirements are reviewed and approved for procurements by the CE (WS) in the SE's conferences. The installation of the HPs is done departmentaly on a small scale, but this is mostly got done through the contractors under the supervision of the district machinery.

The maintenance of HPs is the sole responsibility of the district based divsional EEs. and his subordinate offices. Procurement and supply of spares for the HPs is done by the DEE, stores; for each division. The requirements for spares are communicated to the divisional stores by the sub-divisions through indents, from time to time. The indent entries are recorded in the stores stock register maintained at the divisional stores. The purchase entries are also made in the stock registors and each entry is signed by the DEE. The stock register is designed and works like a Passbook of a savings account holder, with credit and debit entries to the stock of a particular sparepart. A speciman format of the stock register is attached at Annexure no.1/v.1. The indents received from various sub-divisions are preserved in a file at the divisional stores. Justifiably the stock register is a highly valued record keeping mechanism. However the format in the register

STATE : ANDHRA PRADESH
CATAGORIC OPERATIONS CHART



does not contain records of the indent-codes for ready cross checking with stocks released and indents received from the sub-divisions.

Preventive maintenance is the responsibility of the care-takers chosen for each pump. The caretakers have been given a short training course, some traning documentation, and minor tools in the form of two spanners. They have also been given pre-printed complaint cards which could be posted to the Mandal Panchayat office, when the repairs on the pump go beyond them. The caretakers are also given log sheets to maintain records of repairs on each pump at the village level.

The Mandal development officers receive and pass on the complaints to the Mandal mechanic, who is expected to provide the repair inputs. The mechanic makes entries of the complaints in a complaint register maintained at every Mandal office. When the mandal mechanic fails to cope with the repair requirements he calls for the repair van from the division through parent sub-division. There are eleven sub-divisions and four repair vans under Medak district. The department aims at having one repair van for each sub-division, and let the responsibility of operating and maintaining it to them. The complaint register also provides for entering the type of repairs carried out and the spares changed on the pump for which the complaint is registered. Apparently the complaint register works like an integrated record keeping mechanism at each Mandal Panchayat office.

The reporting of progress and status of HP schemes for a Mandal Panchayat is done by the parent section officers to their respective sub-divisional officers every month in the prescribed format. Sub-divisional reports after compilation for the whole division are submitted to the parent Circle and Chief Engineer's offices every month. The proforma for these reports is attached at Annexure no.1/vol.1.

4.1.3 Field visits & on-site observations :

The district is divided into three divisions, each one of them headed by an EE from Panchayati Raj cadre. The sub-division chosen for field visit was Patancheru. However for operational convinience the Kardex cabinet meant for the sub-division office was located at the Ramchandrapuram Mandal Panchayat. Apparently the Kardex unit seemed to be under the control of the MPO incharge of the Mandal Panchayat office. In most of the cards the installation details were observed to have been

completed. It was reported that periodically the repair entries were being transferred from the complaint register, which apparently seemed to be the operational control and record keeping mechanism at every Mandal Panchayat level. The entries in the register of dates of complaints and reapirs thereof generally showed a gap of 3 to 4 days, with ocassional entries showing a delay of two weeks. The village level caretakers were provided with preprinted complaint cards, but somehow the popular mode of registering complaints on Handpumps was observed to be either a message on a plain paper or a visit by the complainant to the Mandal Panchayat office. The transfer of entries from complaint registers to the Kardex formats was reportedly done on a periodical basis. Though the entries in the Kardex formats were observrd to be dating from 1986, none of the analyses columns were filled up. The kardex formats were in english language and so were the entries. It gave a general impression that the entire handpump repair operation heavily depended on the mobile vehicle team. satisfaction with the services being provided by the department. The pump was also observed to be in working condition. The central team from their overall observations, in the specific villages and others chosen at random, is inclined to subscribe to the contention of the administration that the participation of the pump caretakers in the maintenance of HPs is almost nil. Though the Kardex cabinet was supposed to be under the charge of the sub-divisional officer i.e. Deputy Executive Engineer; the Kardex in Ramkrishnapuram seemed to the charge of the Mandal development officer. The need for any major repairs from a Mandal Panchayat mistry/fitter, on any of the installations, had to go through the parent sub-division office, to the Deputy Executive engineer at the division office.

The second sub-division office visited by the central team in this district was Zaheerabad. The Kardex cabinet was located in the Deputy Executive engineer's office. The entries in the data forms were observed to be incomplete, whereas parellel entries in the complaint cum repair register were upto date. The entries in the Kardex format were not complete for all pumps in the Mandal Panchayat. However the complaint cum repair register was more or less upto date.

The EE, Sangareddy division; strongly subscribed for a 'Two tiered' system of maintenance, meaning thereby every Mandal Panchayat would have a mobile team under their control, and these would be supported by adequate supply of spares from the district/division office. He however felt that ultimately this function has to be

passed on to the village level. As for the Kaedex system , he was in agreement on the desirability of it and suggested that these be located ideally at the Mandal Panchayat offices.

A detailed response to the questionaire at verious levels of administration is attached at Annexure no.2 / vol.1

4.2 State : Karnataka

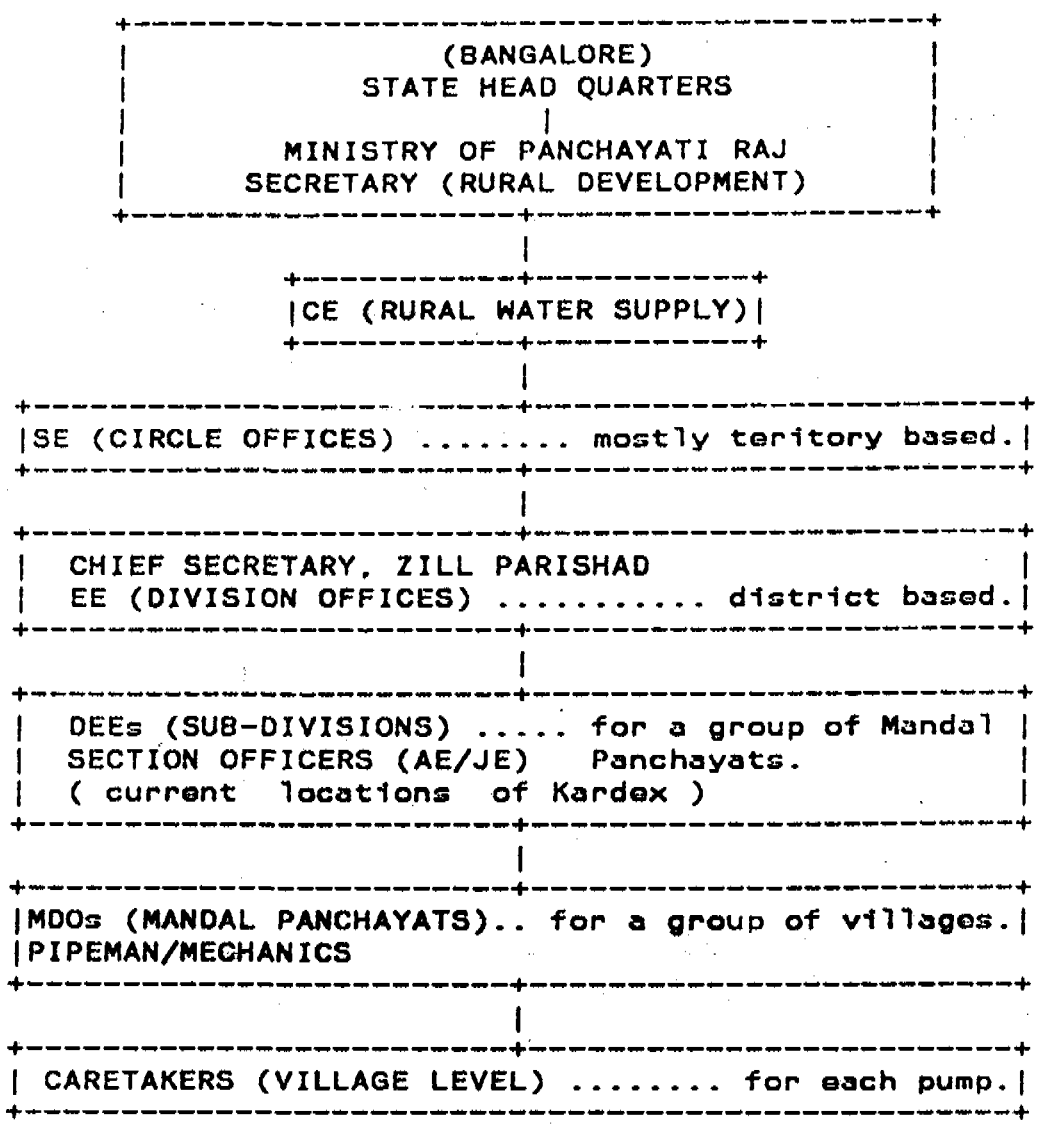
4.2.1 Organization setup :

Like the state of Andhra Pradesh, Karnataka has also adopted the so called 'Panchayati Raj' system. Though the overall framework for both the states is same, there are a few organizational and vital operational changes. The state headquarter level operations are under the administrative control of the Secretary, Rural development and Panchayati Raj and the operational control for the rural water supply and sanitation is with the chief engineer, PHED. At the district level the administrative control is with the Chief Secretary, Zilla Parishad, who in general is an appointee from the Indian Civis Service cadre. The operational control for all rural water supply and other developmental projects like rural sanitation, roads, minor irrigation etc; is with the Executive engineer, Zilla Parishad. The Executive engineers, (ZP;) are mostly drawn from the earstwhile PHED cadre. The districts/divisions are further devided into a convinient number of sub-divisions. Each sub-division is headed by an Assistant Executive Engineer. Each sub-division provides engineering services including handpump installation and maintenance to the Mandals in their jurisdiction. The Mandals consist of a group of villages, each one of which are represented by a Mandal member in the Mandal management committee. The Mandal committee is headed by an public elected representative designated as the Mandal President. The state govt. administration is represented in the mandal committee by one of their revenue employee, who is designated as the mandal secretary.

The pilot district Bidar is divided into five (5) sub-divisions and seventy four (74) mandals. The division office at Bidar is headed by an executive engineer and the sub-divisions are headed by Assistant Executive engineers from the earstwhile PHED (public health engineering department).Water supply, sanitation, roads, minor irrigation services in the rural areas are provided by the respective sub-divisions of the so called Zilla Parishad sub-divisions. Under the pilot project the district was given four (4) Kardex cabinets, and these were located at following sub-divisional offices,

1. Bidar,
2. Bhalki,
3. Baswkalyan, and
4. Aurad.

ORGANIZATION SETUP IN STATE OF KARNATAKA WITH A SPECIAL REFERENCE TO HANDPUMP MAINTENANCE :



DETAILS OF KARDEX PILOT PROJECTS IN THE STATE :

NAME OF DISTRICT : BIDAR
NUMBER OF KARDEX CABINETS SUPPLIED : 4
NUMBER OF DIVISIONS : 1
SUB-DIVISIONS WHERE THE CABINETS ARE LOCATED :
BIDAR,
BHALKI,
BASWAKALYAN, AND
AURAD.

All AEEs (assistant executive engineers) are assisted by appropriate number of AEs/JEs (assistant engineers / junior engineers). Each AE/JE looks after a Section which consists of a group of Mandals. In a Mandal office a Pipeman cum Handpump Mechanic is appointed by the Zilla Parishad. The Mandal mechanic handles the O & M of the village level piped water supply and the Handpump schemes in all villages under the Mandal. The sub-divisions are provided with a mobile handpump repair team, which consists of

1 - driver,
2 - mechanic, and
3 - helper.

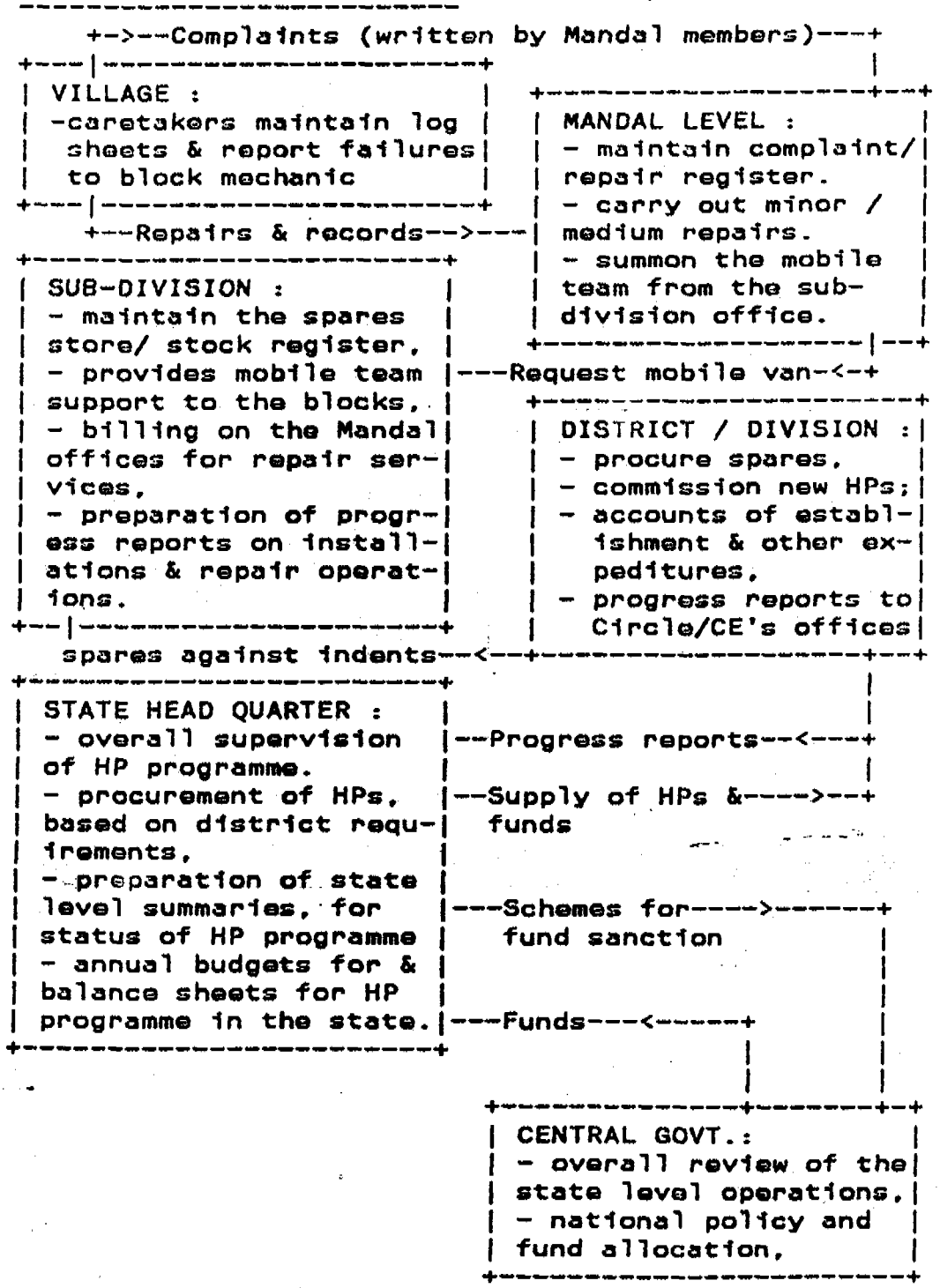
The sub-divisions maintain their stores for handpump spares, whereto the spares are transferred through indents drawn on the divisional store maintained at the division office. However the stores facility is not exclusively for the handpumps, and includes all spares requirements of the department. The divisional stores are handled by a stores superintendant. The overall organization setup of the state government is described in the adjoining chart.

4.2.2 Operations :

As a matter of fact the entire state machinery of the Karnataka related to rural development projects has undergone a drastic change from its conventional PHED setup. The existing PHED setup at the district level has been brought under the control of Zilla Parishad. The scope of the earstwhile state PHED is recently expanded to include other engineering services apart from the rural water supply and sanitation. The operations under the district / divisional EE's offices are not limited to only rural water supply and sanitation, but also include other services viz; road, minor irrigation and other construction activities. However the present study is related to the handpump programme in the rural areas of the district, which, as it stands, is the cahrge of the same district dept.

The requirement of new installations for any district is sanctioned by the CE's office through the annual plans for the ZPs. The district/division EEs prepare their annual requirement, which form a part of the Zilla Parishad budget (District Budget), and is submitted to the Chief Engineer's office through the District Chief Secretary, for scrutiny and financial sanction. The progress on these work-plans is reviewed through the monthly reports, received from the Chief

STATE : KARNATAKA
CATAGORIC OPERATIONS CHART



Secretary, ZP's offices, and the periodic review meetings during the year.

The operation and maintenance of the rural water supply schemes is the sole charge of the district administration. The procurement of spares for the handpumps is done by the district/division offices. The district/division office maintains a central stores which apart from those for handpumps, also includes other spares required for the operation and maintenance of the piped water and other projects undertaken by the division office. The store is handled by a store-keeper who is drawn from general staff cadre of the dept; and is under overall control of the EE. The district store does the procurement of spares for the smaller stores maintained at the sub-divisional level. The sub-divisional store draw indents on the district/divisional store for their handpump spares requirement.

The preventive maintenance above the borehole are supposed to be carried out by the caretakers selected and trained for every pump. The repairs of more serious nature are to be carried uot by the mechanic from the parent Mandal office in each village. The the repairs are beyond the mnadal mechanic, he sends a distress signal to the mobile repair team at the sub-division office. For all major repairs on the HPs by the mobile team, a bill for the services with catagoric account of the labour and spares cost is given. The bill is duely signed by the Section officer (JE/AE) and his Asst. Engineer. The bill is submitted to the Mandal office, where it is certified for payment by the Mandal secretary. The state has been experimenting with a rout map system for the operation of the mobile team to optimise its movement. Under this system the mobile team follows a predefined rout to cover appropriate parts of their jurisdiction, and returns to the sub-divisional headquarter only on weekends.

The reporting from the sub-divisions to the division office is weekly, and from division to parent Circle office and Chief Engineer's office is monthly. The reporting formats for these are attached at Annexure no.3/vol.1 The former report format consists details of the actual complaint and repair thereof, whereas the later focuses on the new installations and the status of the existing ones.

4.2.3 Field visits & on-site observations :

The Village visited by the central team for getting response to the questionaire was Goornalli,

which fell under the Haladkeri Mandal office. Out of the total five (5), the team visited three (3) installations, all of which were observed to be in good working condition. The Mandal office was observed to be maitaining a file of the bills submitted by the concerned section/sub-division office, for the repair services rendered by their repair teams. It was observed by the team, and also confirmed by the accompanying officials, that complaints were received only from the Mandal member from the village. The log-sheets of the caretakers were observed to defunct and the only reliable record-keeping mechanism at the lowest level was observed to be the complaint register at the Mandal office. It was observed that the pump numbers were punched on stand-pipe of every handpump.

The central team could visit three (3) sub-division offices, which form the second level of establishment in the HP programme operations in the state. The Kardex cabinets supplied under the demonstration project, were located in these offices. Only at Bidar sub-division the Kardex forms were almost completely filled in. It was observed that, in general, the sub-divisions were maintaining two registers,

- Master Register, and
- Complaint cum Repair Register. The former contained details of HP installations and the latter recorded details of the repairs carried out on the installations, which bore villagewise identification numbers. It was interesting to note that the repair entry formats provided for entries of frequently changed spareparts in separate columns, which helped the sparepart accounting immensely.

The divisional stores and sub-divisional stores maintained a file of the indents received for the spares, and the stock ledgers. A sample of the format used for this register is attached at Annexure no.3/vol.1. The entries of receipts and issues of material at the stores were qualified by the source/destination, quantity, cost, and bill/Measurement book references, and were duely signed by the stores superintendant.

It was interesting to note that the register formats at all the three sub-division offices visited by the central team, though essentially same, were different from each other.

The responce to the quastionaire received at various levels of state administration, is attached at Annexure no.4/vol.1

4.3 Name of state : Tamil nadu

4.3.1 Organization :

Unlike the previous two states, there are two different state level organizations dealing with the rural water supply schemes. There is an autonomus body , 'Tamil Nadu Water Supply and Drainage Board' (popularly known as TWAD Board), which deals with the installation and commissioning part of the rural water supply schemes. The other state level body is the Commissionerate of Rural Development, Govt of Tamil Nadu; and is responsible for the maintenance of the handpump based, and the so called Mini Water Supply schemes (piped water supply schemes for individual villages). The TWAD board setup is more or less same as the conventional state PHED, except that it acts as an autonomus body with its own governing committe of board members, and is headed by the Managing Director who is drawn from the IAS (Indian Administrative Service) cadre. The operational head of the TWAD Board is a Chief Engineer designated as Engineering Director. District level organizations connected with the HP programme are the district collectorates and the divisional offices (EE's offices) of the TWAD Board. In every collectorate an Assistant Executive Engineer of the TWAD board is deputed under an official (State Civil cadre) designated as PA(PD). Every district is divided into appropriate number of divisions, headed by District Development Officers (DDOs) and assisted by an AE or a JE (Assistant Engineer/Junior Engineer) from the TWAD Board. Under a division a number of Union Panchayats (a revenue and development unit for a group of villages), each one of them headed by a BDO, are formed. The BDOs are assisted by the so called Block Fitters for maintenance of HP and Mini Water supply schemes. At village level the dept. is aiming at training one caretaker for each pump.

An organization chart of the related departments is presented in the adjoining chart.

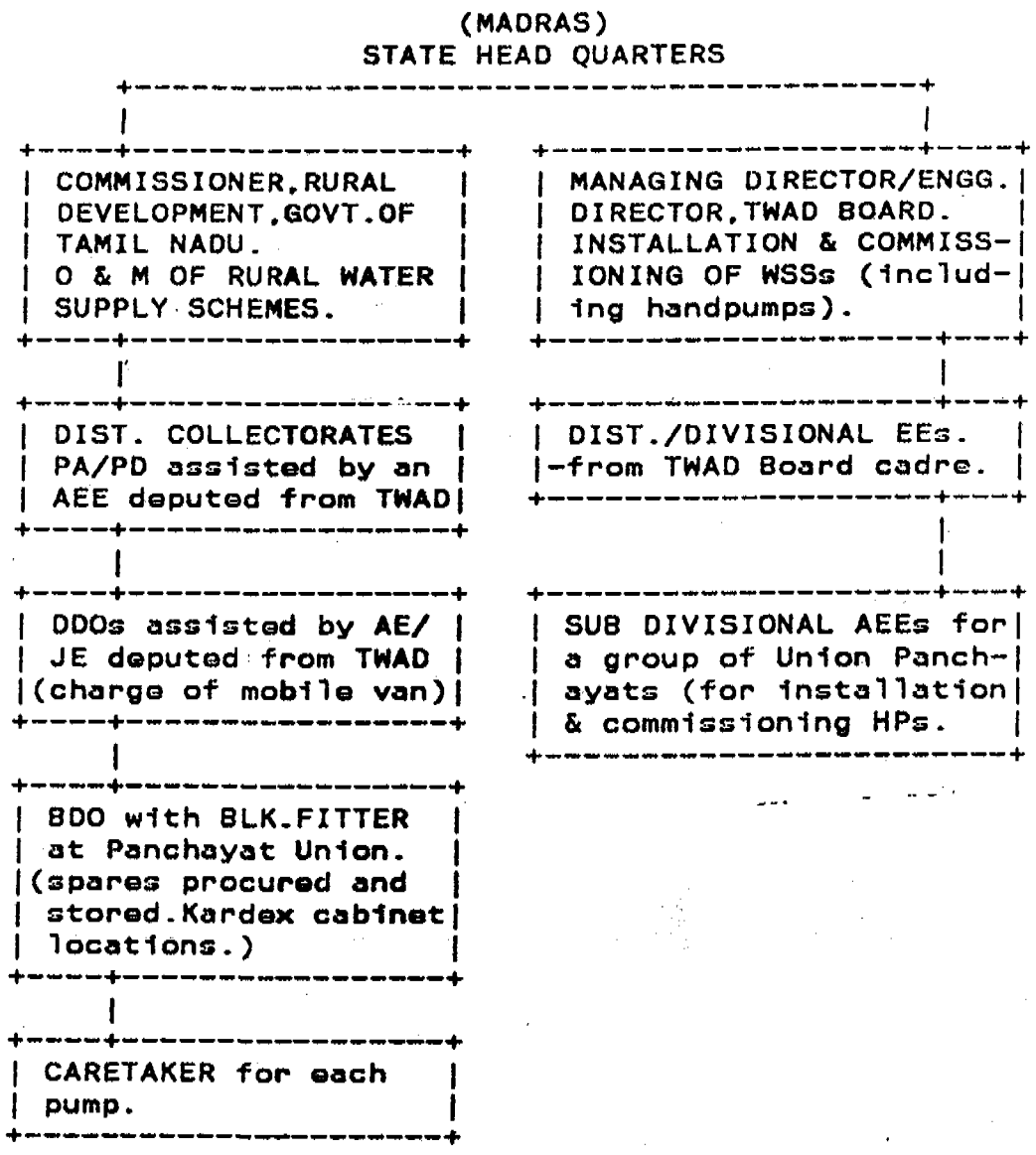
4.3.2 Operations :

The operations under the handpump programme in the state is clearly defined into two parts, viz;

- installation and commisioning, and
- operation and maintenance.

The former is looked after by the TWAD Board officials, and the latter by the district collectorate with its cadre of revenue officials with assistance from the technical officers deputed from TWAD Board.

ORGANIZATION SETUP IN STATE OF TAMIL NADU WITH
A SPECIAL REFERENCE TO HANDPUMP MAINTENANCE :

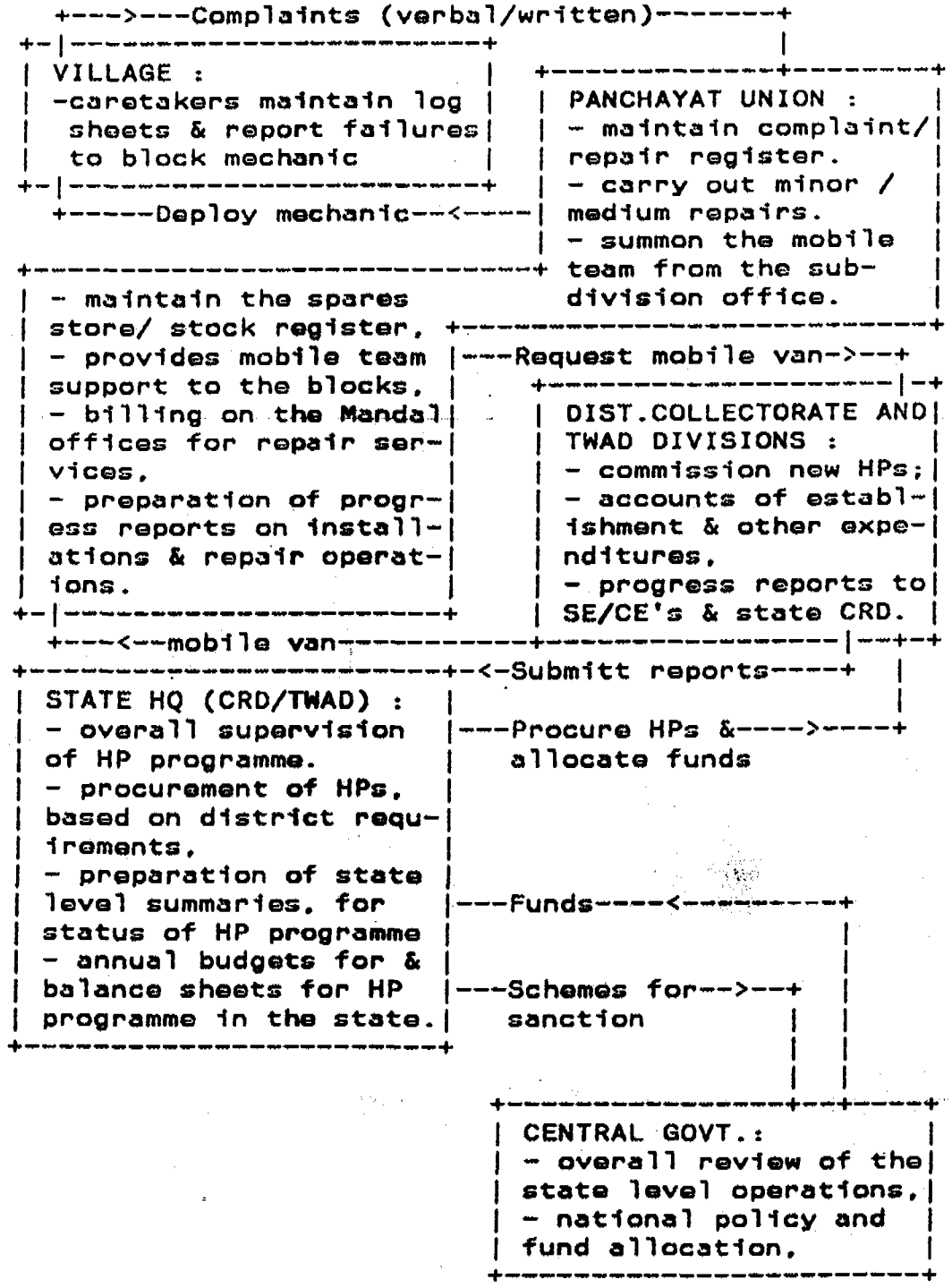


DETAILS OF KARDEX PILOT PROJECTS IN THE STATE :

NAME OF DISTRICT : DHARMAPURI AND ERODE(PERIYAR)
NUMBER OF KARDEX CABINETS SUPPLIED : 5+3
NUMBER OF DIVISIONS : 2+3
BLOCKS WHERE THE CABINETS ARE LOCATED :

NALLAMPALLI, DHARMAPURI, AND KRISHNAGIRI DIVISION (Block wise location not known).	VALLAKOIL, PERUNDURAI, AND GOBICHETTYPALAYAM.

STATE : TAMIL NADU
CATAGORIC OPERATIONS CHART



The village caretakers are expected to do the above ground preventive maintenance, and they are trained and are supplied with two spanners for this purpose. The dept. has also supplied to the caretakers log-sheets for maintaining record of the preventive maintenance and repairs carried out on the pump under their charge. The caretakers seek assistance from the block fitter for any repairs which are beyond them.

The Union or block fitter receives complaints from the caretakers on behalf of the BDOs, and goes on to repair the deseased pump. The fitter maintains a complaint cum repair record register at every Union office. The spares are procured and stored at the Union level depending on their requirement. The fitter also handles this store and maintains a stock register to keep an account of the spares procured, and used. He also maintains a stock register for accounting of the old wornuot parts, which fetch some salvage value for the department.

The divisional office maintains the mobile team which visits the pump installations requiring major repairs, on specific request from the Union fitters. The mobile vans are maintained by the central govt. workshop at the district head quarter. The fuel for the vans is also supplied by the central workshops at the fixed rate of 250 liters per van.month. The van has to visit the Union office for collecting the required spares before carrying out the repairs, and also to return old parts and to make entries in the repair register maintained at the Union office.

The district level operations headed by the PA(PD) include,

- taking charge of new installations commisioned by PHED, and maintaining their records in the Master register,
- overall supervision of the repair and maintenance operations of the divisional and Panchayat Union functionaries,
- receiving from divisions and submitting to state headquarters after compilation, various reports.

All policy matters and districtwise evaluation of the operation and maintenance operations is done by the office of the Commisioner, Rural Development. The various weekly, monthly, and quarterly reports; as specified in the 'Manual of Instructions on Handpump Maintenance' circulated by the Directorate of Rural developmet, in the year 1985; are received by an Additional Director in the state commisionarate. The state office also negotiates with suppliers of spareparts for fixing prices and controlls the quality of spares through an outside agency (Crown Agents).

This ensures the availability of quality spareparts at a fixed price to all the Union Panchayat offices.

The state administration has led out an elaborate reporting procedure for various functionaries throug their manual specified above. The reporting formats and frequency for various offices in the state is,

- from Panchayat Union to Division office .... weekly (Annexure no.5/v.1)
- from Division to district collectorate ..... weekly. (Annexure no.5/v.1)
- from Collector to state commisionarate ..... fortnightly. (Annexure no.5/v.1)

4.3.3 Field visits and on-site observations :

The team visited both the project districts for the on-site review and interviewed the officials of PHED and the district collectorates, who are responcible for installation & maintenance of the handpumps respectively. The Kardex cabinets are located at the Block level. Like the other two states visited by the central team, in this state also the overall system of handpump repairs seemed to relly heavily on the mobile team. The team visited two villages viz; Augoundampalli, and Jattigalli in Erode and Dharmapuri districts respectively. At none of the places the caretaker could be traced out. It was reported that the caretakers log sheets were not used for any recordkeeping. The villagers did not seem to have any serious complaints about the system of repairs to handpumps. However a detailed response to the questionaire, for village level operations was provided by the BDOs of the concerned Panchayat Unions. The detailed response recorded by the team is included in Annexure no.6/vol 1.

The kardex cabinets located in the Union Panchayat offices in both the districts seemed to be fairly well kept. The installation cards were observed to be complete and also the repair data for quite a number of pumps was entered in the cards. These blocks being the points of major operating control for maintenance of handpumps in the state, these were observed to maintain the cpmplaint cum repair register, and the stock register in good order. It was reported that the entries from the complaint cum repair register were periodically transferred to the Kardex formats. However none of the annual analyses entries in a single Kardex form were observed to be completed. Both Union Panchayat visited by the central team had well constructed offices with tlelephone connections necessary for summoning the mobile team from parent Division development office (DDO).

The detailed catagoric response of the the various officials recorded by the central team is presented in Annexure no.6/v.1. To avoid repetation of largely similar responses, at different levels, in both the districts are integrated and included in a single Annexure

4.4 State : Orissa

4.4.1 Organization setup :

The state has Orissa, unlike other states included in this study, has maintained the organization pattern of earstwhile Public Health engineering departments of the state governments. The overall organization setup of the state with a specific reference to the handpumup programme is given in adjoining chart. The state operations relating to water supply and sewerage/sanitation are controlled by the CE,PHED; with the assistance of Circle offices, under each of which a convinient number of districts are grouped. The district level organization is devided into a number of PHED divisions, depending upon the work-load. Each division is headed by executive engineers, & is assisted by appropriate number of sub-divisions, headed by Assistant executive engineers from the PHED cadre.

The project district, Mayurbhanj; has its district head-quarter at Baripada. The division, apart from looking after the rural water supply programme also is in-charge of urban water supply system. The district is divided into three (3) sub-divisions, each one headed by an assistant engineer assisted by appropriate number of section officers (junior engineers). One section officer looks after the water supply operations in a number of villages, under the revenue control of a number of blocks. In each block a handpump mechanic is appointed to provide technical assistance to the Block development officer. The district was given five Kardex cabinets under the demonstration project, and these were located at following sub-division/section offices.

Udala,
Betnoti,
Baripada,
Bangriposi, and
Badampaliwa.

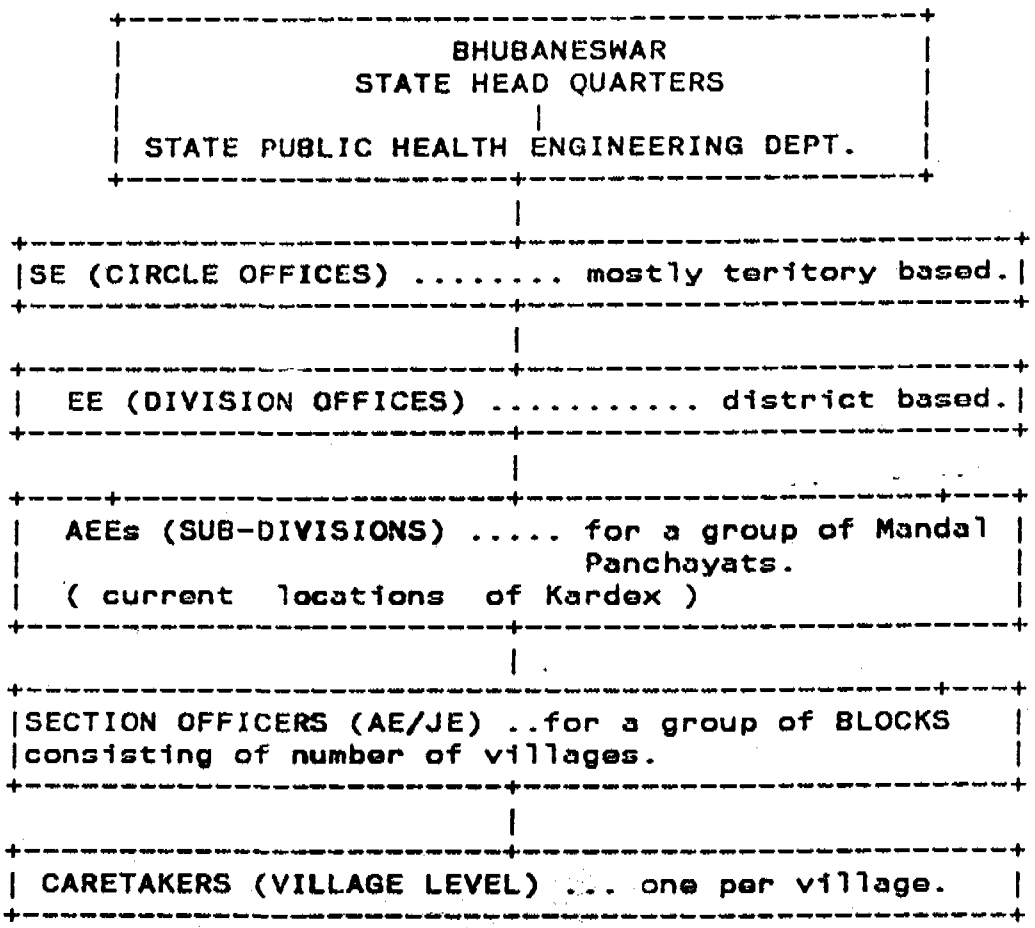
The mobile teams for installation, & repair/maintenance of handpumps consist of,

1 - van supervisor (Junior Engineer, mechanical)
1 - driver
1 - mechanic
3 - helpers.

4.4.2 Operations :

The operations related to the handpump programme in the state are more or less same as the other project states. The procurement of handpumps is done at the

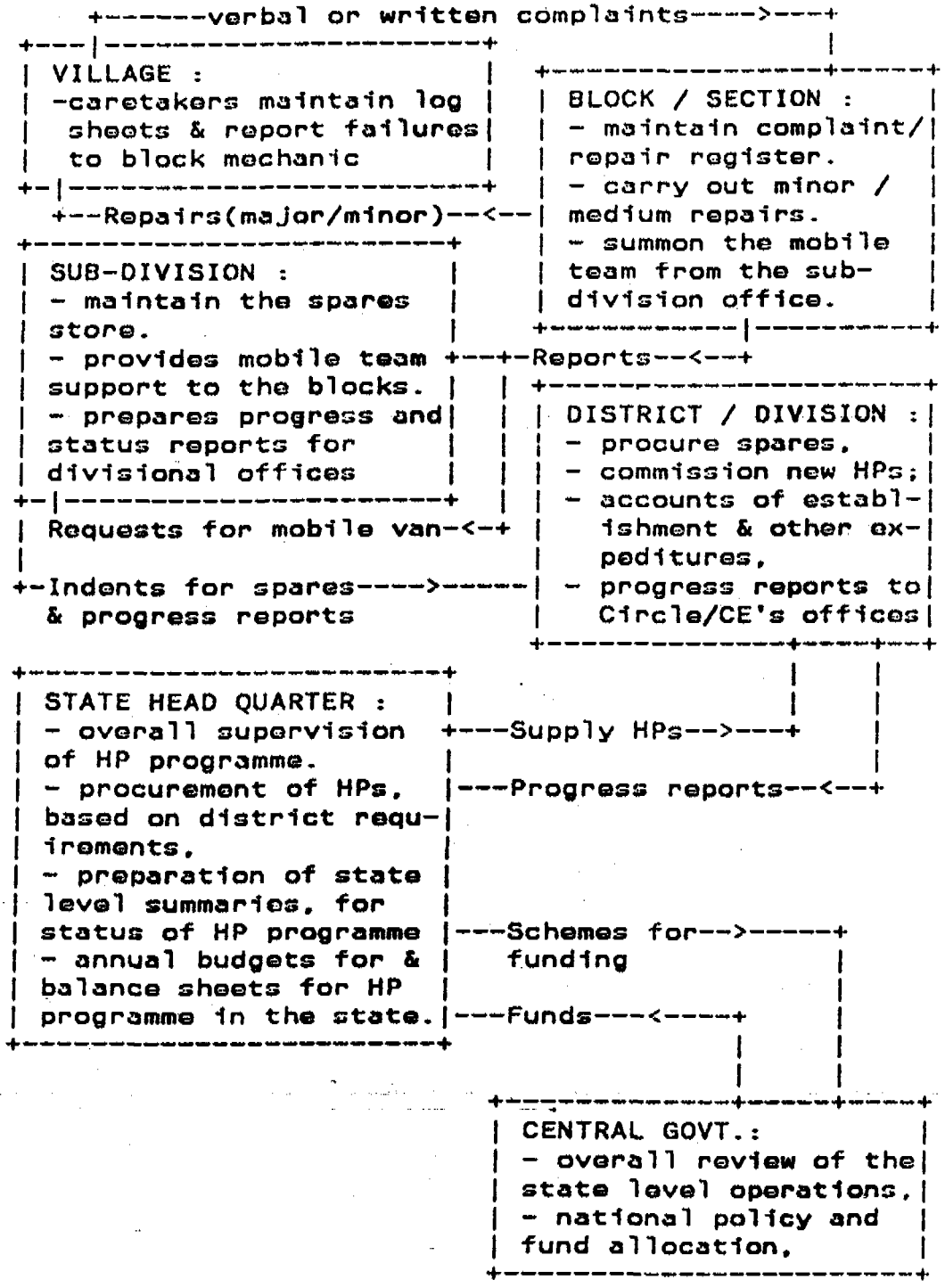
ORGANIZATION SETUP IN STATE OF ORISSA WITH A SPECIAL REFERENCE TO HANDPUMP MAINTENANCE :



DEAILS OF KARDEX PILOT PROJECTS IN THE STATE :

NAME OF DISTRICT : MAYURBHANJ (BARIPADA)
NUMBER OF KARDEX CABINETS SUPPLIED : 5
NUMBER OF DIVISIONS : 1
SUB-DIVISIONS WHERE THE CABINETS ARE LOCATED :
BARIPADA,
BETNOTI,
BANGRIPOSI,
UDALA, AND
BADAMPALIWA.

STATE : ORISSA
CATAGORIC OPERATIONS CHART



state headquarter level in keeping with the districtwise requirements. The annual plans are prepared by the tube-well planning cell of the chief engineer's office at the state headquarter. The execution of the installation plans, prepared by the executive engineer, tubewell planning cell of the chief engineer's office, are monitored by the monitoring cell of the same office. The monitoring cell is headed by a superintending engineer, who apart from the handpump programme also monitors execution, operation and maintenance of all other schemes of the department. The installation of handpumps is done by the district/division offices, for which they have departmental teams.

The procuremont of spares is done by the district PHED offices depending on their needs. The division offices are allocated funds at the rate of Rs.50 per pump.year; by the state govrnment. The stores are maintained largely by the division offices, but in some cases the sub-divisions also maintain sub-stores for operational convinience. The saperes are issued to the section officers (junior engineers) against indents. The mobile teams are common for installations and repair/maintenance of handpumps.

The department has trained one caretaker in every village, who voluntarily does above the hole preventive maintenance for all the pumps. He also forwards complaints on deseased pumps to the block office. The block mistry registers the complaint in a complaint register, and summons the mobile team from the sub-division office for repairs which he can not rectify. The deployment of the mobile team is crises or complaint based.

The reporting from sections (JEs) to the division offices is done through respective sub-divisions, on a weekly basis. Monthly reports compiled from weekly reports are submitted by the EE to the Circle (SE's office) and SE, monitoring cell (Chief engineer's office). The formats used for reporting are attached at Annexure no.7/vol.1.

4.4.3 Field visits & on-site observations :

The central team visited the state in the last week of Jan.1989. Water supply to the entire district, townships and also the villages was under the PHED Executive Engineer, PHE Division, Baripada. The division is further divided into three sub-divisions and twelve sections. One section office provides service to a number of blocks. The entire district consists of twenty five (25) blocks.

The village visited was called Rajabase, and fell under Baripada sub-division. Three HP installations were visited ad all of them were found to be in working order with a reasonable drainage arrangement. However the village caretaker and his log sheet was not available for scrtiny. It was reported that the caretaker level operations and record-keeping thereof was not functional. Reportedly, the villagers lodged there complaints about handpump with the block fitters or the section officers (JEs). The complaints were registered in a complaint cum repair record register, maintained at the block office. The Kardex cabinet located in the Baripada sub-division office was inspected by the team and it was observed that, most of the installation data was filled in.

In absence of the village caretaker and the section officer, a response to the questionaire was provided by the sub-divisional officer. Part of the questionaire relating to district level operations was responded to, by the EE, PHE division, Baripada. At state headquarter level the team had discussions with the CE, PHED; SE, monitoring; and the EE, monitoring. The responses at various levels of the organization were recorded by the central team and the same are reproduced under Annexure no.8/vol.1.

DIAGNOSTIC SITUATION ANALYSIS

5.0 DIAGNOSTIC SITUATION ANALYSES :

For a proper analyses of the situation, it is very essential to have major findings of the study, which will enable one to make catagoric diagnostics. Therefore this chapter is presented under two sub-heads viz;

Findings of the study, and

Diagnostics.

5.1 Findings of the study :

Major findings of the field visits of the central team, and from the response to the questionaire at various levels; are described below.

a. The structure and nomenclature of the organizations, involved in the handpump programme in sample states differs from each other.

b. The village level setup is limited to, only the village or pump caretakers, with the record keeping mechanism being available in the form of 'Caretaker's Log sheets'.

c. The log-sheets are either unused, or missplaced, or not provided.

d. The complaints on handpumps are mostly registered by the users or public representatives. All villages seem to have a day-to-day link with the revenue block offices.

e. The block mechanics, in absence of conveyance seem to rely heavily on the mobile team.

f. Though the provision of block mechanics, in general, is at the rate of 1 per 50 pumps; the same for mobile teams is in the order of 1 per 1000 to 1500.

g. The most popular record keeping mechanism at the block offices, wherefrom handpump services are sought by the users, is the Complaint cum Repair record register.

h. The Kardex cabinets have been located at either the block or sub-division offices.

i. For majority of pumps, the installation details are entered in the Kardex forms.

j. Details for only major repairs carried out on the handpumps are entered in repair records of the Kardex.

k. No effective mechanism of carrying out preventive maintenance of handpumps, and record keeping mechanism thereof, eixsts in any of the sample project areas.

l. Except for Dharmapuri in Tamil Nadu, the authorities do not seem to have paid special emphasis on the filling up of Kardex formats.

m. The Kardex system is being operated as a statute, rather than as an operational requirement.

n. All levels of the administration were unanimous

about the desirability of Kardex system, but sggested modification of formats to fulfill the operational requirements.

5.2 Diagnostics :

Of all the operating levels of the handpump repair and maintenance programme, the villages with their weak infrastructur are observed to be the most fragile link. The authorities have not been able to get entered every reapir on a handpump in the caretaker's log sheets. This is because, they do not seem to have sufficient control to ensure that the caretakers remain present at the time of the repair. The caretakers, inspite of the training seem to have failed to appreciate the importance of the log-sheets, and hence the team came accross situations wherein either the sheets were misplaced or unused.

Inspite of the diversity of the organization setups in the sample states, the Kardex system does not seem to have faced any problem of location. Primarily the system being a recording mechanism for demand and delivery of handpump repair services, for around 600 odd pumps by a single unit. Because the least count of the present cabinets is, what is mentioned above; at many block offices they are underutilised.

Among all the establishment units, the Block offices, and their likes (Mandal, Mandal Panchayat Unions, and Union Panchayats) were observed to be the most active participants in the overall programme of handpump maintenance. These obviously should become the focal points for any system of handpump maintenance programme. Almost every village seems to have day-to-day contact with these offices, and find it convinient to demand handpump repair needs here. Moreover because these are the revenue offices of the government, these have a reasonably good office and personnel infrastructure, which can be effectively used for maintenance of a book-keeping system like Kardex, with little redistribution of work in the existing personnel setup.

The biggest advantage of the Complaints cum Repair record register over the present Kardex formats is that, the entries are sorted on time/period attributes. Whereas the entries in the Kardex formats are indexed on the individual handpumps. The operational requirement for material and complaint accounting, for the handpump programme; is planned, executed, reported, and reviewed on a time attribute, viz; Weekly, fortnightly, monthly, and annually. To put it simply, anybody at the block

office wanting to prepare a weekly report of the handpump repair activities has to scan through the entire pack of six hundred odd cards (600). On the contrary the popular Complaint cum Repair register provides a ready tool for the same. Though the Kardex in its present form provides an excellent tool for maintaining history sheets for individual handpumps, it fails to provide a ready operational support to the establishment engauged in installation and maintenance of the handpumps.

Because of the inability of the present Kardex format to provide a ready material, services accounting, and reporting tool to the establishment; it is really not utilised by them so far, in the sense that for all practical needs the conventional registers are used. Rather than becoming an operational requirement, it is being looked upon as a statutory burden by the district administration. On the contrary, the parellel system of Complaint cum Repair registers, largely because of their 'Time-indexed' nature of the information, has become more popular. Admittedly, the 'Individual Pump-indexed' information, avialable from the present Kardex formats, is also importnat for a detailed accounting and analyses of the reapir operations; it is also essential to fulfill the operational demands by suitably supplimenting the present system.

The team also came accross a common complaint, that the present formats devoted too much space for recording borewell details, and provided insufficient space for details of spareparts used. The codification of spares, and provision of separate columns for commonly used spares, which would help in maintaing a catagoric account of spareparts was welcomed by all.

Other important operational requirement of the administration is the book-keeping of the spares-store operations. In fact, the Kardex-like systems have always been associated with material and spares stores. There is no reason, as to why the existing Kardex system should not be expanded to integrate the functions of the so called 'Stock ledgers' or 'Stock Registers'.

One more area of interest in the whole affair was observed to be the reporting procedures at various levels. Though all the administrative levels of the establishment seemed very particular about the numerous weekly/fortnightly/monthly reports being submitted right from blocks to the state headquarters, it was felt that thses reporting procedures could be revamped, to make them more purposeful by standardization, redefining the periodicities, and making them suitable for computerization at the state head-quarter level.

One would have liked to avail the help of a computer, which would have easily solved the problem of, above stated, differing sorting requirements on the data. But the fact of the matter is that, a limited computer facility, in the form of an IBM/PC XT; is assuredly available only at the state head-quarter level. In the avilable circumstances, it would be pertinent to keep the role of computers to the level of state headquarters.

In view of the magnitude of the programme, under which millions of handpumps are being installed all over the country, a completely government managed maintenance system would mean a major implication on the national resource allocation. Acceptance of the popular demand,of providing 1 mobile van for 500 handpumps, would work out to a capital expenditure of Rs.300,000,000/- for a million pumps (at the rate of Rs 1,50,000/- per van). Similarly the provailing expenditure rate of around Rs.400/- per pump.year; which works out to an annual recurring burden of Rs. 400,000,000/- per million pumps; makes it necessary to have a standardised information system for the programme management, and to pay serious attention to the development of village based maintenance system.

RECOMMENDATIONS AND THE PROPOSED SYSTEM

6.0 RECOMMENDATIONS :

The ultimate objective of the government, in the handpump maintenance programme; is to establish a completely VLOM environment. However the currently prevailing systems in different states, incorporate a largely state-managed maintenance setup. The description of the system proposals made hereunder are in keeping with these largely prevailing setups. We foresee the role, of government bodies, as the suppliers and monitors of quality spares, at subsidised rates, to the users in a VLOM environment. In either situations the proposed system, we believe, is designed to provide a powerfull management tool.

From a thorough evaluation of the demonstration projects, put into operation in five districts of the four states, certain advantages and disadvantages of the existing Kardex system have come to light. By far the biggest achievement of the present Kardex system is the fact that all the present users are unanimuos on the the desirability of a system of this kind. It is interesting to note that, inspite of this large vote for the system, because of its dimensional, and structural disagreement with the ground conditions and operations; it has not succeeded in replacing the parellel systems and becoming an operational requirement of the Handpump maintenance programme.

The prime requirements of a system like Kardex can be,

- convinient location,
- appropriate dimensional design to suit the location and the target units in its influence area,
- adequecy of formats to provide a ready operational and analyses tool, and
- ease of handling.

This apart, it has to be understood that, Kardex alone can not become the complete system. Neverthless it can become an important component of the overall system. In the present context, when the community participation in the handpump programme is largely of an assortive beneficiary, and that of the govrnment is an efficient server; it is desirable and feasible, to maintain an accountable and efficient organization.

In keeping with the overall format adopted for evaluation of the demonstration projects, the recommendation of the proposed system are also made under three heads viz:

- functions,
- Organization, and
- operations.

The first part deals with the functional requirements of

a desirable system in view of the ground conditions. The second part deals with the manpower and facility allocation for appropriate functions under the proposed system. The last part of this chapter deals with the operations of organization proposed in the preceeding chapter.

6.1 Functions :

The catagoric function-chart for various levels of operation of the handpump maintenance programme is presented in Annexure no.7/vol 2. The village level functions are limited to tightening of bolts, and greasing of chain by the caretakers, and timely registration of complaints at the parent block office. It has been observed that almost all villages have a day-to-day link with their revenue block offices, which makes them an ideal location for an handpump service counter.

Inspite of the different-sounding organizational setups prevailing in differnt states, it is easy to identify an office, equivallent to the so called Revenue Block. Traditionally these offices have a well established personnel and office setup , and also have a long cultivated rapport with the village folks. In the proposed system, these are considered to be focal points of the entire handpump maintenance programme. All important functions like registration of complaints, indenting for spares, deployment of mechanics/mobile teams, record-keeping of the maintenance operations and also their evaluation; are proposed to be located at the block offices.

The most important function at the district level administration is procurement of quality spares in accordance with the actual requirements. The installation of new handpumps is costumarily a district controlled operation, and hence the installation details of handpumps have to be transported from there to the block offices or its likes. The entire fund and material accounting of the handpump maintenance programme is a district level function.

The state headquarter apart from procuriring and allocating new handpumps, has important functions like funding, evaluating, and monitoring the district level operations.

The central authority's concern is evaluation of the programme for determining national policies and specialised funding.

6.2 Organization :

It was observed by the central team during their field visits, and it also holds true as a general observation, that there is an acute need for a dedicated manpower setup with clearcut allocation of resources and responsibilities at appropriate levels in the state administrations for handpump programme. The committee has come to an agreement on proposing a well defined personnel and facilities structure, as indicated in the Annexure no._8 /vol.2

6.2.1 Village :

The village level setup is suggested to be maintained as it is, and further supported by training and mass communication measures to provoce larger community participation in the various aspects of handpump programme. The state establishments are equivocal on the futility of having a village level Kardex system, which to some extent, is justifiable; in view of the pevailing design of Kardex, and pump densities in the villages. But for preparing a firm basis for the village level maitenance system, it is necessary to have a book-keeping mechanism at village level. The committee proposes providing log sheets which will be housed in the inspection cover of the handpump.

6.2.2 Block offices :

Inspite of the major role of the established setups, like division, sub-division, and section offices; of the state PHE Departments; the revenue block offices, and their likes in almost all states, have remained the focal points of User-Server interaction pertaining to the handpump maintenance programme. The committee fully recognises this fact, & it is suggested that these (the block offices and their likes viz; Mandal Panchayats, Union Panchayats etc.); be retained as nerve centres of the proposed system. The users would find it convinient to interact with the server organization, be it the Tamil Nadu like collectorate owned, or the conventional PHED setup; through these offices. Moreover these offices, traditionally and factually, have clerical strengths, which are proposed to be borrowed for limited book-keeping functions regarding the handpump programme. The overall operations shall be under the Block Development Oficer or the Mandal Development Officer or the Mandal Secretary, and he will make available a clerk from his established setup, for a couple of hours every

day. In addition, a trained handpump mechanic will be posted at every block (henceforth 'Block' is used to mean Block and/or Mandal Development Office and/or Union Panchayat office and all similar revenue units in various states).

6.2.3 Proposed Kardex cabinet :

The Kardex cabinets shall be kept at every block and the mechanics will be fully equiped with a Tool Box fitted on a bycicle. The Kardex cabinets are proposed to be kept at these offices, which obviously call for some dimensional modifications over their present form. The number of pumps under the jurisdiction of any block office are observed to be in the range of 50-100. Therefore the Kardex cabinets shall be built of modules consisting of three (3) trays each. The reorganization of the Kardex cabinet is diagramatically shown in Annexure no.10/vol 2. It is proposed to consist of duplicate entry forms (Annexure no.2/vol.2) for the 'Time-indexed' information; with top form, in a pair, being tarable for onward submission; in the second tray of every cabinet. The first tray shall consist of,

- isometric of every part of HP with its description and codification, and
- full Kardex system operation and training material

The third and lower trays shall consist of 'Pump-indexed' information consisting of two parts viz; the installation information, and the repair/maintenance information. The existing format of pump-installation card shall be continued, but other format, shall be replaced, by three (5) sheets of Annexure no.3/vol.2. Each tray shall consist of information sheets for fifty (50) pumps. Other structural design features of the old system, which provide a ready access to a particular catagory of information shall be retained.

6.2.4 Control-Block office (CBO) :

For a group of blocks, accounting together for around 1000 pumps, the best established and conviniently located amongst them (block offices) shall be treated as the 'Control Block Office' (CBO) for the handpump maintenance operations. An AE or JE from the engineering staff cadre of the district administration, shall be appointed at every CBO. The CBO shall be equiped with two mobile vans (at the rate of 1 per 500 handpumps), with one (1) driver, and two (2) helpers with each of them. For all service calls by the mobile van, on the blocks, the concerned block-mechanic shall act as the

mobile team mechanic. The necessary spares for the group of blocks shall be stocked at this office. Every vehicle will maintain a register consisting of forms Annexure no.4/vol.2; for accounting of their daily activities. Apart from the Kardex cabinets the CBO shall also maintain an Indent Book and Stock register Annexure no.1/vol.2; for accounting of spares.

6.2.5 District office :

At district level a full time personnel setup of,
- one JE/AE,
- one clerk, and
- one peon,

under the overall controll of the EE/AEE, shall be dedicated to provide a software support to the handpump programme (installation and maintenance). A full fledged stores for properly stocking the new HPs, procured by the SHQ, and spares for maintenance of HPs in the district shall be provided at every district. The district office shall maintain a file, holding copies of 'installation cards' for each handpump in the district. A catagoric capital goods and spares account shall be maintained at the district stores as per format no.1. An inspection cum spare carrier vehicle for the district office (Mahindra 'Cowl chassy with trolley'), shall be provided for the handpump programme.

6.2.6 State headquarter :

At this level an overall controll of the operations by a Chief Engineer, through an officer of the rank of Executive engineer is envisaged. An AEE/DEE shall be a full time appointee, in this office, exclusively for handpump programme (installation and maintenance) in the state.

6.3 Operations :

These have been deliberately split into two heads, to segragate the routine programme operating practices and the soecific MIS practices.

6.3.1 General practices

Though there have been references made to the general operating practices, at various levels of the proposed organization in the previous section of this chapter; a catagoric account of these is given in Annexure no._8_/vol.2. The presentation is rather self expainatory and should not need any further elaboration.

6.3.2 MIS practices :

A catagoric presentation of the MIS practices (record keeping, evaluating, and reporting) is made in Annexure no._9_/vol.2. Salient features of the proposed system are,

a) The block clerk has to register only complaints on handpumps in the Kardex, during fixed hours in a day.

b) The block mechanic has to look for complaints every morning and decide his daily activities. At the end of the day he has to enter an account of his day's work in the Kardex.

c) Every time the mechanic seeks help of the mobile team/van, it would be his responsibility to fill, or get filled, the vehicle log-book (format no.4).

d) The second tray of the Kardex provide a ready mean of preparing weekly reports (tare the duplicate sheet from the second tray of the Kardex) for submission to the CSO.

e) From the weekly reports it is convinient for the JE/AE in-charge, at the CSO, to prepare the monthly reports Annexure no.5/vol.2; for submission to the district office.

f) The monthly report format can also be used for blockwise quarterly district-report to the higher offices (Circel/CE's offices).

g) The proposed Kardex formats provide a catagoric information storage and retrival facility, which is indexed/sorted, both chronologicaly and pumpwise; and should prove to be a strong operating tool for optimization of the handpump programme.

6.3 Follow-up activities :

On formal acceptance of the proposed system, a detailed system specifications, and operating manual for proper implementation and engineering of it will be prepared. Among other things the followup activities shall consist of,

- design of new Kardex cabinets,
- printing of new Kardex formats,
- preparation of operation manuals,
- preparation of training material for the system, and
- action plan for implementation of th system.

ANNEXURE - PART I

/016

ANNEXURE No.1/ Vol.1

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr.C.Ganapati, Asst.Adviser, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr.Kalyan Sundarum, BDO, Perundurai Union Panchayat.

Sr.no.	Question	Answer	Observations and remarks
1.00	NAME OF VILLAGE:	Aygoundampallayam	A Panchayat Union for a group of villages, under the Block Development officer. The Union Panchayats are under the administrative control of one of the number of divisions, in which the district is divided into.
2.00	NAME OF TALUK:	Perundurai	
3.00	NAME OF BLOCK / MANDAL:	Perundurai	
4.00	NAME OF DISTRICT:	Erode/Periyar	
5.00	NO.OF HANDPUMPS:	[6]	
6.00	VILLAGE LEVEL OPERATIONS :		
6.01	How many caretakers/village level mistris are in operation in your village :	[6]	Caretakers mostly appear to be preoccpied, but the Mandal members are quite active.
6.02	Is there anybody incharge at village level (Panchayat personnel) :	Yes	The complaints on individual pumps are accepted only from Mandal members.
6.03	If yes, who :	Panchayat President.	
6.04	Has any of the following is being supplied to the village administration for O & M of pumps ,		The preventive maitenance role of the caretakers is almost non-existant. It is generally beleived that the responsibility of repairs is of the Govt. The caretakers logsheets are normally lost or filled-in infrequently
	- grease	No	
	- minor spares	No	
	- tools	Yes (2 spanners)	
	- funds	No	
	- what is the source of such supplies (block/subdivision/district)	Asst.Executive Engr. Collectorate, Periyar	
6.05	Whom do the village caretaker/panchayat personnel report the need for major repairs and breakdowns :	B.D.O.of parent Union Panchayat.	Well printed complaint cards have been supplied by UNICEF, but complaints are lodged on any piece of paper.
6.06	Is there anybody who receives complaints from users and/or the caretakers (at the Panchayat office)	No	Mandal Members receive verbal complaints to be passed on to the pump Mandal secretary at the Mandal office.
6.07	If yes, who :	nil	Though preprinted complaint cards are made available to
6.08	How long does it take to	One day	

	reach a complaint from the users/local caretaker to the block office :		the members, the complaints are observed to be on plane paper in regional language.
6.09	Do you have any register or other means (at village level) of maintaining records of,	Yes (caretaker's log sheets)	The caretakers log sheets are mostly blank, and many a times lost. Caretakers log-sheets are not really cared for.
	- installations	do	
	- O & M functions	do	
6.10	Is there any preventive maintenance (tightening of bolts/nuts, greasing of chain etc.) and records thereof :	No	There does not appear to be regular preventive maintenance undertaken by the caretakers.
6.11	If every village is given a Kardex cabinet, where will you prefer it to be located (Panchayat office/village school/primary health centre/temple) :	pump density too low, & village level setup to operate the system does't exist	No definite setup available at the village level. This will have to be kept limited to the caretakers log-sheets.

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr.C.Ganapati, Asst.Adviser, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr.Kalyan Sundarum, BDO, Perundurai Union Panchayat.

7.00	SUB DIVISION LEVEL OPERATIONS	BIDAR	
7.01	No.of villages covered by Kardex system :	[48]	
7.02	No.of pumps covered by Kardex:	[230]	
7.03	No.of villages and pumps not yet covered by Kardex:	Nil / 131	
7.04	No.of handpump mistris in your block / Sub Division:	caretakers: 361 mechanic : 1	
7.05	Who provides the input data for the Kardex :	fitter / mechanic	
7.06	Who fills in the installation and maintenance data in the Kardex, how frequently:	JE/AE, of parent Div [monthly]	
7.07	Is every repair by the (caretaker/mistry/mobile team) entered in the Kardex :	mobile team and the Block level fitter.	
7.08	In the attached Kardex format indicate the columns, which are normally filled, with	All columns concerning below ground det ails are not filled in.	

	'/'mark, and with 'X',if not filled in regularly :	in.	
7.09	Are you informed of every new installation in your block, and are those entered in the Kardex :	Yes Entries are made in the master register.	
7.10	Who does the reviews and analyses on the KArdex information :	JE/AE in-charge of the parent division.	apparantly nobody seemed to be filling in the analyses cards in the Kardex.
7.11	Whom do you submitt the reports (attach format and quote it as an annexure no.), and at what periodicity, - Kardex based ..... - any other type	Weekly reports [sample copy at Annexure no.1] Yes Registers	
7.12	Is there any preventive maintenance undertaken and records thereof kept, in the Kardex by the block functionaries :	The caretakers are expected to do the preventive maintenance, but is observed to be non existant	
7.13	What is the mode of conveyance for the mistry (motor cycle/ Bicycle/ Bus) :	No conveyance is so far provided by the administration.	
7.14	How long does it take for the block office to respond to any compaints from the date of receipt, - longest ..... - Average ..... - shortest .....(days)	 one week three days one day	
7.15	Do you maitain any handpump spares store :	Yes	
7.16	Does the Kardex system help in handling your spares stores :	No, mostly the stock register is rellied upon.	
7.17	Do you submit indents for the spares and consumables to the district office (please attach sample proforma) :	Yes, sample indent form attached at Annexure 2	
7.18	Funding for the payments to staff & maintenance of pumps,	From general panchay at funds.	

	!- source of funding	DRD office	
	!- at what monthly rate and on !what basis (per pump or per !personnel of various !catagories)	Rs.350 per pump.yr. released in 2/3 annual installments.	
7.19	!Do you think that the present !Kardex formats are adequate !to fulfill your (management / !monitoring / reporting) !requirements :	only management requirement	
7.20	!Do you have any suggestions !for improvement of the system !(give details separately) :	Codification of and emphasis on spares utilised	

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr.C.Ganapati, Asst.Adviser, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr.Kalyan Sundarum, BDO, Perundurai Union Panchayat.

8.00	!DISTRICT LEVEL OPERATIONS :		
8.01	!No. of blocks :	SUB-DIV:3 / UNIONS:2	
8.02	!No.of villages :	[342]	
8.03	!No. of Kardex units/ no.of !pumps covered / not yet !covered) :	[4/TOTAL:2899]	
8.04	!No.of installation teams !(with vehicle)	Nil, done through contractors	
8.05	!No.of repair teams !(exclusively for repairs)	[3]	
8.06	!No.of persons per team with !their average salaries/year,		
	!- driver	[1]	
	!- mechanic.....	[1]	
	!- mesan	[0]	
	!- others	[electrician:1]	
8.07	!Average no .of pumps attended !to, by the reapir team per !day :	[4]	
8.08	!Repair operations of the !mobile teams (crises based / !route based) :	Crises based	
8.09	!Do you have a store for	no	

	!handpump spares :	!	!
8.10	!If yes, staffing pattern of !such stores (give an !organogram with respective !functions) :	! no applicable	!
8.11	!Bases for procurement of !spares ,	! no	!
	!- kardex records	! No	!
	!- indents received from !villages ...	!indents received fro!m BDOs and procurem-!nt is also done by !BDOs.	!
	!- anticipatory (based on !experience)		!
8.12	!Has the kardex system helped !in ,	!	!
	!- maintaining records of !installations and aging of !pumps	! Yes	!
	!- book keeping of the repairs !and replacements	! Yes	!
	!- planning of preventive !maintenance schedules.....	! No	!
	!- better anticipation and !timely procurement and supply !of spares	! No	!
	!- to fulfill the reporting !requirements to the higher !office	! Yes	!
8.13	!Do you receive indents for !installations and spares from !block (attach a speciman !format) :	! no	!
8.14	!Do you maintain a store (for !HP). If yes, attach a !description of the !organization and their !functions :	!No, the stores are !maintained by block/!Union Panchayat/BDO !offices.	!
8.15	!Expenditures on various !operations and maintenance !heads (give annual budget & !expenditure figures),	!Vehicle repairs are !done by dist.worksho!ps.	!s.
	!- salaries of repair teams ...	!Only fuel charges at!Rs.250 per veh.mnth.!	
	!- repair van's O & M....	!are made to BDOs, to!	
	!- cost of spares	!the dist.workshops.	!
	!- others	!	!
8.16	!Do you receive any formal	!New installations:6	!

	reports from block on installations and repairs. If yes, at what interval and in what format. How far Kardex been helpful to the blocks & you in this regard :	monthly transfers frm PHED. Repair reports:monthly, mostly based on complaint & master registers.	
8.17	Do you have any record keeping mechanism viz. registers,kardex or otherwise (please attach sample sheets) :	Stock Register -1 Master Register -1	
8.18	Who is overall incharge of operations at district level (give a complete organogram with functions and responsibilities) :	PA to dist Collecter /PA(PD), assisted by Asst.Ex.Engineer deputed from PHED.	
8.19	Is anybody from your office visiting the block office to analyse the Kardex data.If yes, who and at what periodicity :	No	
8.20	How do you rate the Kardex system for overall sucess of HP programme :	Desirable	

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr.C.Ganapati, Asst.Adviser, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr.M.R.Chandran, Asst.Director (WS), CRD, Tamil Nadu.

9.00	STATE HEADQUARTER LEVEL OPERATIONS :		
9.01	Name of state :	Tamil Nadu	
9.02	Number of districts :	[19]	
9.03	No.of villages where Hp schemes are in operation	villages: 12648 no.Mark IIs : 63729	
9.04	Annual budget for new installations :		
9.05	Annual budget for O & M of pumps :	Totla budget for HP O & M is Rs.350 per pump.year;	
9.06	Actual annual expenditure , - salaries of personnal employed on HP schemes ..... - on material procurement and	Actual expenditure is at Rs.450 per pump.year.	

	!installation/commissioning of HPs ..... !- on consumables and conveyance ..... !- on spares			
9.07	!Exclusive organization head !(and his support staff). !Attach organogram :	!Mannaged by an Asst. director with non technical cadre.		
9.08	!Do you receive requisitions for new installations and spares, !- at what interval .. !- from whom ..... !- in what format	!Receive only reports of installations, & O & M expenditures from Dist.collectoraes every month.		
9.09	!Do you procure any material and equipment for the district offices. If yes, who prepares the PRs and Tenders, who approves these, and how long does it take to fulfill a requirement under the established procedures.(please describe, if necessary attach additional sheets) :	No Only quality of spares is controlled by restricting supply by only approved agencies.		
9.10	!How long the Kardex system been in operation in your state and how far it has been useful to you in following aspects,	since 1987		
	!- procurement of spares !(essential/useful/not useful)	useful		
	!- distribution of spares !(essential/useful/not useful)	useful		
	!- reporting and monitoring needs (essential/useful/ not useful)	useful		
	!- personnel and administration !(essential/useful/not useful)	none		
9.12	!Do you receive any monitoring reports from your district functionaries, !If yes, !- at what interval	Yes fortnightly		

	!- in what format	Annexure 3	
9.13	!What, in your opinion, is the best way of handpump maintenance, !- totally village based with adequate supply of spares !..... !- village based with backup services from block ..... !- block based (mobile mistris) with caretakers in villages..... !- totally block based ..... !- district based (mobile teams) ..... !- other,if any (please describe).....	!To start with a two tiered system, with a HP fitter at every Panchayat Union. Ultimately to be handed over to the village level setups	
9.14	!Your suggestions regarding the Kardex system, !- location (village/block/district) !- reviews (monthly/bimonthly/quarterly) !- format (attach sample and quote as ann.no.)	!Vill.-->Block: daily !Block-->Div.: weekly !Div.->Dist:fortnight !Dist.-->State: quarterly.	There is a need for deputing one technical officer of the rank of Executive engineer from the PHED cadre.

ANNEXURE No.2/ Vol.1

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr C.Ganapati, Asst.Adviser, GOI / A.C. Mudgerikar.
RESPONDENT ..... : Mr.Vishvanath Sastry, DEE, Sangareddy ZP division.

Sr.no.	Question	Answer	Observations and remarks
1.00	NAME OF VILLAGE:	Ramchandrapuram	A Pachayat Union for a group of villages, under the Block Development Officer. The Block/Union Panchayat is under the administrative control of a Division office.
2.00	NAME OF TALUK:	do	
3.00	NAME OF PANCHAYAT UNION :	Sangareddy	
4.00	NAME OF DISTRICT:	Medak	
5.00	NO.OF HANDPUMPS:	[5]	
6.00	VILLAGE LEVEL OPERATIONS :		
6.01	How many caretakers/village level mistris are in operation in your village :	[5]	Caretakers mostly appear to be preoccpied, but the general public is quite active.
6.02	Is there anybody incharge at village level (Panchayat personnel) :	No	The complaints on individual pumps are lodged with the Mandal offices and recorded in complaint registers.
6.03	If yes, who :	[-]	
6.04	Has any of the following is being supplied to the village administration for O & M of pumps ,		The preventive maitenance role of the caretakers is almost non-existant. It is generally beleived that the responsibility of repairs is of the Govt. The caretakers logsheets are normally lost or filled-in infrequently
	- grease	Yes	
	- minor spares	Nuts/bolts	
	- tools	Yes (2 spanners)	
	- funds	No	
	- what is the source of such supplies (block/subdivision/district)	Sub-Division, Zilla Parishad, Sangareddy/Medak.	
6.05	Whom do the village caretaker/panchayat personnel report the need for major repairs and breakdowns :	DEE/MDO, who passes it on to the mandal mechanic for compliance.	Well printed complaint cards have been supplied by UNICEF, but complaints are lodged on any piece of paper.
6.06	Is there anybody who receives complaints from users and/or the caretakers (at the Panchayat office)	No	
6.07	If yes, who :	nil	Though preprinted complaint cards are made available to the members, the complaints
6.08	How long does it take to reach a complaint from the	Two days	

	!users/local caretaker to the block office :		!are observed to be on plane paper in regional language.
6.09	!Do you have any register or other means (at village level) of maintaining records of,	Yes (caretaker's log sheets)	!The caretakers log sheets are mostly blank, and many a times lost. Caretakers log-sheets are not really cared for.
	!- installations	Yes	
	!- O & M functions	Yes	
6.10	!Is there any preventive maintenance (tightening of bolts/nuts, greasing of chain etc.) and records thereof :	!Yes, but no records are maintained.	!There does not appear to be regular preventive maintenance undertaken by the caretakers.
6.11	!If every village is given a Kardex cabinet, where will you prefer it to be located (Panchayat office/village school/primary health centre/temple) :	!pump density too low, & village level setup to operate the system does't exist	!No definite setup available at the village level. This will have to be kept limited to the caretakers log-sheets.

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr C.Ganapati, Asst.Adviser, GOI / A.C. Mudgerikar.
RESPONDENT ..... : Mr.Narsing Rao, AEE, Circle office, Hydrabad.

7.00	SUB DIVISION LEVEL OPERATIONS	Ramchandrapuram	Mandal Panchayat
7.01	!No.of villages covered by Kardex system :	[7]	!Entire operation at this level is under the administrative con-
7.02	!No.of pumps covered by Kardex:	[55]	!rol of the Mandal President &
7.03	!No.of villages and pumps not yet covered by Kardex:	4 / 3 partly	!Mandal Development Officer. An AE/JE is in charge of oper-
7.04	!No.of handpump mistris in your block / Sub Division:	Mandal : 1	!ations at Mandal level. He is attached to a Sub-division.
7.05	!Who provides the input data for the Kardex :	Mandal mechanic & mobile team	!Mandal mechanics have to hea-
7.06	!Who fills in the installation and maintenance data in the Kardex, how frequently:	do [monthly]	!onal mobile teams. He does'nt have any conveyance to enable him to quickly attend repair calls.
7.07	!Is every repair by the (caretaker/mistry/mobile team) entered in the Kardex :	presently none	
7.08	!In the attached Kardex format indicate the columns, which are normally filled, with	!All columns concerni- ing below ground det- tails are mostly	! The complaint registers and stock registers are main tools for operating purposes.

	'/'mark, and with 'X',if not filled in regularly :	carried forward.	The data is then transferred to the Kardex formats.
7.09	Are you informed of every new installation in your block, and are these entered in the Kardex :	Yes Entries are made in the master registers Exported to Kardex	do
7.10	Who does the reviews and analyses on the Kardex information :	Presently nobody,but the parent sub-division is responsible	So far, in no case the analyses part in the Kardex is completed.
7.11	Whom do you submitt the reports (attach format and quote it as an annexure no.), and at what periodicity, - Kardex based ..... - any other type	AEs of Sub-divisions submitts monthly reports to the Ex.Engr at Division offices. partly Complaint register	
7.12	Is there any preventive maintenance undertaken and records thereof kept, in the Kardex by the block functionaries :	The caretakers are doing the preventive maintenance, but no records of it are maintained.	
7.13	What is the mode of conveyance for the mistry (motor cycle/ Bicycle/ Bus) :	No conveyance is so far provided by the administration.	
7.14	How long does it take for the block office to respond to any compaints from the date of receipt, - longest ..... - Average ..... - shortest .....(days)	The mobile teams are with EEs; i.e. Division offices. one week three days one day	They are aiming to have one sion offices which has so far not been possible.
7.15	Do you maitain any handpump spares store :	No, but a few spares are kept with mech.	Mostly the spares to the Mandal mechanic is ad-hoc basis.
7.16	Does the Kardex system help in handling your spares stores :	No, currently no established procedure is followed.	Mostly the stock registers & the indents received from the Mandal offices are relied upon
7.17	Do you submit indents for the spares and consumables to the district office (please attach sample proforma) :	Yes, sample indents to parent division office. [Annexure no.]	Well printed indent books are provided to all Mandal offices
7.18	Funding for the payments to staff & maintenance of pumps,	Funds are handled by Ex.Engr.at Division	For all engineering operations including minor irrigation wo-

	!- source of funding	Zilla Parishad.	!rks,the overall administration!
	!- at what monthly rate and on !what basis (per pump or per !personnel of various !catagories)	Rs.365 per pump.yr.	!of works & finances are handl-!ed by the Ex.Engr.of the para-!nt division.
7.10	!Do you think that the present !Kardex formats are adequate !to fulfill your (management / !monitoring / reporting) !requirements :	only management requirement	!Inclusion of all positive !features of the registers bei-!ng maintained be included in !the Kardex formats for making !it more useful for routine op-!erations.
7.20	!Do you have any suggestions !for improvement of the system !(give details separately) :	Emphasis on spares !use & proper train-!ing of mechanics.	

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr C.Ganapati, Asst.Adviser, GOI / A.C. Mudgerikar.
RESPONDENT ..... : Mr.Vishvanath Sastry,DEE, Divisional stores;& MDO.

8.00	!DISTRICT LEVEL OPERATIONS :	Sangareddy Divn.	
8.01	!No. of blocks :	!sub-div:5/Mandals:45	!Their is no exclusive setup
8.02	!No.of villages :	[1257]	!for HP programme at this level!
8.03	!No. of Kardex units/ no.of !pumps covered / not yet !covered) :	[11/2778/3397]	!To fulfill the norm of one ve-!hicle for 500 pumps, they will!need 12 mobile teams.
8.04	!No.of installation teams !(with vehicle)	!only one, mostly !done by contractors	! At present rate of provision !every mobile team has to atte-!
8.05	!No.of repair teams !(exclusively for repairs)	[4]	!nd to almost 1500 pumps, and !even if a team manage to atte-!
8.06	!No.of persons per team with !their average salaries/year, !- driver ..... !- mechanic..... !- mesan ..... !- others	[1] [1] [1] [helper:1]	!nd to 5 pumps every day, it !will end up attending to each !pump once in a year.
8.07	!Average no .of pumps attended !to, by the reapir team per !day :	[4]	
8.08	!Repair operations of the !mobile teams (crises based / !route based) :	Crises based	
8.09	!Do you have a store for	!Yes, total store are	!No exclusive store for HPs.

	handpump spares :	controlled by a DEE	is provided, and a Kardex
8.10	If yes, staffing pattern of such stores (give an organogram with respective functions) :	assisted by an AE/JE 1-work inspector 2-helpers 1- watchman	cabinet with a general design for a spares stores would be quite helpfull.
8.11	Bases for procurement of spares , - kardex records ..... - indents received from villages ... - anticipatory (based on experience)	No Indents received frm DEEs of various sub-divisions	
8.12	Has the kardex system helped in , - maintaining records of installations and aging of pumps .... - book keeping of the repairs and replacements ..... - planning of preventive maintenance schedules..... - better anticipation and timely procurement and supply of spares ..... - to fulfill the reporting requirements to the higher office	Yes Yes No No No	Probably the Kardex forms need to be modified, with more emphasis on the spares consumed and provision for recording monthly summaries of spares consumed will help in making the Kardex more useful for working requirements.
8.13	Do you receive indents for installations and spares from block (attach a speciman format) :	Yes, Annexure no.	
8.14	Do you maintain a store (for HP). If yes, attach a description of the organization and their functions :	Yes, already answered under 8.00	
8.15	Expenditures on various operations and maintenance heads (give annual budget & expenditure figures), - salaries of repair teams ... - repair van's O & M.... - cost of spares ..... - others	Budget : Rs.365 per pump yr. Actual : Rs 400 per pump year.	
8.16	Do you receive any formal	New installations:	

	reports from block on installations and repairs. If yes, at what interval and in what format. How far Kardex been helpful to the blocks & you in this regard :	monthly reports. Reports on repairs: monthly reports However the Kardex has not been used for this.(Ann.no.___	
8.17	Do you have any record keeping mechanism viz. registers,kardex or otherwise (please attach sample sheets) :	Master Register - 1 Stock register - 1	
8.18	Who is overall incharge of operations at district level (give a complete organogram with functions and responsibilities) :	Executive Engineer, Zilla Parishad.	
8.19	Is anybody from your office visiting the block office to analyse the Kardex data.If yes, who and at what periodicity :	No	
8.20	How do you rate the Kardex system for overall sucess of HP programme :	Very useful	

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr C.Ganapati, Asst.Adviser, GOI / A.C. Mudgerikar.
RESPONDENT ..... : Mr.C.N.Suresh, Dy.CE, Panchayati Raj, Hydrabad.

9.00	STATE HEADQUARTER LEVEL OPERATIONS :		
9.01	Name of state :	Andhra Pradesh	
9.02	Number of districts :	[22]	
9.03	No.of villages where Hp schemes are in operation	villages: No.markII :	
9.04	Annual budget for new installations :		
9.05	Annual budget for O & M of pumps :	Total budget for HP O & M is Rs.360 per pump.year;	
9.06	Actual annual expenditure , - salaries of personnel employed on HP schemes ..... - on material procurement and	Actual expenditure spare : 50 % establishment: 50 %	

	!installation/commissioning of !HPs ..... !- on consumables and !conveyance ..... !- on spares	! and fuel charges.		
9.07	!Exclusive organization head !(and his support staff). !Attach organogram :	! No, Divisional EEs !are incharege of all !operations.		
9.08	!Do you receive requisitions !for new installations and !spares, !- at what interval .. !- from whom ..... !- in what format	!No spares are bought !but new HP purchases !are cleared in SE's !conference every !month.		
9.09	!Do you procure any material !and equipment for the !district offices. If yes, who !prepares the PRs and Tenders, !who approves these, and how !long does it take to fulfill !a requirement under the !established !procedures.(please descibe, !if necessary attach !additional sheets) :	! No !Only quality is !controlled by restr- !icting supplies by !only approved agenc- !ies.		
9.10	!How long the Kardex system !been in operation in your !state and how far it has been !useful to you in following !aspects, !- procurement of spares !(essential/useful/not useful) !- distribution of spares !(essential/useful/not useful) !- reporting and monitoring !needs (essential/useful/ not !useful) !- personnel and !administration !(essential/useful/not useful)	! more than a year ! ! So far, it has'nt !been very useful;but !its potential is !realised & state gov !intends to use it. ! not applicable		
9.12	!Do you receive any monitoring !reports from your district !functionaries, !If yes, !- at what interval	!Monthly reports from !each district. ! [Ann.no._____] ! ! fortnightly		

	!- in what format		
9.13	!What, in your opinion, is the best way of handpump maintenance, !- totally village based with adequate supply of spares !..... !- village based with backup services from block ..... !- block based (mobile mistris) with caretakers in villages..... !- totally block based ..... !- district based (mobile teams) ..... !- other,if any (please describe).....	!To start with a two tiered system, with mobile teams at all sub-divisions. Ultimately to be handed over to the village level setups	
9.14	!Your suggestions regarding the Kardex system, !- location (village/block/district) !- reviews (monthly/bimonthly/quarterly) !- format (attach sample and quote as ann.no.)	Sub-divisions quarterly: lean per. monthly: summer existing format : OK	

Mysore 70-73

	!handpump spares :	!SDO, with 1 JE,1 St-!
8.10	!If yes, staffing pattern of !such stores (give an !organogram with respective !functions) :	!orekeeper, 2 watch- !men.
8.11	!Bases for procurement of !spares ,	
	!- kardex records	no
	!- indents received from !villages ...	yes
	!- anticipatory (based on !experience)	yes
8.12	!Has the kardex system helped !in ,	
	!- maintaining records of !installations and aging of !pumps	yes
	!- book keeping of the repairs !and replacements	yes
	!- planning of preventive !maintenance schedules.....	no
	!- better anticipation and !timely procurement and supply !of spares	yes
	!- to fulfill the reporting !requirements to the higher !office	yes
8.13	!Do you receive indents for !installations and spares from !block (attach a specimen !format) :	!Inst.: Annual requi-! !ments to CE. !Spares: quarterly re! !quiremnts to SEs.
8.14	!Do you maintain a store (for !HP). If yes, attach a !description of the !organization and their !functions :	see 8.09 to 8.11
8.15	!Expenditures on various !operations and maintenance !heads (give annual budget & !expenditure figures),	
	!- salaries of repair teams ...	Govt.scales
	!- repair van's O & M...	[-]
	!- cost of spares	!Sanctions by SE and
	!- others	!payments by EEs.
8.16	!Do you receive any formal	! Reports from sub-

	!reports from block on !installations and repairs. If !yes, at what interval and in !what format. How far Kardex !been helpful to the blocks & !you in this regard :	!divisions every week! Annexure.1	
8.17	!Do you have any record !keeping mechanism viz. !registers,kardex or otherwise !(please attach sample sheets) !:	!File copies of repo-!rts from sub-div., &! !stock registers at !the division stores.!	
8.18	!Who is overall incharge of !operations at district level !(give a complete organogram !with functions and !responsibilities) :	! EE:1/SDOs:3/JEs:12 !& support staff (no !exclusive setup for !HP programme.	
8.19	!Is anybody from your office !visiting the block office to !analyse the Kardex data.If !yes, who and at what !periodicity :	!EEs undertake routin!field inspections.	
8.20	!How do you rate the Kardex !system for overall sucess of !HP programme :	Useful	

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr.C.Ganapathi, Asst.Adviser, DRD / A.C.Mudgerikar, Consultant (MIS)
RESPONDENT ..... :Mr.Chandran,Asst.CE.,PHED,Bhuvaneswar.

9.00	!STATE HEADQUARTER LEVEL !OPERATIONS :		
9.01	!Name of state :	Orissa	
9.02	!Number of districts :	[13]	
9.03	!No.of villages where Hp !schemes are in operation	villages : 36858 handpumps : 91756	
9.04	!Annual budget for new !installations :	!Rs.(1746+1544+3390)L !=688 million (88-89)!	
9.05	!Annual budget for O & M of !pumps :	!Rs.(20.99+27.15) m. !HP & PSS .	
9.06	!Actual annual expenditure , !- salaries of personnel !employed on HP schemes ..... !- on material procurement and	! Actual expenditure !on maintenance of HP! !for 87-88, is (109.5!	

	installation/commissioning of HPs ..... - on consumables and conveyance ..... - on spares	+343.4) million for 79302 handpump pop.	
9.07	Exclusive organization head (and his support staff). Attach organogram :	Mon. cell: 1 SE/1 EE 2 AEs/1 JE/1 St.Off. and support staff.	
9.08	Do you receive requisitions for new installations and spares, - at what interval .. - from whom ..... - in what format	CE finalises rates/ suppliers and also does the procurement of HPs on the annual plans prepared by EE, TW planning.	
9.09	Do you procure any material and equipment for the district offices. If yes, who prepares the PRs and Tenders, who approves these, and how long does it take to fulfill a requirement under the established procedures.(please descibe, if necessary attach additional sheets) :	Annual plans prepared by EE, tubewell planning from state planning dept. Under instructions from CE, the EE prepares the PR & tende documents.	
9.10	How long the Kardex system been in operation in your state and how far it has been useful to you in following aspects, - procurement of spares (essential/useful/not useful) - distribution of spares (essential/useful/not useful) - reporting and monitoring needs (essential/useful/ not useful) - personnal and administration (essential/useful/not useful)	One year on limited basis. So far there is no impact of the Kardex system is felt at the state office. Unless the Kardex formats give a ready tool for routine reporting needs and spares accounting,it will not become an essential feature of the HP programme.	
9.12	Do you receive any monitoring reports from your district functionaries, If yes, - at what interval	Yes weekly & monthly	

	!- in what format	Annexure.1		
9.13	!What, in your opinion, is the !best way of handpump !maintenance, !- totally village based with !adequate supply of spares !..... !- village based with backup !services from block ..... !- block based (mobile !mistris) with caretakers in !villages..... !- totally block based ..... !- district based (mobile !teams) ..... !- other,if any (please !describe).....			
9.14	!Your suggestions regarding !the Kardex system, !- location !(village/block/district) !- reviews !(monthly/bimonthly/quarterly) !- format (attach sample and !quote as ann.no.)			

ANNEXURE No.4/ Vol.1

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr. Ganapati, Asst.Adviser, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr.Sayyad Vajid Ali / Mr. Vittal Rao (JEs,Zilla Parishad,Bidar)

Sr.no.	Question	Answer	Observations and remarks
1.00	NAME OF VILLAGE:	Goornalli	A Mandal Pachayat for a group of villages, under the Mandal secretary (Govt.servant). The Mandal Panchayat consists of an elected body of Mandal members, headed by Mandal President.The funds for wolfar works are transferred to Panchayat and the services by EE, ZP are billable to them
2.00	NAME OF TALUK:	Bidar	
3.00	NAME OF BLOCK / MANDAL:	Haladkori	
4.00	NAME OF DISTRICT:	Bidar	
5.00	NO.OF HANDPUMPS:	[5]	
6.00	VILLAGE LEVEL OPERATIONS :		
6.01	How many caretakers/village level mistris are in operation in your village :	[5]	Caretakers mostly appear to be preoccpied, but the Mandal members are quite active.
6.02	Is there anybody incharge at village level (Panchayat personnel) :	Yes	The complaints on individual pumps are accepted only from Mandal members.
6.03	If yes, who :	Mandal Member	
6.04	Has any of the following is being supplied to the village administration for O & M of pumps ,		The preventive maitenance role of the caretakers is almost non-existant. It is generally beleived that
	- grease	No	the responsibility of repairs
	- minor spares	No	is of the Govt.
	- tools	Yes (2 spanners)	The caretakers logsheets are
	- funds	No	normally lost or filled-in
	- what is the source of such supplies (block/subdivision/district)	Executive Engr. Zilla Parishad, Bidar	infrequently
6.05	Whom do the village caretaker/panchayat personnel report the need for major repairs and breakdowns :	Sub Divisional Officer (Asst. Ex.Engineers)	Well printed complaint cards have been supplied by UNICEF, but complaints are lodged on any piece of paper.
6.06	Is there anybody who receives complaints from users and/or the caretakers (at the Panchayat office)	Yes	Mandal Members receive verbal complaints to be passed on to the pump Mandal secretary at the Mandal office.
6.07	If yes, who :	Mandal member	Though preprinted complaint
6.08	How long does it take to	One day	cards are made available to

	reach a complaint from the users/local caretaker to the block office :		the members, the complaints are observed to be on plane paper in regional language.
6.09	Do you have any register or other means (at village level) of maintaining records of,	Yes (caretaker's log sheets)	The caretakers log sheets are mostly blank, and many a times lost. Caretakers log-sheets are not really cared for.
	- installations	do	
	- O & M functions	do	
6.10	Is there any preventive maintenance (tightening of bolts/nuts, greasing of chain etc.) and records thereof :	No	There does not appear to be regular preventive maintenance undertaken by the caretakers.
6.11	If every village is given a Kardex cabinet, where will you prefer it to be located (Panchayat office/village school/primary health centre/temple) :	pump density too low, & village level setup to operate the system does't exist	No definite setup available at the village level. This will have to be kept limited to the caretakers log-sheets.

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr. Ganapati, Asst.Advisor, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr.Sayyad Vajeed Ali / Vittal Rao, JEs,Zilla Parishad, Bidar

7.00	SUB DIVISION LEVEL OPERATIONS	BIDAR	
7.01	No.of villages covered by Kardex system :	[134]	
7.02	No.of pumps covered by Kardex:	[520]	
7.03	No.of villages and pumps not yet covered by Kardex:	Nil / 79	
7.04	No.of handpump mistris in your block / Sub Division:	mechanics-2 helpers-2	
7.05	Who provides the input data for the Kardex :	mechanic	
7.06	Who fills in the installation and maintenance data in the Kardex, how frequently:	Junior Engr. [weekly]	
7.07	Is every repair by the (caretaker/mistry/mobile team) entered in the Kardex :	mobile team No mistries employed	
7.08	In the attached Kardex format indicate the columns, which are normally filled, with	All columns are regularly filled in	

	'/'mark, and with 'X',if not filled in regularly :		
7.09	Are you informed of every new installation in your block, and are these entered in the Kardex :	Yes	
7.10	Who does the reviews and analyses on the KArdex information :	JE/AE in-charge of HP maintenance	
7.11	Whom do you submitt the reports (attach format and quote it as an annexure no.), and at what periodicity, - Kardex based ..... - any other type	Weekly reports [sample copy at Annexure no.1] Yes Registers	
7.12	Is there any preventive maintenance undertaken and records thereof kept, in the Kardex by the block functionaries :	The caretakers are expected to do the preventive maintenance, but is observed to be non existant	
7.13	What is the mode of conveyance for the mistry (motor cycle/ Bicycle/ Bus) :	Every subdivion has a mobile van	
7.14	How long does it take for the block office to respond to any compaints from the date of receipt, - longest ..... - Average ..... - shortest .....(days)	 two weeks two days one day	
7.15	Do you maitain any handpump spares store :	Yes	
7.16	Does the Kardex system help in handling your spares stores :	Yes	
7.17	Do you submit indents for the spares and consumables to the district office (please attach sample proforma) :	Yes, sample indent form attached at Annexure 2	
7.18	Funding for the payments to staff & maintenance of pumps,	Govt.funds channelled through ZP to the	

	!- source of funding	! Mandal Panchayats	
	!- at what monthly rate and on !what basis (per pump or per !personnel of various !catagories)	!Rs.450 per pump year	
7.10	!Do you think that the present !Kardex formats are adequate !to fulfill your (management / !monitoring / reporting) !requirements :	only management requirement	
7.20	!Do you have any suggestions !for improvement of the system !(give details separately) :	Codification of and emphasis on spares utilised	

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr. Ganapati, Asst.Adviser, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr.Siddappa/Mr.Panduranga (AEE,JE of ZP,Bidar)

8.00	!DISTRICT LEVEL OPERATIONS :		
8.01	!No. of blocks :	!SUB-DIV:5/MANDAL:74	
8.02	!No.of villages :	[598]	
8.03	!No. of Kardex units/ no.of !pumps covered / not yet !covered) :	[4/TOTAL:2899]	
8.04	!No.of installation teams !(with vehicle)	Nil, done through contractors	
8.05	!No.of repair teams !(exclusively for repairs)	[4]	
8.06	!No.of persons per team with !their average salaries/year,		
	!- driver	[1]	
	!- mechanic.....	[1]	
	!- mesan	[0]	
	!- others	[helper:1]	
8.07	!Average no .of pumps attended !to, by the respir team per !day :	[3]	
8.08	!Repair operations of the !mobile teams (crises based / !route based) :	Crises based	
8.09	!Do you have a store for	Yes	

	handpump spares :		
8.10	If yes, staffing pattern of such stores (give an organogram with respective functions) :	only one stores superintendant	
8.11	Bases for procurement of spares ,		
	- kardex records	No	
	- indents received from villages ...	Yes	
	- anticipatory (based on experience)	Annual estimates by AEEs to EE	
8.12	Has the kardex system helped in ,		
	- maintaining records of installations and aging of pumps	Yes	
	- book keeping of the repairs and replacements	Yes	
	- planning of preventive maintenance schedules.....	No	
	- better anticipation and timely procurement and supply of spares	No	
	- to fulfill the reporting requirements to the higher office	Yes	
8.13	Do you receive indents for installations and spares from block (attach a speciman format) :	From Sub Divisions Annexure 2	
8.14	Do you maintain a store (for HP). If yes, attach a description of the organization and their functions :	Yes	
8.15	Expenditures on various operations and maintenance heads (give annual budget & expenditure figures),		
	- salaries of repair teams ...		
	- repair van's O & M....		
	- cost of spares		
	- others		
8.16	Do you receive any formal	Sub Divisions submit	

	reports from block on installations and repairs. If yes, at what interval and in what format. How far Kardex been helpful to the blocks & you in this regard :	weekly reports to EE	
8.17	Do you have any record keeping mechanism viz. registers,kardex or otherwise (please attach sample sheets) :	Stock Register -1 Master Register -1	
8.18	Who is overall incharge of operations at district level (give a complete organogram with functions and responsibilities) :	Executive engineer, in-charge for all engineering projects of Zilla Parishad	
8.19	Is anybody from your office visiting the block office to analyse the Kardex data.If yes, who and at what periodicity :	No	
8.20	How do you rate the Kardex system for overall sucess of HP programme :	Desirable	

QUESTIONAIRE FOR EVALUATION OF KARDEX BASED HANDPUMP PROGRAMDATE OF INTERVIEW :
INTERVIEWER ..... : Mr. Ganapati, Asst.Adviser, GOI; and A.C.Mudgerikar
RESPONDENT ..... : Mr. Iswaran, Dy.Chief Engineer, PHED, Rural water supply.

9.00	STATE HEADQUARTER LEVEL OPERATIONS :		
9.01	Name of state :	Karnataka	
9.02	Number of districts :	[20]	
9.03	No.of villages where Hp schemes are in operation	villages: 27208 habitations: 107000	
9.04	Annual budget for new installations :		
9.05	Annual budget for O & M of pumps :	Rs.230 lakhs. for 88|89	
9.06	Actual annual expenditure , - salaries of personnel employed on HP schemes ..... - on material procurement and	Rs.100 per pump.year Rs.140 per pump.year	

	!installation/commissioning of HPs ..... !- on consumables and conveyance ..... !- on spares	!for spares ! !Rs 140 per pump.year for O & M of pumps	
9.07	!Exclusive organization head !(and his support staff). !Attach organogram :	!No exclusive head, !under the control of !Dy.C.E.monotoring	
9.08	!Do you receive requisitions !for new installations and !spares, !- at what interval .. !- from whom ..... !- in what format	!Spares are procured !at district level !New installations: ! Annual ! from ZPs ! Annexure 3	
9.09	!Do you procure any material !and equipment for the !district offices. If yes, who !prepares the PRs and Tenders, !who approves these, and how !long does it take to fulfill !a requirement under the !established !procedures.(please descibe, !if necessary attach !additional sheets) :	!No.Half yearly requ-!rements submitted by!ZPs, and decided by !High powered commit-!tee.Requirements are!fulfilled in 2 mnths!by direct orders on !approved suppliers, !with quality control!by Crown agents.	
9.10	!How long the Kardex system !been in operation in your !state and how far it has been !useful to you in following !aspects, !- procurement of spares !(essential/useful/not useful) !- distribution of spares !(essential/useful/not useful) !- reporting and monitoring !needs (essential/useful/ not !useful) !- personnel and !administration !(essential/useful/not useful)	!For more than a yr. useful not applicable useful not useful	
9.12	!Do you receive any monitoring !reports from your district !functionaries, !If yes, !- at what interval	Yes monthly	

	!- in what format	Annexure 3	
9.13	!What, in your opinion, is the !best way of handpump !maintenance, !- totally village based with !adequate supply of spares !..... !- village based with backup !services from block ..... !- block based (mobile !mistris) with caretakers in !villages..... !- totally block based ..... !- district based (mobile !teams) ..... !- other,if any (please !describe).....	!To start with a two !tiered system, with !a mobile team at ev-!ry sub-division. !Ultimately to be !handed over to the !village level setups!	
9.14	!Your suggestions regarding !the Kardex system, !- location !(village/block/district) !- reviews !(monthly/bimonthly/quarterly) !- format (attach sample and !quote as ann.no.)	!Sub-divios / block !monthly !Annexure 2	

ANNEXURE - PART II

97

ANNEXURE NO.1/VOL.2

PROPOSED SYSTEM FORMAT NO.1 ITEM CODE : STORES : DISTRICT/DIVISION/SUB-DIVISION/BLOCK
STOCK REGISTER
ITEM DESCRIPTION : _____. |XX|XX|

SR. NO.	DATE OF REC/ISSUE	SOURCE OF SUPPLY / CONSUMPTION.	SPAREPART TRANSACTIONS			COST OF SPARES IN Rs.	INDENT NUMBER.	DELIVERY CHALAN + NUMBER.	COST OF RECONDITIONING	COST OF RESALE	SIGNATURE OF STORES SUPNDT.
			RECEIVED	ISSUED	BALANCE						

ANNEXURE NO.2/VOL.2

PROPOSED SYSTEM FORMAT NO.2 (Time sorted information in Top Trays of the Kardex cabinet).
BLOCK NAME :________(CODE :__). DISTRICT :__________(CODE :___).
REPAIR TEAM OR REPAIR MECHANICS DAILY REGISTER >

DATES OF: DATE OF VISIT & REPAIR. DD	MM	YY	DATE OF COMPLA-NT. DD	MM	YY	PUMP CODE: DISTRICT	BLOCK	VILLAGE	PUMP NO.	A-caretakor(p/a) A	B-platform(c/d) B	C-chain(g/n) C	PARTS, REPLACED (1) / PREVENTIVE MAINTENANCE (0): Telescopic stand Assy 01	Hex. bolt M12 02/02	Hex. bolt M12 02/03	Front cover 02/04	Hex. Nut M12 03/02	Hex. Nyloc Nut M12 03/04	Hex. bolt 03/05	Bearing 03/06	Handle Axle 03/07	Chain link with axle 03/08	Handle 03/13	Water Tank Assy 04	Rubber seat (check valve) 05/04	Seat Retainer 05/05	Cylinder 05/07	Pump bucket 05/10	Sealing (upper valve) 05/12	Sealing ring 05/15	Pipe 06/01	Pipe joint 06/02	Connecting rod 06/03	UNLISTED PARTS Specify codes and quantities. Use fresh line for more than 2 parts. CODE AN	PN	QTY	CODE AN	PN	QTY	1-broken. 2-tastes. 3-yield low. 4-handle hard. Remark no.	OFFICIAL SIGNS. sig
10	01	89	12	01	89	012	45	0078	001	p	c	n				1					1																				
10	01	89	12	01	89	012	45	0078	002	p	c	g				1					1																				
10	01	89	12	01	89	012	45	0078	003	a	c	g				1					1																				
NUMBER OF COM. (______)			NUMBER OF REP. (______)			PERIOD IN (M) (______)			No.of (0)s ..*																													REPAIR PERFORMANCE REMARK [E/G/F/B]	
									No.of (1)s ..**																														

NOTES : 1)Enter, (1) for a part replaced; (0) for preventive maintenance. 3) * - Count no.of 0s in the column. 4) ** - count no.of 1s in the column. 5)Do not enter in columns, for parts, for which no repairs or replacements are done. 6)Ready accounting facility is made in the format for commonly replaced parts only. 6) #- Weekly and monthly checks by AE/JE/BDOs, and DE/AEEs respectively.
7) $- E: for excellent; G: for good; F: for fair; B: for bad. 8) Evaluation parameter- EP(at the end of every page)
EP = Number of complaints(repairs)/period in months; If EP=>80 : excellent;
If 80>EP=>70 : good;
If 70>EP=>60 : fair;
If EP<60 : bad.

ANNEXURE NO.3/VOL.2

PROPOSED SYSTEM FORMAT NO.3 (Pump sorted information in lower trays of the Kardex cabinet.)

DISTRICT :____________(XXX). BLOCK :____________(XX). VILLAGE :____________(XXX). PUMP LOCATION :____________________.

PUMP CODE |XXX|XX|XXX|XX| DATE OF INSTALLATION : __/__/___.

COMPLAINT DATE	COMPLAINT MONTH	COMPLAINT YEAR	REPAIR DATE	REPAIR MONTH	REPAIR YEAR	WATER LEVEL IN (M)	CYLINDER LEVEL IN (M)	A (A-caretaker (p/a))	B (B-platform (c/d))	C (C-chain (g/n))	01 (Enter,(1) for parts replaced / (0) for preventive maintenance)	02 02	02 03	02 04	03 02	03 04	03 05	03 06	03 07	03 08	03 13	04	05 04	05 05	05 07	05 10	05 12	05 15	06 01	06 02	06 03	CODE AN (Unlisted parts. Specify partnumers & quantities. Use next line for more than 2 parts.)	CODE PN	QTY	CODE AN	CODE PN	QTY	Remark no. (1-broken. 2-tastes. 3-yield low. 4-handle hard.)	Sig
10	01	88	12	01	88	45.5	60.0	a	d	n			0	1				0	1																				
31	06	88	05	07	88	58.7	60.0	a	c	g				1				1	0																				
07	12	88	12	12	88	45.5	60.0	a	d	n			1	0				1	1																				
NUMBER OF COM. (______)			NUMBER OF REP. (______)			PERIOD IN (M) (_____)	NO.of (0)s																															PUMP PERFORMANCE : [E/G/F/B]	
							NO.of (1)s																																

NOTES : 1)Enter, (1) for a part replaced; (0) for preventive maintenance. 3) * - Count no.of 0s in the column. 4) ** - count no.of 1s in the column. 5)Do not enter in columns, for parts, for which no repairs or replacements are done. 5)Ready accounting acility is made in the format for commonly replaced parts only. 7) $- E: for excellent; G: for good; F: for fair; B: for bad. 8) Evaluation parameter(to reviewed every year)

No.of complaints(visits)/year.= EP. If EP<=1: excellent.

If EP<=2: good.

If EP<=3: fair.

If more : poor.

PROPOSED SYSTEM FORMAT NO.4 (REPAIR MOBILE VAN / MECHANICS LOG SHEET)

BLOCK NAME :________(CODE :__). DISTRICT :__________(CODE :___). VAN REGISTRATION NO.:________________.

NAME OF BLOCK MECHANIC :_________________________.

DATE & TIME OF VISIT. Km READINGS (DD MM YY TIME / CUMM KM.READ)	CYL. & WAT. LVLS IN (M.)	PUMP CODE: DISTRICT	PUMP CODE: BLOCK	PUMP CODE: VILLAGE	PUMP CODE: PUMP NO.	A-caretaker(p/a) A	B-platform(c/d) B	C-chain(g/n) C	PARTS, REPLACED (1) / PREVENTIVE MAINTENANCE (0): 01	02 02	02 03	02 04	03 02	03 04	03 05	03 06	03 07	03 08	03 13	04	05 04	05 05	05 07	05 10	05 12	05 15	06 01	06 02	06 03	UNLISTED PARTS Specify codes and quantities. Use fresh line for more than 2 parts.: CODE AN PN	QTY	CODE AN PN	QTY	1-broken. 2-tastes. 3-yield low. 4-handle hard.: Remark no.	sig	OFFICIAL SIGNG.
		012	45	0078	001	p	c	n				1					1																			
		012	45	0078	002	p	c	g				1					1																			
		012	45	0078	003	a	c	g				1					1																			
NUMBER OF COM. (______)	NUMBER OF REP. (______)	PERIOD IN (M) (_____)			No.of (0)s ..* / No.of (1)s ..**																												REPAIR PERFORMANCE REMARK [E/G/F/B]			

NOTES : 1)Enter, (1) for a part replaced; (0) for preventive maintenance. 3) * - Count no.of 0s in the column. 4) ** - count no.of 1s in the column. 5)Do not enter in columns, for parts, for which no repairs or replacements are done. 6)Ready accounting facility is made in the format for commonly replaced parts only. 6) #- Weekly and monthly checks by AE/JE/BDOs, and DE/AEEs respectively. 7) $- E: for excellent; G: for good; F: for fair; B: for bad. 8) Evaluation parameter- EP(at the end of every page)

EP = Number of complaints(repairs)/period in months; If EP=>80 : excellent;
If 80>EP=>70 : good;
If 70>EP=>60 : fair;

ANNEXURE NO.5/VOL.2

PROPOSED SYSTEM FORMAT NO.5

MONTHLY REPORTING FROM BLOCKS TO DISTRICT / QUARTERLY REPORT FROM DISTRICT TO STATE HEADQUARTER.

MONTH	YEAR	DISTRICT	BLOCK	No.of villages.	No.of HPs.			No.of complaints	No.of repairs.	Repair availability (days)	Costs of spares			Repair Van O & M		Total cost of O & M (except establishment cost)	Monthly cost of O & M per pump	No.of complaints per p.mnth
					Old	New	Discarded	Working				Bought	Reconditioned	Salvaged.	Operations(fuel & other)	Repairs			
NO.OF PUMPS :				TOTAL AND AVERAGE COST OF O & M OF REPAIR OPERATIONS /p.mnth or p.qtr.														

NOTE : SAME FORMAT CAN BE USE FOR REPORTING FROM CBOs TO DISTRICT, AND
DISTRICTS TO SHQ; WITH CHANGED INFORMATION BASE FROM MONTH TO QUARTER.

ANNEXURE NO.6/VOL.2

PART CODIFICATION FOR INDIA MARK II (IS:9301-1984)

Part description (assemblywise)	AN	PN
1. TELESCOPIC STAND ASSEMBLY	01	
Collar	01	01
Gusset	01	02
Leg	01	03
Stand flange	01	04
Stand pipe	01	05
2. HEAD ASSEMBLY	02	
Washer (to suit M12)	02	01
Hexagonal nut - M12	02	02
Hex bolt - M12 x 20	02	03
Front cover	02	04
Front top end plate	02	05
Front bottom end plate	02	06
Gusset	02	07
Bracket	02	08
Guide bush	02	09
Axle bush (left)	02	10
Axle bush (right)	02	11
Back plate	02	12
Side plate	02	13
Pump head flange	02	14
3. HANDLE ASSEMBLY :	03	
Washer (4 mm thick)- to suit M12	03	01
Hex nut-M12	03	02
Washer (2 mm thick)- to suit M10	03	03
Hex nyloc nut-M10 x 1.5	03	04
Hex bolt M10 x 1.5 x 40 - IS:1346S-8.8	03	05
Bearing	03	06
Handle axle	03	07
Chain link with pins	03	08
Chain coupling	03	09
Roller chain guide	03	10
Housing holder	03	11
Bearing housing	03	12
Handle bar	03	13
4. WATERTANK ASSEMBLY :	04	
Gusset	04	01
Spout	04	02
Riser pipe holder	04	03
Tank top flange	04	04
Tank bottom flange	04	05
Tank pipe	04	06

NOTE : AN - Assembly number,
PN - Part number.

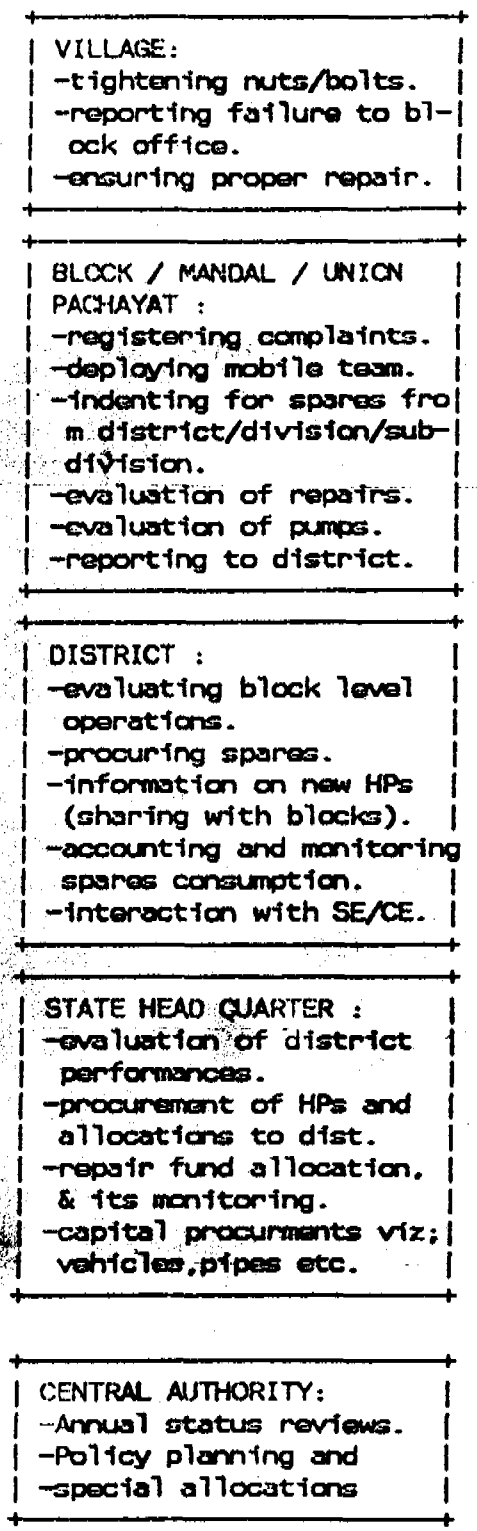
PART CODIFICATION FOR INDIA MARK II (IS:9301-1984)

Part description (assemblywise)	AN	PN
5. CYLINDER ASSEMBLY :	05	
Hex coupler	05	01
Check valve seat	05	02
Check valve guide	05	03
Rubber seating (lower valve).....	05	04
Rubber seat retainer	05	05
Brass liner	05	06
Cylinder body	05	07
Follower.....	05	08
Spacer	05	09
Pump bucket	05	10
Upper valve guide	05	11
Rubber seating (upper valve)	05	12
Upper valve seat	05	13
Plunger yoke body	05	14
Sealing ring	05	15
Reducer cap	05	16
Plunger rod	05	17
Bracket	02	18
6. GENERAL	06	
Pipe	06	01
Pipe joint	06	02
Connecting rod	06	03

NOTE : AN - Assembly number,
PN - Part number.

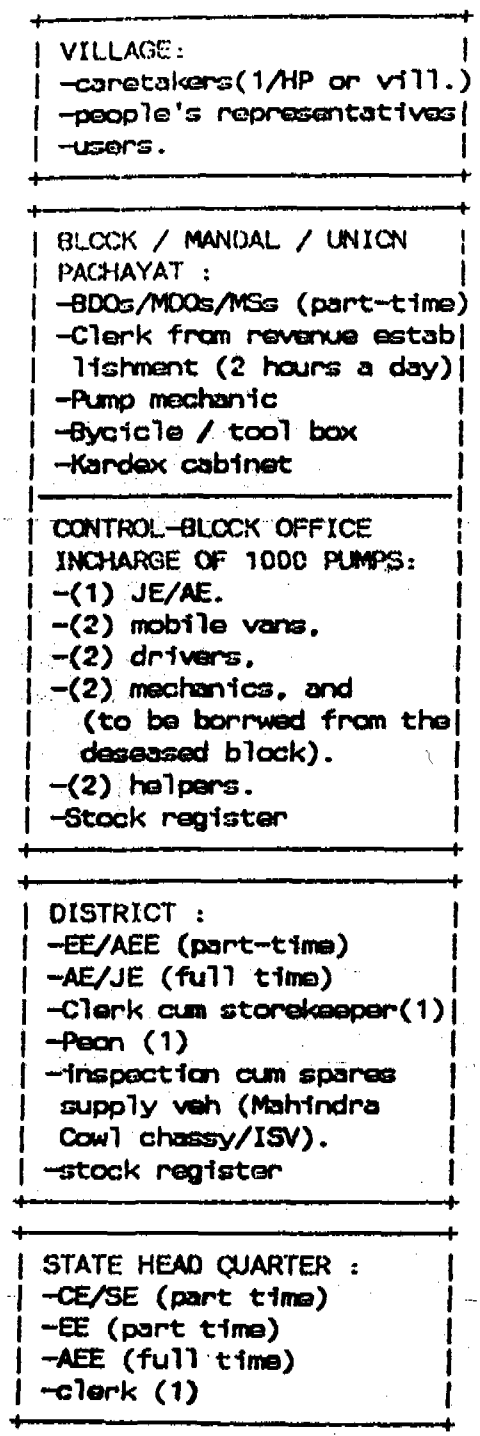
ANNEXURE NO.7/VOL.2

FUNCTION CHART :



ANNEXURE NO.7/VOL.2

ORGANIZATION CHART :



ANNEXURE NO.8/VOL.2

PROGRAMME OPERATION CHART :

VILLAGE:

- every week caretaker, to grease chain & tighten nuts/bolts.
- identify (anticipate breakdowns) repair needs & report to block office.

BLOCK / MANDAL / UNION PACHAYAT :

- preidentified clerk to register complaints in Kardex, couple of hours every working day (preferably in afternoons; say 1pm to 3pm).
- routinely mechanic to check for complaints every day in Kardex, in the morning, and plan/execute his daily activities.
- repair register (form.4) will be maintained with every mobile van.
- after every repair, mobile team gets all details entered in the Kardex, through block mechanic.

CONTROL BLOCK :

- JE/AE to visit dependant blocks, and prepare indents for submission to district, for spares.
- deploy the mobile team as per requirements, & monitor its operation.
- maintain stock register as per Ann.no.1/vol.2
- submitt reports on installation and HP repair operations for each block.

DISTRICT :

- depending on the Control-Block indents received, procure spares.
- AE/JE, incharge of HP; to visit each control block in district every fortnight for collecting fresh indents & supplying spares.
- ISV to be used for above purpose & the same to be used for AEE/EE's inspection visits.
- funds and spares accounting (including reconditioning and salvage of spares).
- overall administration and accounting of all related operations.
- routine reporting to state headquarter.

STATE HEAD QUARTER :

- receipt of district reports & state level summaries
- procurement of HPs and allocation.
- districtwise installation and repair fund allocation, and programme monitoring.

ANNEXURE NO.9/VOL.2

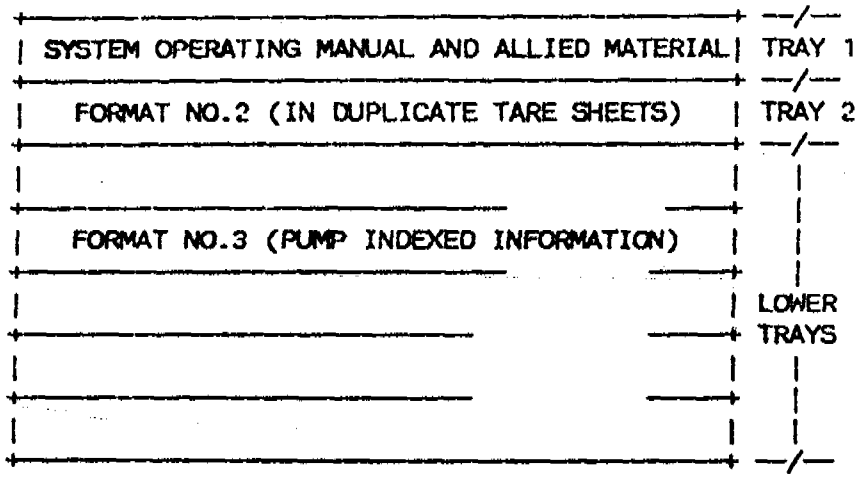
MIS PRACTICES /REPORTING AND ANALYSES :

VILLAGE: -ensure registration of complaints in Kardex, services thereof.
BLOCK / MANDAL / UNION PACHAYAT : -upto date accounting of complaints and repair operations in Kardex (Ann.no.2 & 3/vol.2) -weekly certification of the Kardex entries by BDO/MDO/MS.(Ann.no.2 /vol.2) -submitt duplicates of 'Time-indexed' repair report to CONTROL-BLOCK every month.(Ann.2 /vol.2)
CONTROL-BLOCK : -monthly certification and analysis of Kardex forms by JE/AE, in each block.(Ann.no.2&3/vol.2) -compilation of monthly block reports and submission of monthly summaries to district.(Ann.no.5/vol.2) -submission of monthly performance reports for mobile vans.(Ann.no.5/vol.2)
DISTRICT : -semesterwise certification of Kardex by EE/AEE. -quarterly reports on new installtions and reapir operations to State headquarter. -maintain Master registers with details recorded,as per format in the old Kardex system, and sending copies to BDOs/MDOs/MSs for incorporation in the Kardex system.
STATE HEAD QUARTER : -receipt of quarterly reports and preparation of districtwise state summaries. -district wise programme evaluation & monitoring of funds and material.

ANNEXURE NO.10/VOL.2

RESTRUCTURED KARDEX CABINET :

ADD-ON MODULES OF THREE (3) TRAYS, EACH SUITABLE FOR FIFTY (50) PUMPS.
WHEN TWO MODULES ARE PUT TOGETHER, IT WILL SUIT 200 PUMPS.



MANUAL OF OPERATIONS FOR HANDPUMP-KARDEX SYSTEM **

1.0 Introduction :

The system proposals and operation manual are based on the recommendations made by the Handpump-Kardex system evaluation team fomulated under the adviser, National Water Technology Mission, DRD, New Delhi. The evaluation team's report was based on the on-site investigation of the prevailing practices in the pre-defined demonstration project area. The project areas consisted of five districts viz. Medak, Bidar, Dharmapuri, Erode, and Mayurbhanj; from four states viz. Andhra Pradesh, Karnataka, Tamil Nadu, and Orissa. Though ultimate policy directive of the govt., in this regard is to achieve a completely VLOM (Village level operation and maintenance) for the handpumps, the govt. has to provide the necessary service through the concerned depts.(PHEDs and like agencies) till the necessary skills are available at the village level. In this manual the system is described in context of largely prevailing organization, operational setups in most of the states.

This manual is designed to develop full understanding of the proposed Kardex-system operations & its implications, among the users of the system. This document takes on the obvious questions which would be necessarily answered for better understanding and appreciation of the proposed system or likes of it. The pertinent questions ~~to be answered~~ are,

- What are the objectives of the system ?
- What is the target ?
- What aspects of its' operations need to go on record, and to what purpose ?
- What kind of organization is required to man the system ?
- What are the specifications of hardware (computers/peripherals, tools, books and and Kardex cabinets) required for the system ?
- What will be the role of each operative in the proposed setup ?

This manual tackles the above questions, in same order of logic as posed above, and the sections/chapters are titled accordingly, to make it convinient to the users to understand appreciate the system better.

2.0 What are the objectives of the system ?

The prime objective of the proposed system is to ensure an effective and reliable operation of large number of India Mark II handpumps installed by the government. The system also provides for monitoring of the handpump installation and maintenance operations, in terms of the

related activities and costs involved. Catagorically the objectives could be put as,

- Provision for user's interaction with the govt's service wing.
- Provide a prompt service for preventive maintenance and repairs on the malfunctioning handpumps.
- Ensure requisite backup of quality spares.
- Record keeping of the new installations, maintenance operations carried out on them, and the expenditure incurred thereto, during the course of operations
- Ensure a well monitored and optimumised handpump maintenance programme and related operations.
- Generate data on the extent of services and their costs to the govt., for taking related policy decisions.

All these objectives will be touched upon in a specific context under various heads in this document.

3.0 What is the target ?

The target of this system is govt. promoted and installed India Mark II handpumps, in the rural India. The number of IM II handpumps operational in India at present stands at about 1.3 million. The design features of the IM II, in its present form provides for two kinds of repairs operations, viz. above-ground and below-ground. Generally the former kind can be easily handled by the users with very simple tools, whereas for later kind, skilled inputs, backed up by special tools and spares, are required, which, at present are largely not available at the village level. The above-ground parts of the pump consist of standpipe assebly, water tank and the operating head stock consisting of a chain, bearing housed in a metallic box fixed on the top of water tank, and the pump oprating handle. The below-ground parts consist of riser pipe, connecting rods, and cylinder assembly. Attempts are being made to make available the skills necessary for repair and maintenance of handpumps at the village level by providing training and tools to the potential candidates (artisans, tribal yougs, and women), at the village level. The design of the IM II is also being improved upon, to make it more helpful for VLOM. But govt. has already made a large socio-political and financial committment in installing more than 1.3 million conventional IM II handpumps, and is keen on capitalising this investment by ensuring effective maintenance of these.

A pictorial depiction of the IM II handpumps with catagorisation of the repairs and maintenance viz. above-ground and below-ground, is shown in fig.1

3.0 What aspects of it's operation need to go on record

and to what purpose ?

Installation of a pump is associated with a capital investment and relates to a location, associated beneficiaries, and time of installation. All of these aspects need to be recorded to provide a necessary reference in finding out the utility and durability of the installation. This also needs to be recorded for justification of the investment. After installation the handpump has to undergo preventive maintenanc and repairs from time to time, which , apart from the skilled manpower inputs, would also need replacement of parts. And hence the procurement of quality parts and its stocking in stores for their further distribution to wherever they are required. To ensure procurement of good quality spares from recognized manufacturers, this function is handled by the district offices. A strict material (spares and tools) accounting for the spares being procured at the district stores and further distributed for use on the deseased handpumps is desired. For maintenance of the handpumps a handpump caretaker, handpump mechanic, and a backup mobile maintenance team; are identified in all state setups. The activities of these operatives need to be monitored through the proposed system. The records of daily routines of these operatives will provide useful indicators of the adequecy and efficiency of the maintenance system. There also is a need for reporting of vital aspects of handpump maintenance programmes, to state headquarter and GOI; from the district administrations, for resource mobilization and taking larger policy decisions based on the diagnostic analyses of the reported data. For this purpose a clearcut reporting routine at various levels is proposed in this system.

4.0 What kind of organization is required to man the system ?

As already pointed out in the evaluation study carried out by the central team on Kardex demonstration project, the existing organization setups operating in various states, with respecification of responsibilities, can be effectively used to operate this system. As it is, there is really nothing much wrong with the existing systems of programme management ~~systems~~, if one looks at them in isolation. The highlight of the proposed system is the element of standardization and the syntax which makes it convinient to carry out a diagnostic analyses on the data to take immediate corrective measures and help optimise the handpump maintenance operations.

If one takes an objective look at the existing organization setups, it would be apparent that they are no different from each other, except the names; i.e. a group Gram-Panchayat in Tamil Nadu will be called 'Union

Panchayat', whereas in Andhra Pradesh it would become 'Mandal Panchayat'(this in essence, at least for the purpose of handpump maintenance system, if not exactly the same, is a slightly diluted concept of the earstwhile 'Blocks'). For the sake of convinience, all such administrative units, which are in-charge of a group of villages for revenue purposes and developmental works promoted by the state (the Govt.), will be referred to as Block offices in this manual. There are a few operational variations in different states ~~in different states~~ viz. the installation of handpumps is invariably done by the state PHEDs and their likes, but the maintenance of pumps is under the local bodies (by the PHED personnel deputed to these for this purpose). This manual proposes a dedicated organization setup which could be provided for, under all prevailing administrative structures. A pictorial depiction of the proposed setup is given in fig.2. This proposal needs to be viewed in the context of functional requirements at various levels, which is depicted in fig.3. The village level participation, under the present circumstances is voluntary in nature. Whereas at the block level a skilled handpump mechanic is employed by the govt., in addition, there also is a mobile maintenance/repair team equipped with all spares, tools and tackles required for carrying out any major repairs on the handpumps. ~~This~~ One such team is expected to nurse more than 500 handpumps. The manual proposes to designate one of the block offices as 'Control Block Office' (hereafter referred to as CBO in this document), which will hold charge of two mobile maintenace teams (which will mean that, this office would roughly look after all handpump maintenance functions for approximately 1000 units.) and will do the related monitoring and reporting. One Assistant/Junior Engineer is proposed to be posted at each CBO. The district level operations are proposed to be under one Asst. Executive/Deputy Engineer from the PHED cadre. He will look after the necessary spares procurement, distribution, accounting and reporting requirements related to the handpump maintenance programme. At the state head quarter level, the entire handpump installation and maintenance programme will be under the overall charge of a Chief Engineer or Superintending Engineer. He will have his support staff (as defined in fig.2) to carry out the pre-identified functions outlined in Fig.3.

5.0 What are the specifications of hardware (computers/peripherals, tools, books and Kardex cabinets) required for the system ?

At present, there are about 1.3 million IM II handpumps, and if one is to maintain a monthly status data on all of these it would amount to an enormous volume. It would be desirable to have a powerful data handling

tool like a digital computer to cope with this kind of data. But in the prevailing circumstances a very limited computing facility is available in the form of PC/XTs ATs, that too at the state head-quarter level (SHQ). Therefor, the element of computrization in the present MIS proposal is kept limited to state SHQ and DRD/WTM, GOI office in New Delhi.

The Kardex cabinets are proposed to be installed in every Block office.

Though ultimate policy directive of the govt., in this regard is to achieve a completely VLOM (Village level operation and maintenance) for the handpumps, the govt. has to provide the necessary service through the concerned depts.(PHEDs and like agencies) till the necessary skills are available at the village level.

DEPARTMENT

HANDPUMP INSTALLATION CARD

DISTRICT	CODE	BLOCK	CODE	MANDAL	CODE	VILLAGE	CODE	PUMP NO.

POPULATION OF VILLAGE : BY 19 CENSUS HABITATION POPULATION

LOCATION OF PUMP : NEW INSTALLATION [ ] REJUVENATION [ ]

DANIDA [ ] UNICEF [ ] CENTRE [ ] STATE [ ] DROUGHT [ ] NORMAL [ ] SCP [ ] TSP [ ] OTHERS [ ]

BOREWELL DIAMETER (mm)

BOREWELL DEPTH (m)

CASING DEPTH (m)

YIELD (l m)

STATIC WATER LEVEL (m)

DATE OF DRILLING

BOREWELL DRILLED BY : GOVERNMENT [ ] CONTRACTOR [ ]

GEOLOGICAL FORMATION : HARD ROCK [ ] HEAVY OVER BURDEN [ ] MIXED [ ] SOFT [ ]

DEPTH OF AQUIFER

1 FRACTURED [ ] WEATHERED [ ]

2 FRACTURED [ ] WEATHERED [ ]

3 FRACTURED [ ] WEATHERED [ ]

TYPE OF PUMP : MAKE : SL. NO. DEPTH OF CYLINDER : (m)

RISER PIPE DIAMETER : (mm) INSTALLED : DEPARTMENTALLY [ ] THROUGH CONTRACTOR [ ] DATE :

PLATFORM CONSTRUCTED : YES [ ] NO [ ] IF YES DATE : DEPARTMENTALLY [ ] THROUGH CONTRACTOR [ ]

DRAINAGE PROVIDED : YES [ ] NO [ ] LENGTH OF DRAIN : (m) SOAKPIT CONSTRUCTED : YES [ ] NO [ ]

OTHERWISE DRAIN CONNECTED TO NATURAL DRAIN : YES [ ] NO [ ]

WATER SAMPLE ANALYSED : YES [ ] NO [ ] IS IT POTABLE [ ] SALINE [ ] BRACKISH [ ] [ ]

BOREWELL CHLORINATED : YES [ ] NO [ ] ESTIMATED POPULATION SERVED BY PUMP :

INSTALLATION REPORT SENT TO MAINTENANCE SECTION ON : BY :

NO. OF HANDPUMPS IN THE VILLAGE : NO. OF OTHER WATER SOURCES IN VILLAGE :

REMARKS :

TYPE OF MAINTENANCE SYSTEM : 3 TIER [ ] 2 TIER [ ] SINGLE TIER [ ] ROUTE MAP [ ]

SPARES DISPOSAL SYSTEM EXISTS : YES [ ] NO [ ]

MOBILE MAINTENANCE TEAM EXISTS : YES [ ] NO [ ] LOCATION RESPONSIBLE FOR PUMPS

FREQUENCY OF VISIT BY MOBILE MAINTENANCE TEAM : BY MECHANIC :

NAME OF CARETAKER :

CARE TAKER TRAINED DATE :