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ENERGY POLICY PROGRAM

LIVE LINE TRAINEE ASSESSMENT REPORT

MEPCO, SEPCO, LESCO AND QESCO

FEBRUARY – SEPTEMBER 2015



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©USAID Energy Policy Program
House 4, Street 88, Sector G-6/3
Ataturk Avenue, Islamabad, Pakistan
Tel: +92 (51) 835 7072, Fax: +92 (51) 835 7071
Email: tjaved@ep-ep.com.pk

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ACRONYMS

AEAI	Advanced Engineering Associates International, Inc.
ALM	Assistant Lineman
DISCOs	Distribution Company
EPP	Energy Policy Program
FESCO	Faisalabad Electric Supply Company
GEPCO	Gujranwala Electric Power Company
HESCO	Hyderabad Electric Supply Company
IESCO	Islamabad Electric Supply Company
LESCO	Lahore Electric Supply Company
LLM	Live Line Maintenance
LM	Lineman
LS	Line Service
M&E	Monitoring and Evaluation
MEPCO	Multan Electric Power Company
NTDC	National Transmission and Despatch Company
PESCO	Peshawar Electric Supply Company
QESCO	Quetta Electric Supply Company
RE	Resident Engineer
SDO	Sub-divisional officer
SEPCO	Sukkur Electric Power Company
T&P	Tools and Plans
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

This assessment report summarizes and highlights the responses from Live Line Maintenance (LLM) training participants collected during site visits conducted in May and September, 2015. Based on participant feedback, the assessment highlights the success of LLM training program. To date in Batch II, the Energy Policy Program (EPP) trained 40 linemen from four regional distribution companies (DISCOs) i.e. Lahore Electric Supply Company (LESCO), Quetta Electric Supply Company (QESCO), Multan Electric Power Company (MEPCO) and Sukkur Electric Power Company (SEPCO) from February to September, 2015.

As a result of the LLM training, each DISCO has a trained crew to work on live lines with new tools and transportation equipment for high voltage lines. By working on live lines, DISCOs will reduce the number of bottlenecks by avoiding shutdowns for maintenance and repairs. In turn, LLM training will reduce power outages and losses currently affecting the reliable delivery of electricity to consumers. As a result of this training all four crews received the new tools and plants. The chart below details the locations of the participants:

DISCOs	Linemen
Lahore Electric Supply Company (LESCO)	10
Quetta Electric Supply Company (QESCO)	10
Multan Electric Power Company (MEPCO)	10
Sukkur Electric Power Company (SEPCO)	10
Total	40

To support the training for the remaining DISCO crews, EPP conducted site visits NTDC Tarbela Training Center to interview and survey previous participants from PESCO, HESCO, GEPCO and FESCO. EPP asked the participants to detail the challenges they faced during the training program, and to propose potential solutions for the future training course. The participants identified the following recommendations:

- Translation of the training material into Urdu for better conceptual understanding
- Increased duration of the in-classroom training course from three to four weeks
- Improve monitoring by conducting frequent technical visit to assess linemen's learning abilities during the field-based training

Before Batch II training was provided, EPP conducted an assessment of the curriculum, trainers, and facilities (NTDC Tarbela Training Center). The results of the assessment were shared with the Training Center assessors to help them strengthen future programs. After the Training Center Assessment, EPP successfully delivered the four LLM trainings to MEPCO, SEPCO, QESCO and LESCO at Tarbela Training Center in FY2015.

This assessment reviews the background on LLM training, participant feedback and recommendations provided by participants, their supervisors, and EPP's Monitoring and Evaluation (M&E) Team. Annex I – Collected Comments provides additional comments highlighted in the feedback forms to improve future training. EPP's M&E Team will conduct an additional assessment to collect participant feedback. EPP collected linemen and officials' contact details from all the organization for future monitoring and evaluation.

BACKGROUND

Prior to LLM training, lines were often shut down for routine and preventative maintenance which resulted in losses and created bottlenecks in energy delivery and reliability. EPP helped each DISCO develop one LLM crew dedicated to using new hot stick tools, maintenance techniques, and trailers to service live 132kV and 66kV transmission lines. Each DISCO crew underwent a 14-week intensive training program that consisted of:

- 4 weeks of in-class training focused on health and safety standards
- 10 weeks of extensive field-based training, including supervision, on-the-job practice with hot-stick tools, and bare hand maintenance techniques

To date EPP trained PESCO, GEPCO, FESCO, IESCO in Batch I and MEPCO, SEPCO, LESCO and QESCO in Batch II. All these DISCOs received the hot stick tools and trailers. In preparation for an assessment report and future improvements, EPP conducted a detailed assessment of the training participants to review their experience, capacity gaps, and challenges. The assessment outlines improvements, USAID procedure compliance, refresher course recommendations, and future monitoring and evaluation procedures.



Trainees conduct in-the-field practice on using LLM techniques

EPP's Monitoring and Evaluation (M&E)

Team conducted a post-LLM training assessment in May and September, 2015 to identify program's results, challenges and sustainability. The assessment consisted of two steps:

- Feedback forms completed in person with M&E team members
- Sound bites collected from the participants and the training center's representatives

This two-step assessment process provided the linemen and engineers an opportunity to express their opinions about the training, and gave EPP important information that will shape future programs.

OBJECTIVE

The training sought to:

- Highlight the achieved results
- Identify challenges faced
- To take necessary actions based on the feedback provided by the linemen before the future trainings for improved results
- Sustainability assessment for future and similar trainings
- Identify areas needing improvement.

POST LIVE LINE TRAINING ASSESSMENT

MONITORING AND EVALUATION SITE VISITS

In conducting the training assessment, EPP's M&E team worked closely with Mr. Sher Ahmed, EPP's LLM Coordinator, Mr. Zafar Ali Khan, EPP's Live Line Demonstrator, and Muhammad Hanif Malhi, Live Line Trainer at NTDC Tarbela Training Center. Assessment forms are attached in Annex II – Assessment Feedback Forms and were delivered in both English and Urdu. EPP visited NTDC Tarbela Training Center on the following dates:

- For MEPCO and SEPCO (20 Linemen) – May 15th, 2015
- For LESCO and QESCO (20 Linemen) – September 18th, 2015

ASSESSMENT FINDINGS

The findings below are based on the monitoring and evaluation sessions with the linemen, NTDC training center's principal and live line trainer. The tables highlight the issues discussed and the comments received.

Highlighted Issues	General Feedback and Comments
NTDC Tarbela Training Center	
Tools and Plants	<ul style="list-style-type: none">• NTDC Training Center requested USAID to provide tools and plants which they can use to train more LLM crews from different DISCOs in future.• They requested USAID for tools because their current tools and plants are outdated and cannot perform the required functions effectively and efficiently.
Technical Visits	<ul style="list-style-type: none">• NTDC principal requested USAID to conduct visit with the Technical leads during the training period to identify the on-going challenges and future course of action
MEPCO, SEPCO, LESCO and QESCO	
Similar Trainings	<ul style="list-style-type: none">• Trainees requested USAID to conduct a similar training outside the country on the transmission lines and dead towers where they can learn new skills and techniques.

GENERAL COMMENTS

Linemen were asked to complete the Live Line Post Training Feedback Form, and were provided assistance by EPP's M&E Team. Most of the linemen opted to fill out the forms in Urdu, and EPP translated their responses to generate quotes. General comments and findings appear below:

"I am thankful to USAID to train us on Live Line Maintenance. We always worked on live lines and this training has helped us in learning about the techniques used at the dead towers with expert opinions and practical demonstration by our trainer. Our trainer Mr. Hanif was very helpful throughout the course."

"Previously we had to switch off the transmission lines while working on the faults and repairing discs but after this training with new tools and plants we will be able to work on the live lines and fix the faults without any interruptions"

"Because of this training we don't have to switch off transmission lines and we can now work on 132kV lines without any fear"

“The LLM training has helped us in repairing the dumpers and their weights on the live lines and dead tower without any delays. This will help reduce the load shedding in Pakistan”

“The training has taught us the most recent and better technique in the live line with bare hand and hot sticks methods. We can now maintain live lines safely and without any difficulty”

“After this training we can save our company’s revenue, because now we know how to work on dead and normal towers. This will help in the continuous supply of electricity to the consumers”

Linemen suggested the following related to the training:

“Practical demonstration of the work on the dead tower training was excellent, there should be more training like these for more linemen across the country. Linemen requested to be sent outside the country along with the trainers to learn international techniques of working on the live lines”

“USAID should continue similar trainings in the future, because live line crews in Pakistan are very limited. Trained crew is very often transferred to other companies and some of them get retirement after few years of training”.

RECOMMENDATIONS

As a result of EPP's assessment, the following recommendations have been offered to enhance future LLM programs:

SIMILAR TRAININGS

MEPCO, SEPCO, LESCO and QESCO trainees requested USAID to conduct a similar training outside the country on the transmission lines and dead tower where they can learn new skills and techniques.

TOOLS AND PLANTS

NTDC Training Center requested USAID to provide tools and plants which they can use to train more LLM crews from different DISCOs. They requested USAID for tools because their current tools and plants are outdated and cannot perform the required functions effectively.

FACILITY IMPROVEMENTS

All the linemen at Tarbela's Training Center requested better lodging for future training courses. EPP recommends that NTDC improve the lodging facilities at the Tarbela Training Center, as well. The current facilities lack the appropriate infrastructure to deliver effective training and accommodation for participants. NTDC Tarbela requested USAID to build an accommodation facility and better class room, as currently; they can only fit in a group of 15 people which makes it difficult to accommodate 20 or more people.

PARTICIPANT SELECTION AND BRIEFING

EPP employed USAID-approved participants following the selection and eligibility criteria as given below:

- Less than 45 years of age.
- 10-15 years of experience in their department. For junior linemen, 1-2 years of experience.
- Completion of 10th Grade of equivalent and the ability to read and write in Urdu
- Willingness to attend the training sessions
- Mental and physical fitness to perform the standard duties of a lineman.

ANNEXES

ANNEX I: COLLECTED COMMENTS

	Overall Experience	Live Line Training Course	Concerns about the Training	Comments
MEPCO, SEPCO, QESCO and LESCO	<ul style="list-style-type: none"> We are thankful to USAID for investing their efforts and time in providing the live line training at NTDC Tabela training center 	<ul style="list-style-type: none"> The LLM training has helped us in repairing the dumpers and their weights on the live lines and dead tower without any delays. This will help reduce the load shedding in Pakistan. USAID should continue similar trainings in the future, because live line crews in Pakistan are very limited. Previously we had to switch off the transmission lines while working on the faults and repairing discs but after this training with new tools and plants we will be able to work on the live lines and fix the faults without any interruptions 	<ul style="list-style-type: none"> Trained crew is very often transferred to other companies and some of them get retirement after few years of training. The trained linemen should be given enough time to put their respective skills to use for positive results. Practical demonstration of the work on the dead tower training was excellent, there should be more training like these for more linemen across the country. Linemen should be sent outside the country along with the trainers to learn international techniques of working on the live lines 	<ul style="list-style-type: none"> I am thankful to USAID to train us on Live Line Maintenance. We always worked on live lines and this training has helped us in learning about the techniques used at the dead towers with expert opinions and practical demonstration by our trainer. Our trainer Mr. Hanif was very helpful throughout the course. The training has taught us the most recent and better technique in the live line with bare hand and hot sticks methods. We can now maintain live lines safely and without any difficulty

ANNEX II: ASSESSMENT FEEDBACK FORMS

Confidential information redacted

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www.ep-ep.com.pk
info@ep-ep.com.pk