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IRRIGATION SYSTEMS MANAGEMENT PROJECT  
PHASE II

Project Number 391-0467

MID TERM EVALUATION WORKSHOP  
ON  
O&M EQUIPMENT TRIAL  
LAHORE (PUNJAB ENGINEERING ACADEMY)  
MARCH 2-3, 1992

HARZA ENGINEERING COMPANY  
DEVELOPMENT ALTERNATIVES, INC.  
ASSOCIATED CONSULTING ENGINEERS-ACE (PVT) LTD

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A

## ACRONYMS

CE	Chief Engineer
DAI	Development Alternatives Inc.
FCC	Federal Coordination Cell
ISM-I	Irrigation Systems Management Project, Phase-I
ISM-II	Irrigation Systems Management Project, Phase-II
ISRP	Irrigation Systems Rehabilitation Project.
M&E	Monitoring and Evaluation.
NESPAK	National Engineering Services, Pakistan.
NWFP	Northwest Frontier Province
O/ARD	Office of Agriculture and Rural Development (USAID)
O&M	Operation and Maintenance
PC	Provincial Coordinator
PEA	Punjab Engineering Academy
PID	Provincial Irrigation Department
SDO	Sub-Divisional Officer
SE	Superintending Engineer
TA	Technical Assistance (Consultants)
USAID	United States Agency for International Development
WRD	Water Resource Division (USAID)
XEN	Executive Engineer

## ACKNOWLEDGEMENTS

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We are especially grateful to Dr. Jan Emmert, Chief Water Resource Division, O/ARD, USAID, Mr. Muzzamil H. Qureshi, Project Officer ISM, O/ARD, USAID, Mr. Abdul Jamil, Deputy Federal Coordinator, Mr. Tahir Ahmad Malik, Principal Punjab Engineering Academy (PEA) and faculty/staff of PEA for their cooperation and support in organizing and implementing this O&M Trial Equipment Workshop.

# CHAPTER - 1

## INTRODUCTION

### Background

A carefully selected package of farm-tractor based equipment and vehicles has been provided to 29 irrigation sub-divisions and the divisions, of which they are a part, in the four Provincial Irrigation Departments (PIDs) by USAID, under the auspices of the Irrigation System Management Project Phase-II.

The purpose of adding this equipment to the selected divisions is to carry out a trial to test the concept of improving maintenance of canal banks through use of light mechanization, i.e., deployment of a package at the sub-division level consisting of a farm tractor, several hydraulically operated attachments mounted on the tractor (rear grader blade, front dozer blade, and chisel plough), and pieces of the equipment pulled by the tractor (tipping trolley and sprinkling tank).

The one year trial of this package in the nine selected divisions of the four Provincial Irrigation Departments is designed to determine:

- a - Whether the use of this package actually does improve the standard of maintenance;
- b - Whether the equipment mix in the package is suitable and cost effective.
- c - Whether utilization of the equipment can be successfully institutionalized by the PIDs.

The trial is being regularly monitored by the technical assistance team and an evaluation report will be produced at the end of the trial. This mid-term workshop was held to draw the key participants in the trial, as well as supervisory key officials of the Provincial Irrigation Departments, into a full discussion of the issues in using the package and in improving maintenance. Participants were also requested to suggest remedial measures to undo the administrative, financial, mechanical, and operational problems that were identified. This national level workshop was jointly organized by USAID, the ISM-II TA Team, and the Punjab Engineering Academy (PEA) at Lahore on 2-3 March, 1992.

## Terms of Reference

The responsibilities of the USAID/TA Team and PEA in organizing and conducting the Workshop included:

- Plan, coordinate, and manage all logistic arrangements;
- Prepare agenda/schedule and questionnaire for group discussions;
- Prepare and conduct briefing for the participants on overview of the O&M Equipment Trial, summary of current activities, and present status of the trial;
- Manage and facilitate the workshop, emphasizing team building and problem-solving approaches;
- Prepare a workshop report on issues identified, comprising details of discussions, methodologies employed, agreements, and recommendations reached for effective implementation of the trial. The report will be distributed to all workshop participants.

## CHAPTER - 2

### WORKSHOP DESIGN

#### Workshop Background and Overview

The overall purpose of this workshop was to get all the key participants associated with the O&M Equipment Trial within the PIDs, donor agency, and consultants on the same footing by sharing information about the present status of the program and the problems/constraints being faced. Consensus about problems and recommendation to their solution was also to be sought. A strategy in workshop design was to limit participation on the first day to SDOs and XENS to allow them freedom of forthright discussion of their problems in the absence of higher authorities. Higher officials of the PIDs, but not the SDOs, participated on the second day, with the XENS available to convey the problems and recommended solutions discussed on the first day.

The Water Resources Division (WRD) of the USAID/Islamabad Office of Agriculture and Rural Development (O/ARD), with the concurrence of the ISM Federal Coordinator, Mr. F.H.Usmani, arranged this workshop. The workshop was held at Lahore on the premises of the Punjab Engineering Academy on 2-3 March 1992. The Workshop was facilitated by Mr. Tahir Ahmed Malik, Principal, Punjab Engineering Academy.

Thirty seven participants on the first day and thirty one participants on the second day from the PIDs, Federal Coordination Cell, NESPAK, TA Team, and USAID attended the workshop. Representatives of Millat Tractors and JECO Private Limited, the suppliers of trial equipment, also participated.

#### Workshop Goals

The objective of this workshop was to review the current status and to point out financial, operational, mechanical, and organizational problems identified during the initial stage of the one-year O&M Equipment Trial. The specific purposes of this workshop were:

- To exchange current information and generate ideas for improving routine canal and drain maintenance,
- To share experience of the trial to date and discuss progress of the trial program,
- To solicit opinions of the users on the suitability of the equipment package and their suggestions for modifications,
- To identify problems that have arisen in implementing the trial, and to propose solutions to those problems,

- To focus attention of higher level irrigation department officials on the trial and to gain their support on resolution of the problems.

## Workshop Schedule

### First Day March 2, 1992

- 09:00- Welcome to the Participants: Dr. Jan P. Emmert  
 - Get Acquainted  
 - Workshop Objectives/Goals and Working Procedures:  
 Facilitator
- 09:30 Overview of the O&M Trial Equipment: Muzammil H. Qureshi
- Summary of Activities: Mr. Aslam Khan
- 10:00 Break
- 10:30 First Group Session: (four mixed groups - each group comprising of 2 XENs, 7 SDOs, a Provincial Coordinator and observers)
- Group discussion will lead to identify and list problems in following five different areas:
- Institutional
  - Financial & Administrative
  - Mechanical
  - General
  - Monitoring & Evaluation
- 11:30 Groups' presentations of issues/problems  
 (Facilitator to summarize pertinent problems)
- 13:00 Lunch
- 14:00 Second Group Session: (Provincial Groups comprising of XENs, SDOs, respective Provincial Coordinator/ Provincial Advisor and observers)
- 15:00 Break
- 15:15 Groups' presentations on solutions to the problems
- 16:00 Concluding remarks by Mr. James C. Ringenoldus

## Second Day March 3, 1992

- 09:30 Welcome to the Participants: Dr Jan P. Emmert  
Mr. Abdul Jameel  
(Dy Federal Coordinator)
- Get Acquainted
  - Background & Overview of First Day's Session: Mr. Ringenoldus
  - Workshop Objectives/Goals and Working Procedures: (Facilitator)
  - Overview of the O&M Trial Equipment: Mr Muzammil H. Qureshi
- 10:15 Break
- 10:30 First Group Session: (Three mixed groups comprising of CEs, SEs, XENs, a Provincial Coordinator, a Provincial Advisor and observers)
- Group discussion will lead to suggestions on solution to the issues/problems
- 11:30 Groups' presentations:  
(Facilitator to summarize suggestions)
- 13:00 Lunch
- 14:00 Groups' Consensus & Summary of Solutions
- 15:00 Concluding remarks by: Dr Jan P. Emmert  
Mr. James C. Ringenoldus
- 15:30 Closing address by Mr Tahir Ahmed Malik

## Session Descriptions

This section contains a brief description of each session. The results of the issues discussed and the agreements and decision reached appear in Chapter 5.

### Workshop Opening

The participants were welcomed by Dr. Jan P. Emmert, Chief Water Resources Division, O/ARD, USAID. After the welcome, the facilitator reviewed the workshop schedule and working norms. The participants were requested to introduce themselves giving name, position, where based, and assignment. After the get acquainted session, an overview of the O&M Equipment Trial was given by Mr. Muzammil H. Qureshi, Project Officer ISM, and a summary of current activities was given by Mr. Aslam Khan, O&M Coordinator of the TA Team.

## **Group sessions discussion on Issues/Problems and Solutions**

Two group discussion sessions were held on the first day and one session was held on the second day.

For the first group session on first day, the participants formed four mixed groups. Each group comprised XENS and SDOs irrespective of their province, a Provincial Coordinator and observers from USAID/TA Team. The groups held discussions from 10:30 to 11:30 and made their reports in plenary sessions till lunch break at 13:00. The group discussions led to identifying the problems in following five different areas:

- Institutional
- Financial and Administrative
- Mechanical
- General
- Monitoring & Evaluation

The composition of the groups was as follows:

### **Group-1**

1. Mr Nasar Ali Rajput, Provincial Coordinator, Sindh PID
2. XEN Ghulam Abbas Laghari, Sindh PID
3. XEN Abdul Rehman Beg, Punjab PID
4. A/XEN Mumtaz Ali Naraye, Sindh PID
5. A/XEN Faiz Ahmad, Sindh PID
6. SDO Ghulam Jaffar Hussain, Punjab PID
7. SDO Saif Ullah Bhatti, Punjab PID
8. SDO Nawab Ali, NWFP PID
9. SDO Mohammad Akbar, Balochistan PID
10. Mr Mohammad Amin, Jeco Private Ltd
11. Mr Rue L. Boswell, Provincial Advisor, Punjab
12. Mr Aslam Khan, O&M Coordinator, T A Team
13. Mr Abdul Majeed Chaudhry, T A Team, Balochistan

### **Group-2**

1. Mr Munawar Khan Mandokhel, Provincial Coordinator, Balochistan PID
2. XEN Abdul Ghani Memon, Sindh PID
3. XEN Chaudhry Ghulam Qadir Javed, Punjab PID
4. SDO Gultar Jan, NWFP PID
5. A/XEN Payar Ali Gadiwan, Sindh PID
6. A/XEN Abdul Aziz Memon, Sindh PID
7. SDO Malik Bashir Ahmad, Punjab PID
8. SDO Abdul Rashid Khan, Punjab PID
9. Mr Bashir Ahmad Chaudhry, Millat Tractors, Lahore
10. Mr W.R. Stoneman, Provincial Advisor, Sindh
11. Mr Mian Abdul Khaliq, T A Team, Punjab
12. Dr Farhat Javed, T A Team, NWFP

**Group-3**

1. Mr Chaudhry Mohammad Ashraf, Provincial Coordinator, Punjab PID.
2. XEN Ali Akbar Zehri, Balochistan PID
3. XEN Akbar Hussain, Punjab PID
4. SDO Abdul Hameed Mangel, Balochistan PID
5. A/XEN Mushtaq Ahmad Memon, Sindh PID
6. SDO Chaudhry Rashid Aziz, Punjab PID
7. SDO Rana Abdul Sattar, Punjab PID
8. SDO Shaikh Irfan, Punjab PID
9. SDO Chaudhry Liaqat Ali, Punjab PID
10. Mr Abdul Samad Qureshi, NESPAK, Lahore
11. Mr Gene F. White, Provincial Advisor, NWFP
12. Mr Mehboob S. Karim, M&E Engineer, T A Team
13. Mr Khalid Masood, T A Team, Sindh

**Group-4**

1. XEN Kewal Ram Bhambani, Sindh PID
2. XEN Mohammad Ashraf Chaudhry, Punjab PID
3. SDO Iftikhar Ahmad, Balochistan PID
4. A/XEN Mohammad Ibrahim Shoro, Sindh PID
5. A/XEN Ajab Ali Memon, Sindh PID
6. A/XEN Ali Nawab Shah, Sindh PID
7. A/XEN Habib Ullah Memon, Sindh PID
8. SDO Chaudhry Habib Ahmad, Punjab PID
9. SDO Rana Anwar ul Haq, Punjab PID
10. SDO Mian Mohammad Ajmal, Punjab PID
11. Mr Muzammil H. Qureshi, USAID, Islamabad
12. Dr Carlos A. Gandarillas, Provincial Advisor, Balochistan
13. Mr Azeem Cheema, M&E Engineer, T A Team

For the second group session on the first day, the participants worked in provincial groups. Three groups were formed. Two groups comprised Sindh and Balochistan participants and the third group included participants from both Punjab and NWFP. In the second session, PID participants were given the summary of the problems brought out as a result of the first group sessions. The groups worked from 14:00 to 15:15 and came out with recommendations for solutions to the problems. The groups presented their reports at 15:15 in a joint session. Written summaries for each group were prepared by the Punjab Engineering Academy by 16:00 the same day. These group summaries were used to prepare a synthesized report about issues and recommended solutions for presentation to senior PID officials the next day. The composition of the groups was as follows:

### Group-1 (Punjab & NWFP PIDs)

1. Mr Chaudhry Mohammad Ashraf, Provincial Coordinator, Punjab PID.
2. XEN Abdul Rehman Beg, Punjab PID
3. XEN Chaudhry Ghulam Qadir Javed, Punjab PID
4. XEN Akbar Hussain, Punjab PID
5. XEN Mohammad Ashraf Chaudhry, Punjab PID
6. SDO Ghulam Jaffar Hussain, Punjab PID
7. SDO Saif Ullah Bhatti, Punjab PID
8. SDO Malik Bashir Ahmad, Punjab PID
9. SDO Abdul Rashid Khan, Punjab PID
10. SDO Chaudhry Rashid Aziz, Punjab PID
11. SDO Rana Abdul Sattar, Punjab PID
12. SDO Shaikh Irfan, Punjab PID
13. SDO Chaudhry Liaqat Ali, Punjab PID
14. SDO Chaudhry Habib Ahmad, Punjab PID
15. SDO Rana Anwar ul Haq, Punjab PID
16. SDO Mian Mohammad Ajmal, Punjab PID
17. SDO Nawab Ali, NWFP PID
18. SDO Gultar Jan, NWFP PID
19. Mr Rue L. Boswell, Provincial Advisor, Punjab
20. Mr Gene F. White, Provincial Advisor, NWFP
21. Mr Mian Abdul Khaliq, T A Team, Punjab
22. Dr Farhat Javed, T A Team, NWFP

### Group-2 (Sindh PID)

1. Mr. Nasar Ali Rajput, Provincial Coordinator, Sindh PID
2. XEN Abdul Ghani Memon, Sindh PID
3. XEN Kewal Ram Bhambani, Sindh PID
4. XEN Ghulam Abbas Laghari, Sindh PID
5. A/XEN Mumtaz Ali Naraye, Sindh PID
6. A/XEN Faiz Ahmad, Sindh PID
7. A/XEN Payar Ali Gadiwan, Sindh PID
8. A/XEN Abdul Aziz Memon, Sindh PID
9. A/XEN Mushtaq Ahmad Memon, Sindh PID
10. A/XEN Mohammad Ibrahim Shoro, Sindh PID
11. A/XEN Ajab Ali Memon, Sindh PID
12. A/XEN Ali Nawab Shah, Sindh PID
13. A/XEN Habib Ullah Memon, Sindh PID
14. Mr W.R. Stoneman, Provincial Advisor, Sindh
15. Mr Khalid Masood, T A Team, Sindh

### Group-3 (Balochistan PID)

1. Mr Munawar Khan Mandokhel, Provincial Coordinator, Balochistan PID.
2. XEN Ali Akbar Zehri, Balochistan PID
3. SDO Mohammad Akbar, Balochistan PID
4. SDO Abdul Hameed Mangel, Balochistan PID
5. SDO Iftikhar Ahmad, Balochistan PID
6. Dr Carlos A. Gandarillas, Provincial Advisor, Balochistan
7. Mr Abdul Majeed Chaudhry, T A Team, Balochistan

The group session on the second day comprised senior officials of the respective PIDs and XENs of the trial divisions. Three groups were formed, one group comprised Balochistan and NWFP PIDs participants, the second group Sindh, and the third group Punjab. The groups worked from 10:30 to 11:30 and came out with suggested solutions to the problems bearing the senior level perspective. The groups made their reports from 11:30 until lunch break. The composition of the groups was as follows:

**Group-1 (Balochistan & NWFP PIDs)**

1. Mr Mohammad Amin, Secretary Irrigation, Balochistan PID.
2. Mr Munawar Khan Mandokhel, Provincial Coordinator, Balochistan PID.
3. XEN Ali Akbar Zehri, Balochistan PID
4. SDO Nawab Ali, NWFP PID
5. SDO Gultar Jan, NWFP PID
6. Mr Gene F. White, Provincial Advisor NWFP
7. Dr Carlos A. Gandarillas, Provincial Advisor Balochistan
8. Dr Farhat Javed, T A Team, NWFP
9. Mr Abdul Majeed Chaudhry, T A Team, Balochistan

**Group-2 (Sindh PID)**

1. Mr. Nasar Ali Rajput, Provincial Coordinator, Sindh PID
2. SE Yar Mohammad Mashori
3. SE Shuja Ahmad Junejo
4. SE Abdul Rehman Memon
5. XEN Abdul Ghani Memon
6. XEN Kewal Ram Bhambani
7. XEN Ghulam Abbas Laghari
8. Mr W.R. Stoneman, Provincial Advisor, Sindh
9. Mr Khalid Masood, T A Team, Sindh

**Group-3 (Punjab PID)**

1. Chief Engineer, Mohammad Iqbal
2. Chief Engineer, Khalid Mehmood
3. SE Altaf Hussain
4. SE Abdul Rashid
5. SE Mohammad Shafi
6. XEN Abdul Rehman Beg
7. XEN Chaudhry Ghulam Qadir Javed
8. XEN Akbar Hussain
9. XEN Mohammad Ashraf Chaudhry
10. Mr Rue L. Boswell, Provincial Advisor, Punjab
11. Mr Mian Abdul Khaliq, Harza

Following each group report, the facilitator managed the plenary discussions in a joint session that led to summarizing the results/agreements. The proceedings of

group sessions are given as Appendices A, B and C. The outcomes and agreements are summarized in Chapter 5.

## **Workshop Close**

After the last group session, a wrap up summary was made by Dr Jan P. Emmert and Mr James Ringenoldus. Individual workshop evaluation sheets were filled out by the participants and the closing address was given by Mr Tahir Ahmed Malik, Principal Punjab Engineering Academy.

## CHAPTER - 3

### O&M EQUIPMENT TRIAL

On 2nd and 3rd March, after the get acquainted session, Mr. Muzammil H. Qureshi, Project Officer ISM, gave an "OVERVIEW OF THE O&M EQUIPMENT TRIAL" to the participants of the workshop. The salient points covered in his briefing are summarized as follows:

#### Purpose of the Trial

The purpose of the O&M Equipment Trial is to test the concept of improving maintenance performance through use of light mechanization, i.e. employment of light equipment for routine maintenance tasks. The trial will evaluate the impact of this equipment package on routine maintenance performance as well as the suitability of each item in the equipment package.

#### Concept and Equipment Selection Criteria

The concept is to evaluate utilization of light and easy to handle mechanical equipment for routine maintenance tasks. The equipment is locally made, relatively inexpensive, and easy to operate and maintain. The operating expenses are much less than conventional heavy equipment in use in the PIDs. The basic equipment package will be placed under control of civil subdivisions responsible for canal maintenance, rather than mechanical units. A small additional pool of equipment will be placed at the division level for use by all of the component subdivisions. The equipment package was selected and modified during detailed deliberations with the Provincial Irrigation Departments.

The basic O&M equipment package at the subdivision level consists of a farm tractor, several hydraulically operated attachments which are mounted on the tractor (a grader blade, a dozer blade, and a chisel plough), pieces of equipment which are pulled by the tractor (a tipping trolley and a water bowser). This equipment is supplemented by the division level pool consisting of another tractor, a tractor-mounted front-end loader, and flat-bed truck. Mobility for inspection and maintenance activities is enhanced by providing a Suzuki jeep and a pickup truck to each subdivision and a jeep to each division.

This equipment is intended to facilitate routine maintenance of canal banks, such as regular watering and timely minor earth work repairs. The pickup truck, the Suzuki jeep and the trolley are intended to improve the mobility of staff at the subdivision level and the jeep and flat bed truck at division level. The equipment has been allocated and is being tested in 10 divisions in the four provinces and their component 29 sub-divisions. The trial was started in September 1991 and will last for one year.

## Monitoring and Evaluation Aspects of O&M Trial Program

The purpose of the trial is to assess the suitability and effectiveness of the equipment package in maintaining the condition of canals and drains. To determine the results of the trial, effective monitoring and evaluation of the trial will be essential. The monitoring and evaluation involves the XENs and SDOs directly involved in the trial, higher level PID officials, the Technical Assistance Team, and USAID. The T A Team has already designed and circulated the formats for gathering and analyzing information on the trial.

The objective of the monitoring and evaluation is twofold:

- 1) To determine the impact on maintenance performance,
- 2) To establish the suitability of the O&M trial equipment package.

**Maintenance Performance.** The major issues for the evaluation of maintenance performance are:

- 1) What is the state of maintenance of canals?
  - a) With or without the trial?
  - b) Before and after the trial?

**Suitability of the Package.** To establish the suitability of the package the issues are:

- 1) How frequently is each piece of the equipment used? and for what purpose?
- 2) Is the package financially viable? Do the Divisions/SubDivisions have finances to use and maintain the equipment?
- 3) What are the problems/uses/advantages of each piece of equipment?
- 4) Are there changes needed in the equipment package to make it more effective?

At the end of the trial, we will be in position to answer the following questions for evaluating the trial package:

1. What were the major problems encountered during the trial period?
2. Was the basic concept of the use of mechanized equipment for canal maintenance valid? Does it need modifications?

3. Where is the concept applicable and where is it not?
4. Was this program a financially viable proposition for both the PIDs and the donors?, should they go for an expansion?
5. Is this approach to routine maintenance sustainable? Are operators easily available? Are PIDs willing to provide repair and maintenance budget?
6. Has the performance of maintenance in the trial areas improved?

During these two days at the Punjab Engineering Academy, we will be sharing our experience with the trial so far and will identify problems encountered. This will give us an opportunity to make suggestions for overcoming the problems to help achieve smooth running of the trial and, where necessary, bring it back on course.

## CHAPTER - 4

### SUMMARY OF START-UP ACTIVITIES OF THE O&M EQUIPMENT TRIAL

As part of the opening session of the workshop, Mr. Aslam Khan, O&M Coordinator of the Technical Assistance Team gave a "Summary of Activities", reproduced below.

After the deliberation and discussions with the Provincial Irrigation Departments in a series of Equipment Task Force meetings and in the O&M Planning Workshop held at Islamabad on 3-4 Dec, 1990, the following basic equipment package was selected:

#### Equipment With the Divisional Headquarters

1) Tractor 50 H.P	1 each
2) Front End Loader Attachment	1 each
3) Chisel Plough	1 each
4) Suzuki Jeep	1 each
5) Flat Bed Truck	1 each

#### Equipment With Subdivisions

1) Tractor 50 H.P	1 each
2) Dozer Blade	1 each
3) Grader Blade	1 each
4) Tipping Trolley	1 each
5) Sprinkler Trailer	1 each
6) Jeep Suzuki	1 each
7) Pickup Truck	1 each

### Trial Divisions and Subdivisions

The Provincial Irrigation Departments selected the following Divisions and their component subdivisions for participation in the trial:

#### Punjab

1. Lahore Division along with its Lahore, Pandoki, and Bamba (Changa Manga) Subdivisions.
2. Kirana Division along with its Kirana, Khadir, and Hujjan Subdivisions.
3. Multan Division along with its Multan, Rashida, and Sidhnai Subdivisions.
4. Bahawalpur Division along with its Baghdadul Jadid, Qaimpura, and Shahiwala Subdivisions.

## Sindh

In Sindh Province, the following three Irrigation Divisions along with their three subdivisions each were selected:

1. Fuleli Canal Division
2. Hala Division
3. Jamrao Division

## NWFP

In NWFP Province, one Irrigation Division, Marwat Canal Division, Bannu along with its two subdivisions was selected. (This assignments was subsequently changed to subdivisions of two divisions, the Bannu Canal Division and the Paharpur Canal Divison.

## Balochistan

In Balochistan Province, one Division, Pat Feeder Canal Division, Dera Murad Jamali, with five subdivisions was selected for trial.

### Pre-Trial of the O&M Equipment

The first set of one tractor and associated equipment was delivered in the Pandoki Subdivision of Lahore division on 10 July 1991. This equipment set was used for a pre-trial by the T A Team and the Subdivision staff to determine if there were any deficiencies in the equipment, to develop equipment working procedures, and to formulate and test a training program for staff and operators.

A pre-test of the training program was made with the operators and the staff of Lahore Division, starting on 15 July 1991 by the staff of Millat Tractors, Inc., under the supervision of Mr George Miller, T A Team Equipment Specialist, and the O&M Trial Coordinator. The main aims were to test the adequacy of the training program and discover unforeseen problems by experiencing the actual operation of the equipment.

As a result of the pre-trial, some modifications in the equipment were suggested by the T A Team which were incorporated by the manufacturers. The modified version of the equipment was then supplied to all the remaining Divisions and Subdivisions.

The training to the operators and the staff of Pandoki Subdivision continued until 30 July 30. After this training in Pandoki Subdivision, a program was made out to train the staff and the operators in the other divisions and subdivisions. Before the start of training in each province, a one day seminar was held in each province to acquaint Chief Engineers and the SES and XENS of the participating units with the nature and objectives of the O&M Equipment Trial

and the program for implementation of the trial. Soon after the seminar in each province, a pre-training visit was made by the O&M Coordinator to each participating division to firm up the arrangements with the Executive Engineers and to ensure that the operators and the staff who were to get training would be present when the training was started.

## **Delivery of Tractors and Equipment**

The schedule of delivery of the tractors and equipment to the divisions and subdivisions was developed by the O&M Coordinator, in close liaison with Millat Tractors and Messers JECO, Gujranwala. It was arranged in such a way that the training of the operators and staff could be started soon after the tractors and the equipment had been delivered to each division.

The training staff was to be provided by Millat Tractors and JECO. They were to be present at the respective divisional headquarters a day earlier than the training was to start. The O&M Coordinator supervised the training at all the divisional headquarters.

The schedule followed for training, for the provincial level seminar, pre-training visit, delivery of the tractors and equipment, and operator and staff training is summarized below.

<u>Subdivn/ Division</u>	<u>Seminar Date</u>	<u>Visit by O&amp;M Coor</u>	<u>Equipment Dely Date</u>	<u>Training Period</u>
<b><u>Punjab</u></b>				
Lahore	3/8/91	3/8/91	9/7/91	14-30/7/91
Kirana	8/10/91	16-17/8/91	14/8/91	25-29/8/91
Multan		18-19/8/91	25/8/91	1-5 /9/91
Bahawalpur		20-22/8/91	2/9/91	8-12/9/91
<b><u>Sindh</u></b>				
Fuleli	25/9/91	8/10/91	2/10/91	13-17/10/91
Hala		10/10/91	12/10/91	20-24/10/91
Jamrao		9/10/91	15/10/91	27-31/10/91
<b><u>N.W.F.P</u></b>				
Marwat Canal	19/11/91	20-24/11 1991	17/10/91	23-27/10/91



## CHAPTER 5

# OUTCOMES AND AGREEMENTS

This chapter presents consolidated statements of the agreements and recommendations made about the issues discussed at the workshop. The actual records of the group sessions are given in Appendices A, B, and C. It must be noted that in several cases that workshop participants recommended action for additional procurements be taken by USAID. Due to budgetary constraints, no significant additional procurement by USAID for the O&M Equipment Trial Program will be possible.

### INSTITUTIONAL

1. **Problem:** Frequent transfer of trained staff from the concerned divisions/subdivisions.

**Response:** The PID authorities in respective provinces be briefed/informed about the importance of trial and requested not to order frequent transfers of staff affiliated with trial.

Action By:           Prov Coord, Secretary

2. **Problem:** Temporary assignment of operators.

**Response:** Secretaries of respective PIDs may be requested to initiate the case with Finance Department for regular employment of operators. The operators should be either regular (S.N.E) or on work charge basis.

Action By:           Prov Coord, Secretary

3. **Problem:** Difficulty in appointing required staff in view of prevailing ban on new recruitment.

**Response:** This is applicable to NWFP, Punjab and Sindh PIDs only. It was recommended that ban on employment of work charge should be lifted for this trial. Secretaries of the respective PIDs be requested to approach Chief Ministers to accord special waiver for appointing new staff.

Action By:           P C, Appointing Auth.

4. **Problem:** Additional Training for the Operators.

**Response:** All the participants recommended that Millat Tractors/T A Team should arrange additional training of operators.

Action By:           T A Team/Millat

5. **Problem:** Improper distribution of vehicles.

**Response:** As far as Sindh PID is concerned, there is no problem of vehicles distribution. For other PIDs, Chief Engineers and Superintending Engineers concerned should resolve the issue in consultation with USAID authorities. If the need arises, respective Secretary Irrigation be requested to intervene personally and ensure the proper distribution of vehicles as per the provisions made under this program.

Action By: CEs/PCs/SEs & USAID

6. **Problem:** Used vehicles in poor condition supplied for the program.

**Response:** This problem pertains to Punjab PID only and it was mutually agreed that used vehicles supplied should be replaced by new ones.

Action By: PC/CEs/USAID

### FINANCIAL AND ADMINISTRATIVE

1. **Problem:** Inadequate funding; proposed works can not be carried out with the available funding.

**Response:** Respective PIDs should take up this issue with their Finance Departments to allocate sufficient funds. The funds should be allocated as per the revised yardsticks. In case of Punjab PID, revision of Composite Schedule of Rates - 1979 should also be undertaken.

Action By: Prov Coord/CEs/SEs

2. **Problem:** Lack of proper planning which is partly related with lack of expected funding.

**Response:** Participants view was that lack of funds hamper proper planning and execution of the program. In case of inadequacy of funds, the plans should be adjusted according to availability of funds.

Action By: PIDs

3. **Problem:** Delayed sanctions of the estimates and delayed receipt of funds.

**Response:** Estimates should be prepared in time and timely release of adequate funds, Suspense Head, as well as O&M grant should be ensured by PIDs from their respective Finance Departments.

Action By: SEs/CEs

4. **Problem:** Different yardsticks/formulae for calculating R&M.

**Response:** The estimates should be prepared as per the estimate formats provided by Mr. Aslam Khan. It was also recommended that yardsticks/formulae for calculating R&M should be revised and standardized.

Action By: PIDs

## MECHANICAL

1. **Problem:** Requirement of additional chisel ploughs.

**Response:** USAID be requested to provide chisel ploughs at subdivisional level.

Action By: USAID

2. **Problem:** Tractors at divisional headquarters are without front and rear blades.

**Response:** Tractors at divisional level should be provided with front and rear blades.

Action By: USAID

3. **Problem:** During operations, following defects have been observed in the equipment supplied:

- a. Problems with hydraulic systems, bursting of pipes, leaking of seals and valves.
- b. Problems with rear blade performance.
- c. Front blade lacks angle adjustments.
- d. Less traction of tractor wheels in marshy and soft surface areas.
- e. Lack of availability of spare parts at division headquarters locations.
- f. Inadequate length of sprinkler bar.
- g. Failures and cracks in welding of front blade hinges.
- h. Problematic towing hook.

**Response:** Millat/JECO should be approached for rectifying all the mechanical defects/problems. Millat should ensure adequate supply of spare parts at divisional headquarter locations. T A Team to coordinate and to provide detailed specifications after deliberations with the users.

Action By: Millat/JECO

4. **Problem:** Inadequate H.P of tractors.

**Response:** H.P of the tractor is adequate for Sindh PID. For other PIDs 75 H.P tractors be provided at divisional headquarters level.

Action By: USAID

5. **Problem:** Need for flat-bed trucks.

**Response:** Flat bed trucks should be delivered as soon as possible.

Action By: USAID

6. **Problem:** Need for additional equipment at divisional level; excavator for desilting, hinge on tractor, dozer grader blade, backhoe, and scoop type scraper.

**Response:** If possible, the listed equipment should be provided.

Action By: USAID

7. **Problem:** Manual priming of water bowser pump is cumbersome

**Response:** A separate priming water tank of adequate capacity be provided with the main water tank.

Action By USAID

## GENERAL

1. **Problem:** Political pressure on hiring operators/drivers and assignment of equipment/vehicles.

**Response:** The participants were ultimately of the view that there is no problem on account of political pressure from any quarter.

2. **Problem:** Suzuki pickups not suitable; heavy duty vehicles are required.

**Response:** Heavy diesel pick ups be provided, because running cost for diesel vehicles is less and heavier vehicles last longer.

Action By: USAID

**MONITORING AND EVALUATION**

1. **Problem:** Forms are too difficult and complex for operators.

**Response:** Sub-engineers should be made responsible to fill the forms.

Action By: PIDs

2. **Problem:** Forms should be translated in Urdu.

**Response:** Participants from NWFP and Balochistan recommended that for their PIDs, simple formats should be provided with Urdu version both for estimation and record keeping.

Action By: T A Team/PIDs

3. **Problem:** Complicated estimation procedures.

**Response:** Participants were of the view that no complications have been faced for estimation purposes. However, standard formats of estimates be provided/explained to all concerned.

Action By: T A Team/PIDs

## Chapter 6

### PARTICIPANT EVALUATIONS

Thirty participants completed the written evaluation. The evaluation results show a high rate of achievement of the workshop goals and participants expressed a high level of satisfaction with the workshop, both in oral and written comments.

#### Opinions and feedback:

Participants were asked to answer the following questions. The answers as brought out by the participants are appended below:

1. What do you think has been the primary benefit of this workshop?
  - The different problems being encountered in implementation of the O&M Equipment Trial at various trial sites have been discussed and useful suggestions/solutions have been arrived at.
  - It has helped in further clarifying the whole concept, problems were identified and agreements were arrived at for remedial measures at the field level and as related to decision making levels. This provided a very good opportunity to exchange views and broaden understanding between the donors and users.
  - This enabled us to identify main problems being faced and their solutions.
  - We got time to discuss matters relating to implementation of the trial and recommended solutions to the problems being faced.
  - The workshop has been very beneficial, the open discussion led us to identify problems and come out with solutions.
  - The workshop was very useful in having an introduction with colleagues from other Provincial Irrigation Departments, coming out with problems being faced with the Trial Equipment and recommending solutions for the same.
  - This workshop has helped in involving the senior level PID officials for recognizing the problems being faced with the trial and developing a feeling of satisfaction to the field staff that problems have received due attention at all levels.

- The major benefit of the workshop has been that higher authorities of the PIDs did agree to resolve the problems coming in way of implementing the trial.
- The problems being encountered on O&M Equipment Trial have been identified, possible solution discussed and general consensus arrived at in order to achieve successful implementation of the program.
- This has helped all in assessing the performance of the O&M Trial Equipment and to identify the problems/short comings experienced during operation of the equipment.
- Yes, this workshop has been very beneficial as several problems and their solutions were sorted out.
- Problems concerning O&M Equipment Trial have been quite clearly identified and reasonable solutions have been suggested.
- The workshop helped in involving the PID officials at all levels to sort out the problems and suggest practical solutions.
- The primary benefit of the workshop has been to share the views with the counterparts and identification of problems and remedial measures.
- The workshop has been helpful in further clarifying the whole concept and proceeding with the trial in a better way.
- There has been interaction between the participants from various agencies. Ideas/views of others were shared and will help in successful implementation of the trial.
- This provided an opportunity to the senior PID officials to listen to the problems being faced by field staff and help them overcome the same for effective utilization of the trial equipment.

## 2. What workshop activities could have been done better?

- More time should have been allowed to get more details.
- It would have been ideal, if some field inspections and site visits were organized during the workshop.
- More time should have been given to working groups for identifying the problems and recommendations for the solutions.

- Such workshops should also be held at the provincial level.
- The workshop activities were ideally conducted and completed.
- Nothing is to add.
- Activities carried out during the workshop are good enough for dealing with the issues.
- All activities have been discussed upto desired possible standard.
- The participatory level in the group should not exceed 8.
- I don't think in any way there was any room for betterment in the workshop.
- None
- I feel that entire workshop was done in the proper and desired manner.

**3. Do you believe there are unresolved issues that should be dealt with in follow up activities? What are they and what should be done about them?**

- Almost all the problems have been discussed/resolved in the workshop.
- I suggest that such workshops should be held frequently for effective monitoring and evaluation of the trial program.
- Yes, the problems discussed should be dealt at every level for effective implementation of the trial.
- Follow up actions should be initiated as per the recommendation made for resolving the problems.
- In my opinion there is no further issue to be dealt with.
- The verbal promises from Chaudhary Bashir Ahmad of Millat Tractors should be communicated in writing to all concerned.
- All the issues have been addressed and recommendation for resolving the same have been made. Now the real need is to accord personal attention at all levels and

active follow up for removing the bottle necks by all concerned for effective implementation.

- All the points have been covered at length.
- Recommendations made should be implemented.
- For sure political influence will divert some equipment, yet the fact was denied in the workshop. Some measures as possible should be adopted to counter this.

-

4. What comments do you have about the workshop arrangements and accommodation?

- Arrangements were very good.
- Well done. Thanks.
- These were excellent.
- All very satisfactory.
- The workshop arrangements were satisfactory. Hostel accommodation needs improvement.
- Excellent
- They were excellent and quite adequate and complete. All the organizers of the workshop are to be appreciated.
- The arrangements were fine.
- Well arranged and looked after. A word of thanks for USAID, HARZA and Punjab Engineering Academy.
- A very good management has been experienced in arranging the workshop.
- Excellent, well done and thanks.

## Appendix - A

### PROCEEDINGS OF THE FIRST GROUP SESSION (MARCH 2, 1992)

### SUMMARY OF IDENTIFIED PROBLEMS

#### INSTITUTIONAL

1. Frequent transfer of trained staff from the concerned divisions/subdivisions.
2. Operators assignment is very temporary and they are on work charge basis.
3. Because of prevailing ban on new recruitment, it is not possible to appoint the required new staff.
4. Additional training required for the operators.
5. Improper distribution of the vehicles.
6. Used vehicles in poor condition have been supplied.

#### FINANCIAL AND ADMINISTRATION

1. Inadequate funding; proposed works can not be carried out with the available funding. In case of Punjab it is related to inadequacy of Schedule of Rates.
2. Lack of proper planning which is partly related with lack of expected funding.
3. Delayed sanctions of the estimates and delayed receipt of funds.
4. Different yard sticks/formulas for calculating R&M.

#### MECHANICAL

1. Need is being felt for more chisel ploughs.
2. Tractor at divisional headquarter is without front and rear blades.
3. Problems with hydraulic systems; bursting of pipes, leaking of seals and valves.
4. Problems with rear blade performance.
5. Front blade lacks angle adjustments.
6. Inadequate HP of tractors.
7. Less traction of tractor wheels in marshy and soft surface areas.

8. Lack of availability of spare parts at divisional headquarters locations.
9. Inadequate length of sprinkler bar.
10. Failures and cracks in welding of front blade hinges.
11. Problematic towing hook.
12. Need for flat-bed trucks to transport implements to sites.
13. Need for additional equipment at divisional level: excavator for desilting, hinge on tractor, dozer grader blade, backhoe, and scoop type scraper.

### GENERAL

1. Vehicles not delivered to proper end-users.
2. Political pressure on hiring operators/drivers and assignment of equipment/vehicles.
3. Suzuki pickups not suitable, heavy duty vehicles are required.

### MONITORING AND EVALUATION

1. Forms are too difficult and complex for operators.
2. Forms should be translated into Urdu.
3. Complicated estimation procedures.

**Appendix B**  
**SESSION PROCEEDINGS**  
**SECOND GROUP SESSION (FIRST DAY)**  
**SOLUTIONS FOR THE PROBLEMS**  
**Recommendations of SDOs and XENS**

(Refer to Summary of Identified Problems)

**INSTITUTIONAL**

**GROUP - I (PUNJAB and NWFP PIDs)**

- Frequent transfers of key persons at all levels associated with the trial be stopped. Transfers should only take place at the maturity of normal tenure.
- Action should be initiated to employ the operators on permanent basis.
- As a special case prevailing ban on new recruitment be lifted for appointing the required staff for implementing the trial.
- Additional training be arranged for operators.
- USAID should watch the proper distribution of vehicles as per the provisions made under this program.
- The used vehicles supplied should be replaced by new ones.

**GROUP - II (SINDH PID)**

- Sindh Government may be requested not to transfer the staff prior to completion of routine tenure in trial divisions/subdivisions.
- Secretary PID may be requested to initiate the case with Finance Department for regular employment of operators.
- Secretary PID may be requested to approach Chief Minister to accord special waiver for appointing new staff in view of the imposed ban on new employment.
- Millat Tractors/T A Team should arrange refresher training course of one week duration at divisional headquarter, Hyderabad. Sub-engineers of the division will also be made to participate.
- As far as Sindh is concerned, there is no problem of vehicle distribution.
- Sindh PID was provided with new vehicles, therefore this particular problem is not applicable to Sindh PID.

**GROUP - III (BALOCHISTAN PID)**

- Balochistan PID authorities should be briefed/informed about the importance of trial and requested not to order frequent transfers of staff affiliated with trial.
- Demand for permanent positions be placed with the government.
- There is no ban on employment in Balochistan PID, hence it is not applicable.
- Additional training be arranged for permanent drivers.
- Chief Engineer, Superintendent Engineer and USAID authorities to mutually resolve the issue pertaining to proper distribution of project vehicles.
- Balochistan PID received new vehicles, therefore, point is not applicable.

**FINANCIAL and ADMINISTRATIVE****GROUP - I (PUNJAB and NWFP PIDs)**

- In order to resolve the issue of inadequate funding, additional funds should be made available under Grant M&R. Premium should be revised to bring it at par with other provinces.
- Lack of funds hamper proper planning and execution of the program. Adequate funding will help resolve this problem.
- The timely allocation of funds should be ensured.
- Yardsticks/formulae for calculating R&M should be revised to bring it at par with other provinces.

**GROUP - II (SINDH PID)**

- In order to resolve the issue of inadequate funding, secretary PID be requested to take up the case with Finance Department. If necessary, Chief Minister may also be contacted.
- To overcome the issue of lack of proper planning, six monthly plan on the proformas distributed by Mr. Aslam Khan be prepared. Provincial Coordinator to ensure for the preparation of proper plan.
- For expediting the sanctions, SDOs should prepare the estimate in support of their workplan. XENS to review and forward for sanction by competent authority. Provincial Coordinator to ensure proper compliance.

- Sindh PID is not facing any problem as far as yardsticks or formulae for estimating are concerned.

#### GROUP - III (BALOCHISTAN PID)

- Funds are adequate, no specific requirements exist, hence not a point or issue for Balochistan.
- The plan should be adjusted according to availability of funds.
- Estimates should be prepared in time and pursued for obtaining sanctions.
- It is recommended that a yardstick of Rs. 80/hr for tractor usage time be adopted.

### MECHANICAL

#### GROUP - I (PUNJAB and NWFP PIDs)

- Chisel ploughs should be provided at subdivisional level
- The divisional tractor should also be provided with front and rear blade sets.
- The hydraulic system defects should be rectified by the manufacturer.
- Rear blade is very weak and it does not serve its purpose. This system should be replaced by mechanically operated system instead of hydraulic.
- Nuts and bolts for mounting front end blade are weak, should be made stronger.
- H.P of the tractor should be 75 H.P.
- For increasing the traction of the tractor, double wheel kit should be provided.
- Authorized dealers should be made responsible to provide essential spare parts at divisional headquarters.
- The sprinkler bar should be 10'-12' long.
- Stronger towing hook should be provided for water bowser.
- The flat-bed truck should be provided at divisional level and its delivery should be ensured.
- Present equipment is sufficient.

**GROUP - II (SINDH PID)**

- Group agrees with the recommendation. Secretary PID may be approached by the PPC to request USAID for supply of this equipment to all A/XENs.
- Only front end blade is recommended by the group. PPC to initiate the case.
- Millat Tractors and JECO to ensure the availability of all needed/replaceable spares at Hyderabad. They should make a permanent arrangement for spares/repairs after warranty period. USAID/T A Team to write a letter to Millat/JECO.
- Millat and JECO to remove the operational/manufacturing problems identified in the summary of problems. USAID/T A Team to initiate follow up.
- Tractor H.P for Sindh is o.k.
- As far as traction is concerned, there is no problem for Sindh.
- USAID/JECO to initiate action for getting the length of sprinkling bar increased to 12 feet.
- Flat bed trucks should be delivered as soon as possible.
- If possible, the listed equipment may be provided.

**GROUP - III (BALOCHISTAN PID)**

- More chisel ploughs should be requested from USAID.
- USAID be requested for procurement/provision of back hoe attachment.
- Millat/JECO should be approached for rectifying all the mechanical defects.
- H.P of the tractor is adequate for Balochistan PID.
- For increasing traction, use of chains is recommended.
- Spare parts should be arranged by USAID and stored at divisional level.
- Length of sprinkling bar should be increased to 12 ft.
- Millat/JECO to rectify the problems of failures and cracks in front blade hinges.
- Flat-bed trucks should be provided at the earliest.

## GENERAL

### GROUP - I (PUNJAB and NWFP PIDs)

- Vehicles should be delivered to subdivisonal & divisional level to proper end-users.
- There is no problem on account of political pressure from any quarter.
- Suzuki pickups be replaced by Toyota or Nissan pickups.

### GROUP - II (SINDH PID)

- Sindh is not facing any problem as per the points listed under general problems.

### GROUP - III (BALOCHISTAN PID)

- Political pressure will remain.
- Heavy diesel pickups be provided, because running cost for diesel vehicles is less and heavier vehicles last longer.

## MONITORING & EVALUATION

### GROUP - I (PUNJAB and NWFP PIDs)

- Sub-engineers should be made responsible to fill the forms.
- There is no need of translation of forms in Urdu.
- There is no complication in estimation procedure as far as Punjab and NWFP PIDs are concerned.

### GROUP - II (SINDH PID)

- Forms to be filled by sub-engineers.
- Translation of forms in Urdu is not required by Sindh PID.
- No problems are being faced in Sindh PID on estimation procedures.

### GROUP - III (BALOCHISTAN PID)

- Operators to keep/maintain log books and forms to be filled in by sub-engineers.
- Forms do not need translation.
- No problems on account of estimation procedures.

**Appendix C**  
**SESSION PROCEEDINGS**  
**GROUP SESSION (SECOND DAY)**  
**SOLUTIONS FOR THE PROBLEMS**  
**Recommendations of XENs, SEs, and CEs**

(Refer to Summary of Identified Problems)

**INSTITUTIONAL**

**GROUP - I (BALOCHISTAN and NWFP PIDs)**

- Balochistan PID authorities should be briefed/informed about the importance of trial and requested not to order frequent transfers of staff affiliated with trial.
- It is recommended that staff should be regular (S.N.E).
- There is no ban on employment in Balochistan PID, hence it is not applicable.
- Additional training be arranged for permanent drivers.
- Chief Engineer, Superintendent Engineer and USAID authorities to mutually resolve the issue pertaining to proper distribution of project vehicles.
- Balochistan PID received new vehicles, therefore, point is not applicable.

**GROUP - II (SINDH PID)**

- Sindh Government may be requested not to transfer the staff prior to completion of routine tenure in trial divisions/sub-divisions.
- Secretary PID may be requested to initiate the case with Finance Department for regular employment of operators.
- Secretary PID may be requested to approach Chief Minister to accord special waiver for appointing new staff in view of the imposed ban on new employment.
- Millat Tractors/T A Team should arrange refresher training course of one week duration at divisional headquarter, Hyderabad. Sub-engineers of the division will also be made to participate.
- As far as Sindh is concerned there is no problem of vehicle distribution.

- Sindh PID was provided with new vehicles, therefore this particular problem is not applicable to Sindh PID.

#### **GROUP - III (PUNJAB PID)**

- The SDOs/sub-engineers associated with the trial should stay on their present postings till June 1992.
- Action should be initiated to employ the operators on work charge basis.
- Ban on employment of work charge should be lifted for this trial.
- Additional training be arranged for operators.
- Secretary Irrigation to intervene personally and ensure the proper distribution of vehicles as per the provisions made under this program.
- The used vehicles supplied should be replaced by new ones.

### **FINANCIAL and ADMINISTRATIVE**

#### **GROUP - I (BALOCHISTAN and NWFP PIDs)**

- Funds are adequate, no specific requirements exist, hence not a point or issue for Balochistan.
- The plan should be adjusted according to availability of funds.
- Estimates should be prepared in time and pursued for obtaining sanctions.
- The estimates should be prepared as per the estimate formats provided by Mr. Aslam Khan. Slight variation of 10 percent is acceptable.

#### **GROUP - II (SINDH PID)**

- It should be taken up by PID with Finance Department, to allocate sufficient funds under a separate head for O&M purpose.
- Sindh PID is not facing any problem as far as preparation of plans are concerned. In certain cases the plans has already been prepared.
- No problem for Sindh PID, these have already been sanctioned.
- Sindh PID is not facing any problem as far as yardsticks or formulae for estimating are concerned.

**GROUP - III (PUNJAB PID)**

- In order to resolve the issue of inadequate funding, it is recommended that the funds be allocated as per revised yardsticks. Revision of Composite Schedule of Rates - 1979 should also be undertaken.
- Lack of funds hamper proper planning and execution of the program. Adequate funding will help resolve this problem.
- The timely release of adequate funds/Suspense Head as well as O&M grant should be ensured by PID from Finance Department.
- Yardsticks/formulae for calculating R&M should be revised and standardized.

**MECHANICAL****GROUP - I (BALOCHISTAN and NWFP PIDs)**

- More Chisel ploughs should be requested from USAID.
- Tractors at divisional level should be provided with front and rear blades.
- Millat/JECO should be approached for rectifying all the mechanical defects.
- H.P of the tractor is adequate for Balochistan PID. For any fresh supply of tractors, 75 H.P tractors may be provided.
- For increasing traction, use of chains is recommended.
- Spare parts should be arranged by USAID and stored at divisional level.
- Length of sprinkling bar should be increased to 12 ft.
- Millat/JECO to rectify the problems of failures and cracks in front blade hinges.
- Flat-bed trucks should be provided at the earliest.
- Additional equipment as spelled out is very much required and should be added.

**GROUP - II (SINDH PID)**

- All SDOs may be provided with an additional chisel plough.
- Each divisional headquarter may be provided with a dozer blade.

- Millat Tractors and JECO to ensure the availability of all needed/replaceable spares at Hyderabad. They should make a permanent arrangement for spares/repairs after warranty period. USAID/HARZA to write a letter to Millat/JECO.
- Millat and JECO to remove the operational/manufacturing problems identified in the summary of problems. USAID/T A Team to initiate follow up.
- There is no problem on account of this in Sindh PID.
- As far as traction is concerned, there is no problem for Sindh.
- USAID/JECO to initiate action for getting the length of sprinkling bar increased to 12 feet.
- Flat-bed trucks should be delivered as soon as possible.
- If possible, the listed equipment may be provided. It is also recommended that a priming tank may be provided with water bowser.

#### GROUP - III (PUNJAB PID)

- Chisel ploughs should be provided at subdivisional level
- The divisional tractor should also be provided with front and rear blade sets.
- The hydraulic system defects should be rectified by the manufacturer.
- Rear Blade is very weak and it does not serve its purpose. This system should be replaced by mechanically operated system instead of hydraulic.
- Nuts and bolts for mounting front end blade are weak, should be made stronger.
- Tractors having higher H.P should be provided at divisional level.
- Traction capability of the tractor should be enhanced. Millat Tractors to suggest ways and means to do this.
- Authorized dealers should be made responsible to provide essential spare parts at divisional headquarters.
- The sprinkler bar should be 10'-12' long.
- Stronger towing hook should be provided for water bowser.

- The flat-bed truck should be provided at divisional level and its delivery should be ensured.
- Present equipment is sufficient.

## GENERAL

### GROUP - I (BALOCHISTAN and NWFP PIDs)

- Vehicles should be sent directly to the concerned divisions
- No comment.
- Heavy diesel pickups be provided, because running cost for diesel vehicles is less and heavier vehicles last longer.

### GROUP - II (SINDH PID)

- Sindh is not facing any problem as per the points listed under general problems.

### GROUP - III (PUNJAB PID)

- Vehicles should be delivered to sub-divisional and divisional level to proper end-users.
- There is no problem on account of political pressure from any quarter.
- Suzuki pickups be replaced by Toyota or Nissan pickups.

## MONITORING & EVALUATION

### GROUP - I (BALOCHISTAN and NWFP PIDs)

- Operators to keep/maintain log books and forms to be filled in by sub-engineers.
- Simple format should be provided with Urdu version both for estimation and record keeping.
- No problems on account of estimation procedures.

### GROUP - II (SINDH PID)

- Forms to be filled by sub-engineers.
- Translation of forms in Urdu is not required by Sindh PID.

- No problems are being faced in Sindh PID on estimation procedures.

**GROUP - III (PUNJAB PID)**

- Sub-engineers should be made responsible to fill the forms.
- There is no need of translation of forms in Urdu.
- There is no complication in estimation procedure as far as Punjab PID is concerned. Standard formats of estimates be provided/explained to all concerned.

# Appendix D

## OBSERVATIONS AND RECOMMENDATIONS REGARDING O&M TRIAL EQUIPMENT

by

M. Aslam Khan, O&M Trial Coordinator

### Observation 1

During the workshop proceedings, it was brought up that the spreader bars on the water tank trailers were not long enough. The bars were fabricated at their present length to preclude their becoming damaged by careless driving or by unforeseen accidents. I would not recommend lengthening the bars beyond the maximum outside width of the trailer.

### Recommendation 1

As stated above, it is unwise to extend the spreader bar beyond the maximum width of the tank trailer. However, if additional spreader width coverage is needed, fan type distributors should be attached to each end of the existing spreader bar. Care will have to be taken in determining the size of the water feed hole in the ends of the bar to assure even water distribution.

### Observation 2

There was much discussion about loss of traction under adverse soil conditions.

### Recommendation 2

It is recommended that one set of dual wheel rims, tires, tubes and mounting brackets be obtained. These should be mounted, water ballast added and the unit field tested. Some simple time distance trials should be run to determine traction improvement using dual wheel equipment vs standard tire and wheel equipment.

### Observation 3

There was much discussion relative to the need for 2 tool bars or field cultivator to be added to the implements supplied with the dozer/rear blade equipped tractor. It was stated that in light soils, the ripper which is presently equipped is very slow since it has a very narrow soil working width. Another problem mentioned is that it is always with the loader equipped tractor and is not along with the dozer tractor when there is a need for soil loosening prior to dozing. A problem with having this extra unit will be transporting it to the field when the tractor will need both front and rear blades with it.

### Recommendation 3

It is recommended that one tool bar or field cultivator be obtained for field trial purposes. However its use and effectiveness should be carefully monitored to determine feasibility of purchasing additional units. The tool bars/cultivator unit should be equipped with transport trucks and a removable or fold up tongue to allow it to be hooked behind the tractor with the rear blade in place and towed to the field. The rear blade will have to be equipped with 2 pull points designed to pull the tool/cultivator in transport position.

### Observation 4

Discussions indicated that much time is consumed priming the centrifugal pump on the water trailer.

### Recommendation 4

It is recommended that the water trailers be modified by the addition of a priming tank and necessary piping and valves to allow priming of pump from the priming tank. The priming tank would be recharged at the time the main tank was filled and be ready when next needed to prime the pump. The priming tank modification should be designed so that it can be mounted in the field using common tools and simple modifications to the existing unit.

### Observation 5

It is suggested that a modified version of the front blade be fabricated which will have crowd, tip, and higher elevation functions. This unit should then be field tested to determine actual usefulness.

### Recommendation 5

It is suggested that a modified version of the front blade be fabricated which will have crowd, tip, and higher elevation functions. This unit should then be field tested to determine actual usefulness.

### Observation 6

There was much discussion regarding the hydraulic range adjustment of the rear blade. As presently built it does not have adequate range.

### Recommendation 6

The rear blade hydraulic range adjustment should be redesigned as one unit to permit a wider more useful range of angling the blade both through horizontal and vertical arcs.

## Observation 7

It has been noted that a one cubic meter, hydraulic type tractor drawn scraper would be quite useful if added to the O&M trial spread of equipment.

## Recommendation 7

It is recommended that one scraper to be obtained and field tested, if at all possible. It is believed that the addition of this unit will be very useful and cut the time required to move and spread fill material.

Appendix E  
**PARTICIPANT LIST**

<u>NAME AND ADDRESS</u>	<u>PHONE</u>
<b>Federal Coordination Cell</b>	
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4. Mr. Shuja Ahmad Junejo Superintending Engineer Rohri Circle, Hyderabad	Off 0221/ 22577 Res 0221/ 26755
5. Mr. Abdul Rehman Memon Superintending Engineer Nara Canal, Hyderabad	Off 0221/ 20389 Res 0221/ 20737
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7. Mr. Kewal Ram Bhambani Executive Engineer Jamrao Irrigation Division Mirpur Khas	Off 023/2067 Res 023/2712
8. Mr. Abdul Ghani Memon Executive Engineer Hala Irrigation Division Hala	Off 2463 Res 2651
9. Mr. Habib Ullah Memon Assistant Executive Engineer Khadro Irrigation Sub-Division Khadro	Off 10 (Khadro) Res 0221/619782
10. Mr. Mohammad Ibrahim Shoro Assistant Executive Engineer Badin Sub Division	Off 2230 Badin

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| 11. Mr. Mumtaz Ali Narai<br>Assistant Executive Engineer<br>Tando Adam Sub-Division    | Off 02221/2508                         |
| 12. Mr. Abdul Aziz Memon<br>Assistant Executive Engineer<br>Hala Sub Division          | Off 0228/2246<br>Res 0228/2430         |
| 13. Mr. Ajab Ali Memon<br>Assistant Executive Engineer<br>Shahdad Pur Sub Division     | Off 02232/394<br>Res 02232/930         |
| 14. Mr. Faiz Ahmad Memon<br>Assistant Executive Engineer<br>Mirpur Khas Sub Division   | Off 023/2454                           |
| 15. Mr. Piar Ali Gadiwan<br>Assistant Executive Engineer<br>Matli Sub Division         | Off 292 Matli                          |
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#### Irrigation and Power Department - Punjab

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| 18. Mr. Chaudhry Mohammad Ashraf<br>Provincial Coordinator for ISM Project<br>Lahore                  | Off 58882                |
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| 20. Mr. Altaf Hussain Chohan<br>Superintending Engineer Irrigation<br>Bahawalpur                      | Off 4626<br>Res 6624     |
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| 23. Mr. Mohammad Ashraf Chaudhary<br>Executive Engineer<br>LBDOC, Lahore Division                     | Off 334267<br>Res 802491 |

24. Mr. Ghulam Qadir Javaid Executive Engineer, Multan Canal Division, Multan	Off 33289 Res 74277
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