



Technical Work Inspection for USAID's Energy Policy Project and Power Distribution Project

Project Work Plan



IQC Contract No. AID-391-I-11-00002

Task Order No. AID-391-TO-15-00006

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Contents

1	Introduction	1
1.1	Title	1
1.2	Task Order (TO)	1
1.3	Commencement & Completion Dates	1
1.4	Project Scope	1
1.5	Project Area	1
2	Project Overview & Objectives	2
2.1	Project background	2
2.2	Overview and Objective	2
3	Project Organisation, Roles and Responsibilities	3
3.1	Introduction	3
3.2	Project Organisation	3
3.3	Roles and Responsibilities	3
3.3.1	USAID	3
3.3.2	Other Stake Holders	3
3.3.3	Halcrow Pakistan (Pvt) Ltd.	4
4	Project interfaces	7
5	Procedures and Controls	8
5.1	Financial	8
5.1.1	Policies	8
5.1.2	Audit	8
5.1.3	Cost Control Reporting System	8
5.1.4	Invoices	8
5.1.5	Monthly Financial Reports	8
5.1.6	Quarterly Accrual Reports	8
5.1.7	Quarterly Financial Status Report	9
5.2	Document Control	9
5.2.1	Objective	9
5.2.2	Responsibility & Control	9
5.2.3	Folder Structure	9
5.2.4	TO Title & Reference	9
5.2.5	Date Format	9
5.2.6	Document Format	10
5.2.7	Document Coding	10
5.2.8	Document Logs	10
5.3	Communication	10
5.3.1	Objective	10
5.3.2	Communications and reporting	10
5.3.3	Lines of communication	10
5.3.4	Project team directory	11
5.3.5	Communication tools	11

6	Project Work Plan	12
6.1	Monthly Review	12
6.2	Project Activities Overview	12
6.2.1	General Management and Administrative Support	12
6.2.2	Project Plan and Management	12
6.2.3	Inspection and Verifications	13
6.2.4	Project Close Out	15
7	Reports & Deliverables	16
8	Critical Milestones	17

Appendices

Appendix A	EPP Equipment List
Appendix B	PDP Equipment List
Appendix C	Project Organogram
Appendix D	Project Directory
Appendix E	Overall Work Plan
Appendix F	Region Wise Work Plan
Appendix G	Percentage Sampling (PDP & EPP)
Appendix H	Inspection and Verification Forms
Appendix I	Non Compliance Report Forms

Acronyms

ACOR	Alternate Contracting Officer's Representative
AEAI	Advance Engineering Associates International
AJK	Azad Jammu and Kashmir
CO	Contracting Officer
COR	Contracting Officer Representative
DISCO	Distribution Companies
EPP	Energy Policy Program
FESCO	Faisalabad Electric Supply Company
GENCOS	Generation Companies
GEPCO	Gujranwala Electric Power Company
GoP	Government of Pakistan
HESCO	Hyderabad Electric Supply Company
HPK	Halcrow Pakistan (Pvt.) Ltd.
IESCO	Islamabad Electric Supply Company
IQC	Indefinite Quantity Contract
IRG	International Resources Group
KPK	Khyber Pakhtunkhwa (province)
LESCO	Lahore Electric Supply Company
LOE	Level of Effort
MEPCO	Multan Electric Power Company
MPR	Monthly Progress Report
NTDC	National Transmission and Dispatch Company
PDP	Power Distribution Program
PESCO	Peshawar Electric Supply Company
PWP	Project Work Plan
QESCO	Quetta Electric Supply Company
SEPCO	Sukkar Electric Power Company
TESCO	Tribal Electric Supply Company
TO	Task Order
TWI	Technical Work Inspection
USAID	United States Agency for International Development
WAPDA	Water & Power Development Authority

1 Introduction

1.1 Title

Technical Work Inspection for USAID's Energy Policy Project and Power Distribution Project

1.2 Task Order (TO)

USAID Pakistan awarded the contract for the 'Technical works inspection for Power Distribution Program and Energy Policy Program' to Halcrow Pakistan (HPK) through Task Order No – AID -391-TO-15-0006 under IQC contract No- AID-391-1-11-0002.

1.3 Commencement & Completion Dates

The commencement date of the task order is 16 July 2015, whereas planned finished date of project is 15 January 2015.

1.4 Project Scope

Summarizing the project scope under this task order, USAID requires A-E Services for inspection and verification of technical services provided by other contractors under USAID's Energy Policy Program (EPP) and Power Distribution Program (PDP). The inspection and verification is to be limited in number to a representative random sample.

1.5 Project Area

Project area is scattered within territorial jurisdiction of following ten Distribution Companies (DISCOs) and NTDC across Pakistan in all four provinces and AJK region, whereas NTDC projects are in KPK and Punjab Provinces.

1. PESCO KPK Province & AJK Area
2. IESCO Capital Territory Islamabad, Punjab & AJK Area
3. GEPCO Punjab Province & AJK Area
4. FESCO Punjab Province
5. LESCO Punjab Province
6. MEPCO Punjab Province
7. HESCO Sindh Province
8. SEPCO Sindh Province
9. QUESCO Baluchistan Province
10. TESCO KPK Province
11. NTDC KPK & Punjab Provinces

2 Project Overview & Objectives

2.1 Project background

USAID, under EPP & PDP is striving to address the chronicle energy problems faced by Pakistan since last two decades. The quantum of load shedding faced by people of Pakistan has tremendously affected the growth rate of the country's economy. The goals of USAID's energy programs in Pakistan are: expanding production capacity, increasing distribution efficiencies, and supporting reform of the sector. This multi-prong approach aims to address both the immediate energy shortages and help the country build longer-term energy sufficiency. The programs are aimed at increasing electricity distribution companies' efficiency, revenues, system capacity, commercial viabilities and decreasing losses and theft of electricity.

2.2 Overview and Objective

USAID implemented the PDP & EPP programs from 2010 to 2015 through International Resource (IRG) and Advanced Engineering Associates International (AEAI) respectively. The Projects under the EPP and PDP are all across Pakistan. A brief on activities of both programs is given below;

- EPP consists of equipment related to energy provisioning by utility companies / DISCOs, and includes equipment such as power transformers, circuit breakers and various grid station equipment. This program is spread out mainly in the KPK region. A list of equipment which has been provided / installed under this program is given in Appendix A.
- PDP consists of equipment related to power distribution and includes items such as LT Capacitors, various types of meters, Lineman tool kits, outage reduction devices etc., installed all over Pakistan. It also includes Load Data Improvement (LDI) project spread across all Discos grid station. A list of equipment which has been provided / installed under this program is given in Appendix B.

USAID requires services for inspection and verification of technical services provided by other contractors under USAID's EPP and PDP. Hence the goal of this task order is to ensure that energy Programs "*made possible by the American People*" are completed and delivered to the required standards specifications and thus serve their purpose for their design life.

3 Project Organisation, Roles and Responsibilities

3.1 Introduction

Project organisational structure together with the roles and responsibilities is integral part of the effective delivery and management of a major project as they provide the framework for people to deliver their assigned responsibility within their role, clearly and with minimal ambiguity of scope.

This section outlines the guidance on three key elements:

- Organisation;
- Roles
- Responsibilities

3.2 Project Organisation

The project organisation is a project specific social arrangement which pursues collective goals, controls its own performance and if organised correctly can positively motivate staff, improve work performance and communications and ultimately deliver project success.

The project organogram is enclosed as Appendix C. It has been aligned to the specific TO needs and addresses all positions required to be performed under this TO.

3.3 Roles and Responsibilities

For this task order there will be mainly three entities working in close coordination to perform and activities. Key responsibilities and roles are discussed under:

3.3.1 USAID

USAID has a central role in the complete program. The key responsibilities of USAID within the context of this TO are:

- Make or approve changes in the TO. This responsibility lies with the Contracting Officer (CO);
- Provide technical oversight to HPK and responsibility of approval of all services, reports, deliverables, submissions etc. lies with the Contracting Officer's Representative (COR);
- General coordination, support with key stakeholders when required for smooth and successful and timely delivery of the project;
- Arrange to provide a platform to get the information on needs of all stakeholders; and provide coordination with all the relevant government machinery, other stakeholders, and community when required.
- Reimburse HPK for services under a time and material cost reimbursable contract.

CO is responsible for the contract on behalf of USAID, any variation in scope of contract is the authority of CO. COR is CO's representative for this contract and the key point of contact for all matters. The ACOR is the alternate to COR in his absence.

3.3.2 Other Stake Holders

Apart from above, other key stake holders are listed below.

- Advance Engineering Associates International (AEAI) is the contractor responsible for Energy Policy Program (EPP).

- IRG (International Resource Group) is the contractor responsible for power distribution program (PDP).
- DISCOs, WAPDA offices, and other Government relevant organisations for Power sector.

The prime role of these stake holders is to provide relevant data and access support to the project team (HPK) for inspection and verification purpose.

3.3.3 Halcrow Pakistan (Pvt) Ltd.

The role and responsibilities for the task are project specific and HPK staff will own these specific roles and responsibilities to their best competencies in order to meet the project needs.

The responsibilities of the project team within their role are being defined as it is essential to ensure that duplication is avoided and /or gaps in the delivery of the project are eliminated and the project objectives and requirements are achieved. The roles and responsibilities assigned have been agreed with the individual staff to have ownership and feedback on duplication, gaps etc. Care has been taken to also establish the relationship between the roles as it promotes teamwork and ensures there are no gaps and any necessary overlaps are recognised and accepted.

In assigning the roles to the team members, three aspects have been considered:

Responsibility - The personal obligation to carry forward an assigned task to a successful conclusion;

Authority – To empower someone to make decisions and get things done. This forms part of the relationship structure which must ensure that all necessary authority is vested somewhere in the project and that the escalation to be used when an individual's authority runs out are clear; and

Accountability - The extent to which someone is "held to account" for things. People can only be accountable for things over which they have authority. The accountability is maintained by the reporting lines.

The roles and responsibilities of all the key personnel under this TO are outlined in the following lines.

3.3.3.1 Project Manager (PM)

(Reports to CO, COR, & IQC Program Manager)

The key role of the PM is the successful delivery of the project through the management of the client, HPK supply chain and other internal and external stakeholders.

The PM is overall responsible for delivery of the TO including all activities, reports and deliverables. He has the following prime responsibilities:

- Ensure that the Services comply with the requirements of the TO
- Delivering within the project budget and schedule with quality.
- Managing interfaces between the project teams, and USAID.
- Formation and development of successful project teams.
- Delegating tasks and duties and monitors performance of the project team;
- Incorporating the required degree of skill and care.
- Conducting regular project progress and review meetings with the project team;
- Clearly specifying any delegations of authority and ensuring roles are well defined.

- Establishing and managing all systems for the project as per the work Plan;
- Auditing and reviewing all aspects of project performance.
- Complying with management requirements and applying best practices;
- Ensuring statutory and regulatory requirements are met.
- Encouraging continual improvement and knowledge management.
- Mentoring and coaching project team.
- Ensuring that the appropriate arrangements for the management of health and safety in support of current legislation and polices are maintained for the complete project lifecycle.
- Reporting updates weekly or as required by email to the COR.
- Holding quarterly coordination meetings with the COR for the duration of this TO.
- Reporting of incidents including serious incident report, incident report and situation report as and when required.
- Notifying the CO and COR of any problem, delay, or adverse condition, which materially impairs the ability to meet the requirements of the TO.

3.3.3.2 Senior Electrical Engineer

(Reports to the PM)

The key role of the Senior Electrical Engineer is the successful delivery of the Engineering aspect of the project through the management of all the engineering works and in the absence of PM act on behalf of the PM.

The Senior Electrical Engineer is overall responsible for all Engineering activities, reports and deliverables. He has the following prime responsibilities:

- Coordinating with COP in all matters particularly related to the inspection, verification and assessment of the project.
- Existing data , literature and documentation review
- Ensure that the Services comply with the requirements of the TO
- Assembling directing and managing the project engineering team
- Delegating tasks and duties and monitors performance of the engineering team, incorporating the required degree of skill and care;
- Conducting regular project progress and review meetings with the project teams and the PM;
- Ensuring all aspect of Health, Safety and Environment (HSE) are met during field visit for inspection and verification;
- Mentoring and coaching project team;
- Preparing all deliverables and providing input for timely and successful delivery of project as per TO requirement.

3.3.3.3 Lead Electrical Engineer – Regions.

(Reports to the Senior Engr.)

Dedicated team of Senior Electrical Engineers for each region (Sindh/Baluchistan, Punjab & Islamabad/ Khyber Pakhtunkhwa regions) will be responsible for all engineering inputs, reports, deliverable for their respective regions.

In addition to the responsibilities mentioned above for Senior Electrical Engineer, they will be overall responsible for managing regional team for carryout field visits for inspection and verification.

3.3.3.4 Project Coordinator

(Reports to PM)

The project coordinator will be key resource to the PM for progress, planning and project control. He will work closely with PM, Senior Electrical Engineer and other team members to ensure the progress and issues are resolved in a timely manner on all technical issues to meet the project schedule and project requirements. He will be responsible for the control of all project communications and documentation. He will be responsible for:

- Preparing project schedules in detail and summary;
- Ensuring that all schedules are maintained and updated in line with project requirements;
- Acting as focal point for receipt, distribution and despatch of internal and external communications and documentation;
- Managing and maintaining correspondence and document registers;
- Managing electronic and hard copy filing system of all communications and documentation;
- Monitoring progress and review schedules on a regular basis of all project parties;
- Responsible for branding and marking activities;

4 Project interfaces

USAID is represented by following key personnel:

- Abdullah Akbar, Contracting Officer (CO) for this TO
- Robert Helmerick, Contracting Officer Representative (COR)
- Mohammad Ishtiaq, Alternate COR
- Saeed Anwar, Senior Program Manager (COS), and
- Nadeem Habib, Program Management Specialist (Energy)

Advance Engineering Associated International (AEAI) responsible for Energy Policy Program (EPP) is represented by following key personnel;

- Talha Javed, Chief of Party (COP)
- Memona Nasser, Associate Manager CCA

IRG (International Resource Group) responsible for power distribution program (PDP) is represented by following key personnel;

- John Pullinger, DCOP (Operations)
- Tahir Ahmed , Senior Program Manager

Halcrow is represented by following key personnel;

- Usman Mumtaz, IQC Program Manager
- Afzal Siddiqui, Project Manager (PM)
- Kawish Shariatullah, Sr. Electrical Engineer (SE)
- Khursheed Ali, Region lead -Sindh
- Sheikh Muhammad Yahya, Region lead- Punjab
- Fayaz Siddiqui, Region lead ISB/KPK
- M Azeem Akram, Project Coordinator
- Hassan Kazmi, Office Engineer

The project interface between the entities is given below:

- Robert Helmerick – COR - USAID
- Afzal Siddiqui – PM (TWI) – HPK

The agreed mechanism is given below:

- The communication from each team should be carried out through single point of contacts given above.
- The teams can interact directly on technical matters through telephone. All significant telephone calls should be followed by an email to minute the conversation. Single point of contacts should also be kept in the loop.
- All coordination and communication with USAID and other stakeholders will be through PM. However PM can delegate this responsibility to other person if required.
- ACOR will be kept in CC for all report submissions.

5 Procedures and Controls

HPK has robust project management systems and procedures which are ISO 9001 and ISO 14001 certified. These procedures were assessed during the pre-award assessments and were found to be satisfactory by the assessors. They are:

5.1 Financial

5.1.1 Policies

The policies and rules set out in the HPK's finance manual will also be implemented in case of all TOs awarded by USAID under the IQC program. Where ever a modification in the policies is necessitated; the same will be done and implemented.

HPK's business is carried out according to local corporate and tax laws, the same are applicable in case of TOs awarded by USAID.

5.1.2 Audit

External auditors perform annual statutory financial audit of HPK.

USAID may require an annual third party audit of books of accounts pertaining to USAID awarded TOs. This audit may be initiated after the end of each financial year. This audit becomes mandatory if the billing exceeds certain amount of threshold during a project.

5.1.3 Cost Control Reporting System

Cost control reporting system is prepared for USAID to monitor progress of cost versus budget for all activities under the contract. The ability to forecast cost based on changes in project condition is essential with the progress of TO.

5.1.4 Invoices

The invoicing will be done monthly and will be submitted electronically on or before the 10th of following month. These calculations sheets show position, LOE, applicable day rate and amount in Pak Rupees.

As per USAID policy; invoice can only be raised for those items which have been paid or disbursed to sub-contracts, suppliers and employees.

5.1.5 Monthly Financial Reports

As per the requirement of IQC and TO a monthly financial summary will be submitted on or before the 10th of the following month. Monthly financial summary provides an overall financial progress of the TO by reflecting the actual against the budgeted amounts and LOEs. Also it shows the estimated cost to complete, sub-contract obligation, change orders and anticipated change orders.

5.1.6 Quarterly Accrual Reports

Accrual report will describe on a quarterly basis – the amount disbursed to HPK against its invoices and the accrued costs to the project; this will include the

- Unpaid invoices by USAID; and
- Cost to be billed or charged to the USAID in the ending month of that particular quarter.

5.1.7 Quarterly Financial Status Report

This report will show ceiling price of TO, obligated funding to date, expenses to date (actual and accrued), and remaining unspent funds. The report is due within 30 days of the end of the respective quarter.

5.2 Document Control

5.2.1 Objective

The goal of document control is to put in place to protect the value of the content of documents and to enhance the usefulness of that content to the user. The main objectives are to make all documents easily identifiable, retrievable and have its audit trail.

Document control provides a framework for deciding how information is created in the organization and how it is managed once created. The purpose of a document control method is to ensure:

- Documents fulfil a useful purpose
- Resources are not wasted on the distribution of unimportant or useless information
- Only valid information is published
- Information is kept up to date
- Information is provided in a form that can be used by the audience
- Classified, confidential, or proprietary information is restricted to the people who have a real need to access it
- Information is retained that could help solve a problem, improve opportunities, avoid costly errors, or deflect potential litigation

5.2.2 Responsibility & Control

The PM along with support of the project coordinator, will be the single point of reference for the issue and control of all correspondence and documentation on the project. All documents shall be prepared and issued in accordance with procedures, formats and coding structures as detailed below.

5.2.3 Folder Structure

A separate folder for this TO is created on main server, and to have proper control the PM will define the access levels for team as per their roles and responsibilities.

5.2.4 TO Title & Reference

The following title will be used for all documents, reports, drawings, etc.

- **Title:** " Technical Works Inspection for USAID's Energy Policy Project and Power Distribution Project "

Following reference numbers will be used on the title covers of all documents & reports;

- IQC Contract No. AID
- TO No. AID-

5.2.5 Date Format

When writing the date on a document or drawing it must be written as follows:

DD MM YY for Example 16 August 15.

5.2.6 Document Format

All documents will be prepared as per standard HPK's documentation templates and as per the requirements of the Branding and Marking Plan. All documents will be accompanied by a front cover sheet detailing the project name, document code, title, status and revision number.

All document issued will consist of a document history log.

5.2.7 Document Coding

The purpose of having a document coding structure for all documentation is to establish and maintain a project wise document handling system. All TO participants (internal) will adopt the coding structure as outlined in this document and all outgoing correspondence with external agencies will abide by the coding conventions outlined in this document.

5.2.8 Document Logs

The project control and reporting engineer with the guidance of the PM, will maintain document registers of all documents issued. The register will provide a detailed report on the history and status of each drawing and document. Information recorded on the register should include:

1. Document Number, Title and Revision
2. Date of issue, in the format given above
3. Document File Name
4. Date required for return of comments (if applicable)
5. Date comments returned (if applicable)
6. Status of Document
7. Reason for Issue

HPK standard templates for document issue register will be used. For effective control separate documents logs and issue register for all incoming and outgoing documentation will be prepared.

5.3 Communication

5.3.1 Objective

The goal of the project communication planning is to develop a strategy for delivering key information to the proper recipients in a timely and efficient manner. Project information will be communicated on a scheduled basis to ensure that information is available to support both Project Management and the Project Team's needs.

5.3.2 Communications and reporting

The PM will be the authorised company representative and responsible for communication with all stakeholders. Where required, the PM will delegate specific authorities to other member(s) of the team by using a Communications Authorisation Matrix or similar. Our prime contact person in USAID will be the COR of the TO. All critical communication with other stakeholders will be through USAID/Pakistan or with their consent.

5.3.3 Lines of communication

The lines of communication between project participants are clearly defined in section 4 above.

5.3.4 Project team directory

Project team directory will contain contact information for all project staff, and stakeholder. The project team directory will be reviewed on a monthly basis and kept up to date to reflect any change.

Project Team Directory is attached as Appendix D.

5.3.5 Communication tools

As a standard practice we will efficiently use the following communication tools;

- Meeting (face to face, video conference, etc.)
- Reports, Memos, Email, etc.
- Verbal (telephone/mobile)

At various stages of the project, specific meetings are required to review, action and follow up on key matters to enable the project to be managed and executed effectively. To facilitate the actions being completed, as agreed at the meeting, minutes are to be issued within 5 calendar days of the meetings. The PM will establish requirements for meeting types and frequency.

The following meetings will be required but are not limited to:

Meeting	Purpose	Medium	Frequency	Attendees
Weekly updates	To review the weekly project progress, developing issues & problems	Email	Weekly or As required	None
PM / USAID Meeting	To review and coordinate the project progress, developing issues & problems	Face to Face	As required	USAID/ HPK
Stakeholder Meeting	Review progress and key risks and decisions required. Upon request of data	Face to Face Written Verbal	As Required	USAID HPK Stakeholder
Project Team Meetings	Review status of the project with the team.	Face to Face or through other communication means	Weekly	Project Team
Progress Meeting	Review status of progress on site	Face to Face or through other communication means	fortnightly	Project Team Any Party

The meeting minutes will be distributed within 5 calendar days following the meeting. Meeting minutes will include the status of all items from the agenda along with new action items.

6 Project Work Plan

The Project work plan (PWP) is prepared as part of the project activity and one of the Deliverables of Task Order (Section F.5.). This is an overall plan of the work to be accomplished for better performance and resolution of problems. The objectives of work plan are to indicate an overall picture of project with activities breakup showing start and end dates, duration, quantum of % sampling of various items and provide guidelines for controlling project, implementation of procedures and successful completion of project.

The proposed PWP is a living document and is flexible to changes as and when required to cover possible changes in Scope of work. Accordingly whenever deemed necessary, monthly or quarterly reviews of work plan may be made as per project requirement.

An Overall Work Plan and Region-Wise Work Schedule for PDP and EPP works are attached as Appendix E and Appendix F respectively.

6.1 Monthly Review

The Work Plan will be reviewed in coordination with USAID on a monthly basis and updated as needed. These monthly reviews shall serve as the equivalent of Activity Report. A section will be written in the Monthly Progress Report (MPR) to cover this activity report. The MPR shall be submitted to the COR within 10 calendar days of the end of each monthly period.

6.2 Project Activities Overview

This section summarizes the key activities listed in work plan as under;

6.2.1 General Management and Administrative Support

HPK will provide the general management and administrative support to the USAID. The activities are continuous and ongoing activities which will continue till end of project. The activities planned are as follows:

- General advice and support
- Overall management and administrative support
- Project Manager Communications with the COR and other Stakeholders
- Ensure property control for expendables and non-expendable property
- Database development and management
- Provide support for conferences, workshops, and seminars and logistics support for field staff
- Provide security to all contract and subcontract personnel, facilities, and equipment
- Branding and Marking

6.2.2 Project Plan and Management

Proper project management and planning is important activity for successful and timely delivery of project as per agreed schedule. PM along with other team members will ensure to plan, manage and execute project. The activities are ongoing which also requires input from finance team. Majority of activities required partial input every month till end of project. Key activities are;

- Project Work Plan preparation , review and update as required
- Cost Control report System preparation
- Financial Report and Vouchers to be prepared and submitted on or before 10th day of each month till end of project

- Monthly Progress Report to be prepared and submitted on or before 10th of each month till end of project
- Email Updates to USAID regarding general progress, information required and other correspondence ideally on weekly basis or as required
- Quarterly Meetings planned at end of October 2015 and December 2015

6.2.3 Inspection and Verifications

Inspection and Verifications is the most important activity of the task order. This phase will continue from start of the project and key activities involve under this task will continue till 30 September 2015. There will be major input required from all resources during this phase.

Key activities under this task are briefly discussed as under;

6.2.3.1 Staff Mobilization

Dedicated staff have been deployed to undertake the task. Under the leadership of senior electrical engineers field teams will be mobilized in in three regions for the purpose of inspection and verification. Organogram is attached as Appendix C is for further clarity.

6.2.3.2 Methodology for Inspection & Verification Plans

Methodology for Inspection and Verification Plans is summarised below;

- Inspection teams under regional heads shall be deputed for data collection, physical Inspection and verification of the equipment /material.
- Inspection team will be familiarized with safety practices adopted at site works as per Halcrow policy.
- Inspection teams will be supported with technical documents for verification of approved specification and confirming name plate data as per site installation.
- Dedicated forms for inspection of each equipment will be provided to inspection teams like Formats of :
 - Transformer,
 - 11KV Switchgear,
 - 132KV Current Transformer,
 - 132 KV Circuit Breaker,
 - LT & HT Capacitors,
 - 3 Phase Energy meters and 3 Phase HT Type Smart Energy Meters
 - Radio Frequency Enabled Smart Energy Meters.
- Inspection teams will be provided with Inspection Visit Report formats to generate report with observations, conclusions & recommendations including non-compliance (major/minor) Identification. Same will be reviewed by Project Manager & Senior electrical engineer before submitting to USAID.
- For major equipment like power transformers, 132 KV circuit breakers and other switchgear inspection will also be carried out by Project Manager/Sr. Electrical Engineer as deemed necessary.
- Selected sample testing for capacitors, energy meters, outage reduction devices (ORD) shall be conducted in accordance with submitted documents and location.
- It will be confirmed that final as built drawings (control schematics, lay out drawings and O&M Manuals) have been handed over to concerned departments in desired number for maintenance and operation of the system/Subsystem. Similarly handing over of any spare part to the Discos shall be confirmed.
- History of installed equipment shall acquire for major equipment i.e. Power Transformers , Switchgears;
 - Date of installation

- Date of energization
- Major faults history & its diagnostic with causes and remedy
- Training to be conducted for inspecting teams to fill the check list forms, establishing NCR for Major and Minor identification, prepare and submit technical site reports accordingly.
- Non-compliance reports for major deviations, if any, will be reported to USAID with supporting report to take up the matter with the contractor for necessary action.

6.2.3.3 Sampling Methodology

Sampling methodology is based on random sampling but with weighing factors. The sampling methodology which is being used is a bench mark to start the inspection works, this has already been submitted to COR for review and shall be further refined in consultation with COR if required. The weighing factors are:

- Equipment type (EPP / PDP)
- Service Offered (Supply / Installation / Repair)
- Geographical location

6.2.3.3.1 Percentage Sampling of PDP & EPP Activities

Percentage sampling is the primary component to exercise for the project to proceed for Inspection and Verification. As per statement of work, the TO does not require a comprehensive inspection and verification. Instead only a representative random sampling is needed that conveys accurate picture of the works carried out under PDP. Based on this guideline, HPK proposed sampling criteria to USAID for review and comments, if any. However, this review will not hold HPK in starting site verifications as per agreed time frame so that stringent target dates for completion of field visits/site verifications and submittal of initial reports for PDP is not delayed.

There are some additions in the original list of equipment/activities, these additional works will be discussed and finalized with USAID separately.

Percentage sampling sheets of PDP and EPP for regions are attached as Appendix G.

6.2.3.4 Inspection and Verification Forms

Based on information/ data received, HPK prepared standard forms for the inspection and verification of equipment installed under PDP and EPP scope of works.

Standards Inspection & Verification forms are attached as Appendix H

6.2.3.5 Inspection and Verification field visits in Regions

Field visits for inspection and verification will be carried out from 03 August 2015 to 18 September 2015 in the following regions.

- Punjab region
- Sindh & Baluchistan Region
- KPK and Islamabad Region.

6.2.3.6 Inspection and Verification Reports Phase 1 and 2

Separate reports will be prepared for PDP and EPP after the completion of field survey and submitted to USAID.

- Phase 1 report will be for those items/ equipment that have been **installed** by Contractors

- Phase 2 report will be for those items/ equipment that are **under progress** by Contractors

6.2.3.7 Non Compliance Reports

All tests / verification exercises shall be recorded for compliance, completeness and shortcomings on test forms suitably developed for individual case. Equipment / procedures compliant with equipment and installation procedures shall be compiled into a summary report and presented to COR for review and approval. Equipment or procedures not complying with the laid down specifications shall be immediately flagged, if a cause for concern, either because of physical or environmental concerns. A detail inspection report along with recommended resolution shall be put forth and a follow up testing exercise shall be conducted after an appropriate time period, to ensure such equipment's compliance with the specifications.

NCR forms for EPP and PDP for Major (deviation)/Minor (punch list) is attached as Appendix I.

6.2.4 Project Close Out

Activities related to this task are discussed as under;

6.2.4.1 Demobilization Plan

De-mobilization plan has already been prepared and submitted to CO for approval which mainly includes.

- Illustrative list of property
- Property disposition plan
- Plan for phase out for in country operation
- Timelines for completing required action in demob plan

De-mobilization will be carried out in two phases;

In phase 1, Field teams will be demobilized after the completion of activity of Inspection and verification in all regions

In phase 2, Project team will be demobilized after the submission of Final report and data handover.

6.2.4.2 Final Project Report

The final report contents should include but not limited to

- Executive Summary
- Results achieved in Comparison to work Plan Targets
- Significant Implementation problems encountered
- Actions taken to resolve problems
- Describe organisation on project

7 Reports & Deliverables

Reports and deliverables listed below shall be prepared; revised to suit COR comments (if required); and approval pursued from COR. The timelines for these reports is also given below.

Report Title	Due in (days)	Initial Submission Date	Recurring Frequency	COR Approval Required
Project Work Plan	30 (After the award of Project)	17 Aug 2015	Once Monthly review update as needed	Yes
Final Report		15 Jan 2016	Once	Yes
Inspection and Verification Reports (separate for PDP and EPP) Phase -1 & Phase - 2	14 (After completion of field data collection)	30 Sep 2015	Once	
Non-Compliance Reports	immediate	As and when required	As and when required	
Security Plan	Prior to the start of TO		Once / Review on regular basis and revise as Needed	Yes
Cost Control reporting System	15 (After the award of project)		Once	
Financial Reports	30 (At end of Quarter)		Quarterly	
Financial vouchers	10 (At end of every Month)		Monthly	
Monthly Progress Report	10 (After the end of every Month)		Monthly	Yes (Format only)
Email Updates	Every Monday		Weekly/ As required	
Demobilization Plan	Prior to the start of TO	31 July	Once	Yes
Branding Implementation & Marking Plan	Prior to the start of TO		Once	Yes

The deliverables in the above table with last column entries are recurring at the specified frequency.

8 Critical Milestones

Critical milestones of the project are identified in the table below. The table emphasizes the consequences of delaying of an activity that has a chain of linked and dependant activities which in turn are affected.

Critical milestones,

Activity	Critical Milestone Date (Last date)	Dependant Activity
General Management & Administrative support	16 July 2015 (project start date)	To plan and run project successfully with in timeline.
Work Plan	30 Days after the Award of project	
Sampling Percentages Methodology and list	First Three Weeks from Project starts	1-To plan visits for inspection and verification activity 2-Preparation and finalization of inspection and verification methodology
Finalize list for each region for site investigation	First Three Weeks from Project starts	To plan and monitor schedule to conduct inspection & verification
Preparations of Inspection & Verification Plan (check list , variations form, methodology)	First Three Weeks from Project starts	To properly conduct inspection & verification during filed visits as per TO requirement
Field Visits for Inspections & Verifications	From the start(3 rd Aug) of inspection activity	To prepare Final Report.
Inspection and Verification Reports (separate for PDP and EPP) Phase -1 & Phase - 2	30 Sep 2015	Finalization of sample, finalization of list of equipment, and inspection visits
Final Report	15 Jan 2016	



Appendix A

EPP Equipment List

List of Items/Material Delivered by EPP					
S.No	Purchase Order Description	Deliverables	Qty.	Unit	Districts
1	Transformer Oil Tests	• Oil Sample test results	211	Tests	Throughout KPK
2	Repair of 40 MVA, 132/66 kV Power Transformer	Delivered and installed at Shahibagh	1	Nos.	Peshawar
3	Implementation of Automated Metering System (AMR)	• Application Software for Control Room	1	Nos.	Throughout KPK
		• PC Application for Remote Client	3	Nos.	
		• Data Concentrator Unit	61	Nos.	
		• Three Phase Whole Current Energy Meter with RF Module	141	Nos.	
4	Complete Rewinding of 40 MVA, 132/66 kV Power Transformer	40MVA Power Transformer delivered Chakdara	1	Nos.	Dir Lower
5	Supply of PTF Cooling Fans & Circuit Breakers	• Power Transformer Cooling Fans	348	Nos.	Throughout KPK
		• Fan Motor Circuit Breakers (MCB up to 40 Amps, 3 Phase)	28	Nos.	
		• Fan Motor Circuit Breakers (individual 2-5 Phase)	28	Nos.	
6	Supply of 132kV Circuit Breakers-PESCO	• 132kV Circuit Breakers	7	Nos.	Charsadah, Bannu, Kohat, Mansehra, Nowshera
7	Supply of Metering Panels and Data Communication Equipment	• 4 Line Metering Panels with Bidirectional (Import & Export) Energy Meters 1 Amp rating accuracy class 0.2S as per specifications P-1999:2008 & P-202-2012,	3	Nos.	Lahore, Gujranwala
		• 3 Line Metering Panels with Bidirectional (Import & Export) Energy Meters 1 Amp rating accuracy class 0.2S as per specifications P-1999:2008 & P-202-2012,	1	Nos.	
		• 2 Line Metering Panels with Bidirectional (Import & Export) Energy Meters 1 Amp rating accuracy class 0.2S as per specifications P-1999:2008 & P-202-2012,	10	Nos.	
		• Data Communications Equipment as per specifications-199:2008 Line Metering Panels with Bidirectional (Import & Export) Energy Meters 1 Amp rating accuracy class 0.2S as per specifications P-1999:2008 & P-202-2012, 12 Sets	12	Sets	
8	Supply of 03 Toyota HIACE High Roof Vans	• Toyota Hiace Vans	3	Nos.	Peshawar, Abbottabad, Mardan
9	Supply of 132 kV Circuit Breaker, Current Transformer and Capacitor Cell for PESCO GS	• SF6 Circuit Breaker Type GL 312 F1/4031 P(31mm/kV), F1, Three Pole Autorecloser 145KV-3150A-50Hz-40kA/3 s, with steel structure, HV connectors, SF6 Gas for first filling and Anchor Bolts.	3	Sets	Nowshera, Hangu, Bannu
		• 132kV Current Transformer with complete assembly outdoor type	1	Nos.	
		• Capacitor cell 8280V, Type PSLP, 400kVAr, 50Hz, Capacitance 18.6μF,	100	Nos.	
		Installation, testing and commissioning of capacitor banks	3	Nos.	
10	Supply, Installation and commissioning of 03 new Power Transformers at Hattar, DI Khan and Jamrud	• 31.5/40MVA, 132/11.5kV Power Transformer Complete with Auxiliary Panels and all other Accessories	3	Nos.	DI Khan, Haripur, Khyber Agency
		• Full 11kV outdoor bus bar system with all ancillaries suitable for 5 x 1000 MCM Power Cables per phase on the LV side of the Power Transformers	3	Nos.	
11	Repair & Rehabilitation of Power Transformer-PESCO	20/26MVA, 132/11kV Power Transformer at Gadoon Amazai	1	Nos.	Swabi
12	Supply of Power Transformer Oil IEC-60296	For 40MVA Power Transformer delivered at Chakdara			Dir Lower

List of Items/Material Delivered by EPP					
S.No	Purchase Order Description	Deliverables	Qty.	Unit	Districts
14	Supply of Testing Equipment for P&I Vans	• 3 Phase 10KVA Honda Petrol Generator	3	Nos.	All KPK Districts
		• Secondary Injection Relay Test Set	3	Nos.	
		• Circuit Breaker Analyzer system	3	Nos.	
		• Digital Insulation Resistance Tester 10KV	3	Nos.	
		• Digital Clamp Meter	3	Nos.	
		• True-RMS Industrial Logging Multi-meter	3	Nos.	
		• Low Resistance Ohmmeter 230V	3	Nos.	
		• 3 Phase fully automatic TTR 300 Series with accessories	3	Nos.	
		• Capacitance and Dissipation Factor Test Set	3	Nos.	
		• Digital Low resistance Ohmmeter 600A	3	Nos.	
		• Phase Rotation Indicator	3	Nos.	
		• CLR Meter	3	Nos.	
		• Digital Clamp Meter	3	Nos.	
		• Electrician Tool Kit in a Box 14 Items	3	Sets	
15	Supply and delivery of 11kV metal clad switchgear, incoming Panels. Supply & Delivery of total 4KM 1000 MCM. Indoor termination Kits for 1000 MCM. Outdoor termination Kits for 1000MCM.	• 11 kV Switchgear Incoming Panels	3	Sets	DI Khan, Haripur, Khyber Agency
		• 4 KM 1000 MCM Power Cable	3	Sets	
		• Complete Outdoor Termination Kits	27	Nos.	
		• Complete Indoor Termination Kits	27	Nos.	
16	Supply of PTF Cooling Fans & Circuit Breakers - 2nd Batch	Power Transformer Cooling Fans	129	Nos.	All KPK Districts
		Fan Motor Circuit Breakers (Individual 1~2 Amps, 3-phase)	50	Nos.	
17	Telescopic bucket trucks have been delivered at PESCO warehouse on April 28, 2015	Registration ongoing	4	Nos.	All KPK Districts
18	Nine (09) Transmission Line Tower Repairs	Tower steel and foundations	9	Lines	Peshawar, Mardan and Abbottabad Division
19	LLM IESCO-April 13, 2015	Live Line tools, trailers and vehicles	1	Set	Islamabad
20	LLM PESCO-May 8, 2015	Live Line tools, trailers and vehicles	1	Set	Peshawar
21	LLM FESCO-June 20, 2015	Live Line tools, trailers and vehicles	1	Set	Faisalabad
22	NTDC Design Center Upgrade & Training (hardware + software)	Desktop Computers	24	Nos.	Lahore
		Laptops	11	Nos.	
		Printers	9	Nos.	
		Scanners	8	Nos.	
		Multimedia	1	Nos.	
		UPS	24	Nos.	
		Wireless Routers	8	Nos.	
		Server	1	Nos.	
		Plotter	1	Nos.	
		Bentley Substation V8i Design	13	Licenses	
		AutoCAD 2014	19	Licenses	
		STAADPRO	3	Licenses	

List of Items/Material Delivered by EPP					
S.No	Purcahse Order Description	Deliverables	Qty.	Unit	Districts
		PLS-CADD	4	Licenses	
		Tower	3	Licenses	
		PLS POLE	3	Licenses	
		SAPS	3	Licenses	
		SAGSEC	7	Licenses	
		CAISSON	3	Licenses	
		Arc GIS	8	Licenses	
		Microsoft Project	35	Licenses	
23	Supply and delivery of Application Servers, Storage Area Network (SAN), and Display Portals	• Storage Area Network (SAN)	2	Nos.	WAPDA House, Lahore; PESCO, IESCO, GEPCO, LESCO, MEPCO, SEPCO, HESCO, QESCO, FESCO and TESCO
		• Application Server	4	Nos.	
		• UPS	6	Nos.	
		• Display Portals	45	Nos.	
		• Laptop Computers	5	Nos.	
24	Supply of PPEs and earth sets for PESCO grid stations	• Grounding Sets	40	Nos.	Peshawar, Mardan, Bannu, Abbottabad
		• Hardhats	200	Nos.	
		• Visibility Jackets	200	Nos.	
		• Leather Gloves	40	Nos.	
		• Flash Goggles	40	Nos.	
		• Welder's Safety Goggles	20	Nos.	
25	Supply of Tools and equipment for transmission lines and grids	Welding Set	4	Nos.	Peshawar, Mardan, Bannu, Abbottabad
		Generator 5kVA	4	Nos.	
		Gas cutter	4	Nos.	
		Press machine high pressure 15 ton	4	Nos.	
		Press machine high pressure 20 ton	4	Nos.	
		Press machine high pressure 100 ton	4	Nos.	
		Blower Machine	4	Nos.	
		Hand Line with Rope	4	Nos.	
		Strain Board	4	Nos.	
		Live line measuring stick	4	Nos.	
		Conductor grips	16	Nos.	
		Grounding sticks with duck bill and clamp	16	Nos.	
		linemen belts with harness	20	Nos.	
AVO Meter	4	Sets			
26	Supply, delivery, installation and training of equipment for NTDC IT Department	Server	5	Nos.	Lahore, Islamabad
		Desktop Computers	18	Nos.	
		Laptops	4	Nos.	
		Printers	3	Nos.	
		scanner	2	Nos.	
		Print Server	1	Nos.	
		UPS	1	Nos.	
		Switch	3	Nos.	
		Fiber optic laying and installation	1	Job	



Appendix B

PDP Equipment List

List of PDP Engineering Equipment Installed in the Field by June 2015			
Sr. No	Equipment	DISCO	Quantity Installed by June 30, 2015
1	LT Capacitors	MEPCO	45,615
		FESCO	1,033
		IESCO	788
		LESCO	1,058
		QESCO	16,007
		PESCO	2,367
		HESCO	715
		SEPCO	2,019
	TOTAL	69,602	
2	Electronic Meters	PESCO	25,480
		FESCO	7,561
		MEPCO-refixing	16,685
		TOTAL	49,726
3	RF-Enabled Meters	LESCO	6,417
		PESCO	3,872
		TOTAL	10,289
4	AMR Meters for Various Customer Categories	IESCO	343
		MEPCO	761
		LESCO	84
		HESCO	12,803
		PESCO	98
		TOTAL	14,089
5	AMR Meters for Hi-End and Tubewell Consumers	MEPCO	29,687
		PESCO	10,007
		TOTAL	39,694
6	AMR Meters for Cost of Service Study	FESCO	
		GEPCO	169
		HESCO	24
		LESCO	122
		MEPCO	179
		PESCO	123
		QESCO	
SEPCO			
	TOTAL	617	

List of PDP Engineering Equipment Installed in the Field by June 2015			
Sr. No	Equipment	DISCO	Quantity Installed by June 30, 2015
7	LDI AMR Meters (On Grid Stations)	FESCO	1,101
		GEPCO	891
		HESCO	581
		IESCO	1,139
		LESCO	1,797
		MEPCO	1,379
		PESCO	1,062
		QESCO	670
		SEPCO	594
		TESCO	121
	TOTAL	9,335	
8	CSP Transformers	PESCO	55
		TOTAL	55
9	Municipal Pumps	CDA-Islamabad	135
		KWSB-Karachi	75
		TOTAL	210
10	Industrial Motors	FESCO	147
		HESCO	157
		IESCO	2
		KESC	51
		LESCO	516
		MEPCO	252
		PESCO	410
		SEPCO	4
	TOTAL	1,539	
11	ABC Cable (Km)	PESCO	85
		MEPCO	269
		TOTAL	354
12	HT Capacitors	MEPCO	40
		TOTAL	40
13	Voltage Regulators	MEPCO	-
		TOTAL	-
14	Hand Held Units (HHUs)	MEPCO	538
		PESCO	900
		IESCO	13
		TOTAL	1,451
15	Deck Loaders for Linemen	MEPCO	70
		PESCO	70
		TOTAL	140

List of PDP Engineering Equipment Installed in the Field by June 2015			
Sr. No	Equipment	DISCO	Quantity Installed by June 30, 2015
16	Suzuki Ravis for Linemen	MEPCO	30
		PESCO	30
		TOTAL	60
17	Outage Reduction Devices	FESCO	703
		GEPCO	853
		HESCO	153
		IESCO	862
		LESCO	784
		MEPCO	1,254
		PESCO	2,400
TOTAL	7,009		
18	Linemen Tools (Ladders, Gloves, Belts, Hard Hats, High Visibility Vests, Spanners, Pliers, Wrenches, Drilling Machines, Clamps, Tool Kits, Hot Sticks, Grounding Sets, Training Aids etc.)	FESCO	43,998
		GEPCO	
		HESCO	
		IESCO	
		LESCO	
		MEPCO	
		PESCO	
		QESCO	
SEPCO			
TOTAL	43,998		

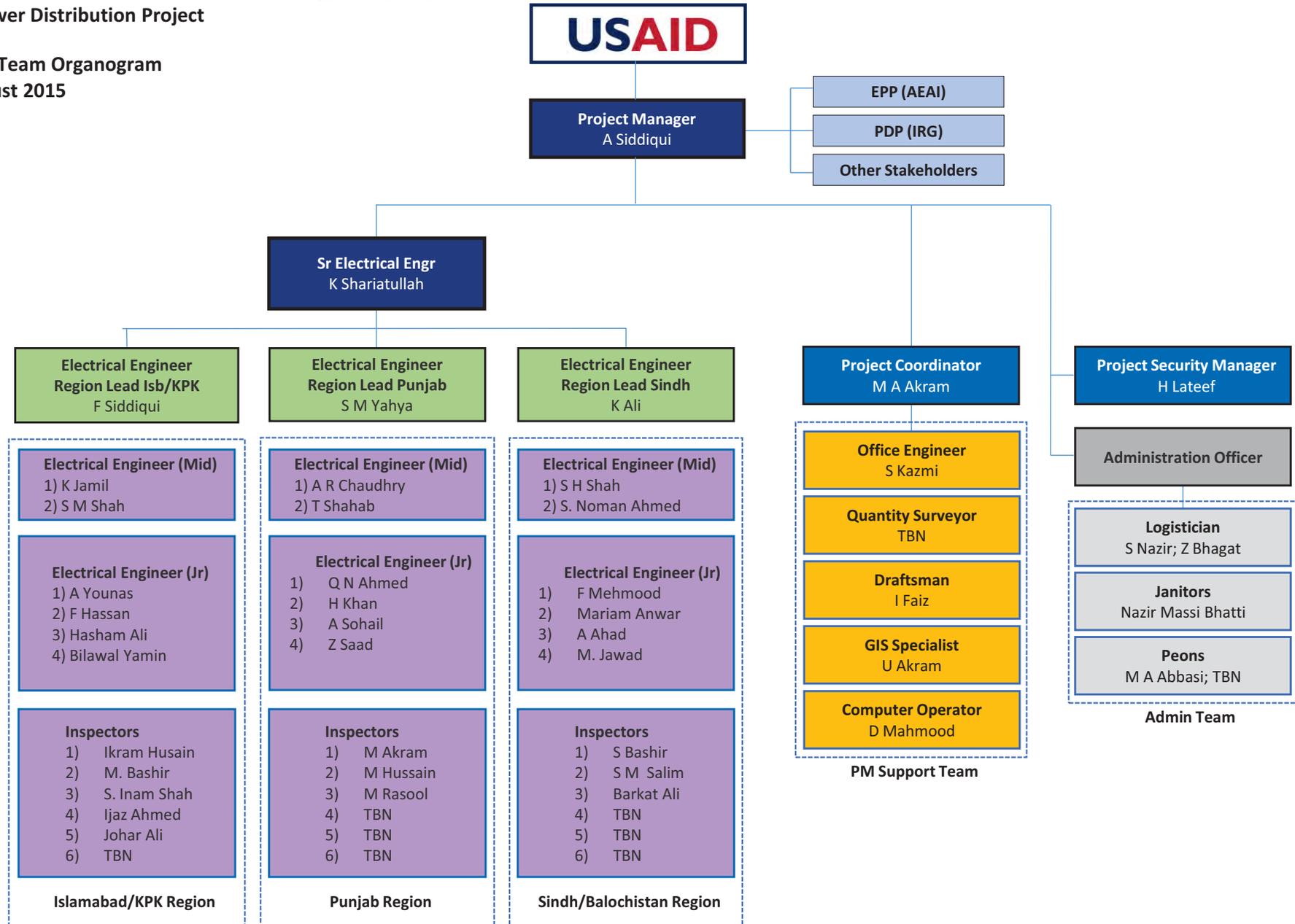


Appendix C

Project Organogram

Technical Work Inspection for USAID'S Energy Policy Project
and Power Distribution Project

Project Team Organogram
16 August 2015





Appendix D

Project Directory

PROJECT DIRECTORY

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

Company	Name	Designation	Email	Contact number
USAID				
	Abdullah Akbar	Contracting Officer (CO)	Abakbar@usaid.gov	0301-8554893
	Robert Helmerick	Contracting Officer Representative (COR)	rhelmerick@usaid.gov	0300-5012184 051-2015000
	Mohammad Ishtiaq	Alternative COR		051-2015000
	Saeed Anwar	Senior Program Manager (COS)	sanwar@usaid.gov	0300-5012219
	Nadeem Habib	Program Management Specialist (Energy)	nhabib@usaid.gov	0300-8568936
AEAI				
	Talha Javed	Chief of Party (COP)	tjaved@ep-ep.com.pk	0302-8512702
	Memona Nasser	Associate Manager CCA	memona@ep-ep.com.pk	0336-5236984
IRG				
	John Pullinger	DCOP (Operations)	jpullinger@pdip.pk	0302-8555055
	Tahir Ahmed	Senior Program Manager (PDP)	tahmed@pdip.pk	0308-5553344
HPK				
	Usman Mumtaz	Program Manager	Usman.Mumtaz@halcrowpk.com	0301-8541490
	Afzal Siddiqui	Project Manager (PM)	Afzal.Siddiqui@halcrowpk.com	0334-5444341 0335-3231262

	Kawish Shariatullah	Sr. Electrical Engineer (SE)	Kawish.Shariatullah@halcrowpk.com	0334-5444349
	Khursheed Ali	Region lead - Sindh	Khursheed.Ali@halcrowpk.com	0333-3009329
	Sheikh Muhammad Yahya	Region lead- Punjab	powercom-1@hotmail.com	0300-8461463
	Fayaz Siddiqui	Region lead ISB/KPK	Fayaz.Siddiqui@halcrowpk.com	0334-5444364 0300-5209559
	Azeem Akram	Project Coordinator	Azeem.Akram@halcrowpk.com	0321-5288600
	Hassan Kazmi	Office Engineer	Syed.Kazmi@halcrowpk.com	0345-5379002



Appendix E

Overall Work Plan

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

WORK PLAN - Rev 01 - Updated, 17 August, 2015

Sr. No.	Task Name	Start Date (D / M / Y)	Finish Date (D / M / Y)	2015												2016
				Jul	Aug	Sep	Oct	Nov	Dec	Jan						
1	Technical Work Inspection for USAID's EPP and PDP	16-Jul-15	15-Jan-16	[Full-time activity bar]												
2	General Management & Administrative Support	16-Jul-15	15-Jan-16	[Full-time activity bar]												
2.1	General Advise & Support	16-Jul-15	15-Jan-16	[Partial inputs bar]												
2.2	Coordination with COR	16-Jul-15	15-Jan-16	[Partial inputs bar]												
2.3	Coordination with Stake Holders	16-Jul-15	15-Jan-16	[Partial inputs bar]												
2.4	Data Management	16-Jul-15	15-Jan-16	[Partial inputs bar]												
2.5	Managing of USAID-Funded property	16-Jul-15	15-Jan-16	[Partial inputs bar]												
2.6	Branding Implementation & Marking Plan	16-Jul-15	15-Jan-16	[Partial inputs bar]												
2.7	Security Plan Review and Implementation	16-Jul-15	15-Jan-16	[Partial inputs bar]												
3	Project Plan and Management	16-Jul-15	15-Jan-16	[Full-time activity bar]												
3.1	Project Work Plan	16-Jul-15	16-Aug-15	[Deliverable - requires Review, Update as required bar]												
3.2	Cost Control Reporting	16-Jul-15	11-Aug-15	[Deliverable bar]												
3.3	Financial reports	12-Aug-15	15-Jan-16	[Deliverable - need basis bar]												
3.4	Financial vouchers	12-Aug-15	15-Jan-16	[Deliverable - need basis bar]												
3.5	Monthly Progress Report	10-Aug-15	15-Jan-16	[Deliverable - need basis bar]												
3.6	Email updates	27-Jul-15	11-Jan-16	[Deliverable - need basis bar]												
3.7	Quarterly Meeting Minutes	30-Sep-15	31-Dec-15	[Deliverable - need basis bar]												
4	Inspection & Verification	16-Jul-15	30-Sep-15	[Full-time activity bar]												
4.1	Staff Mobilization	16-Jul-15	20-Aug-15	[Deliverable - requires Review, Update as required bar]												
4.2	Inspection & Verification Methodology	16-Jul-15	20-Aug-15	[Full-time inputs bar]												
4.3	Sampling Methodology	16-Jul-15	20-Aug-15	[Full-time inputs bar]												
4.4	Inspection and Verification Forms	16-Jul-15	10-Aug-15	[Full-time inputs bar]												
4.5	Inspection in Islamabad, KPK & Khyber Agency	3-Aug-15	18-Sep-15	[Full-time inputs bar]												
4.6	Inspection in Punjab	3-Aug-15	15-Sep-15	[Full-time inputs bar]												
4.7	Inspection in Sindh & Balochistan	6-Aug-15	18-Sep-15	[Full-time inputs bar]												
4.8	Inspection Reports Phase-I (Separate for PDP & EPP)	10-Sep-15	30-Sep-15	[Deliverable - need basis bar]												
4.9	Inspection Reports Phase-II (Separate for PDP & EPP)	10-Sep-15	30-Sep-15	[Deliverable - need basis bar]												
4.10	Non-Compliance Reports	3-Aug-15	30-Sep-15	[Deliverable - need basis bar]												
5	Project Close Out	16-Jul-15	15-Jan-16	[Deliverable - requires Review, Update as required bar]												
5.1	Preparation of Demobilization Plan	16-Jul-15	31-Jul-15	[Deliverable - requires Review, Update as required bar]												
5.2	Demobilisation - Phase I (Demobilization of Field Staff)	15-Nov-15	30-Nov-15	[Full-time inputs bar]												
5.3	Demobilisation Phase 2 - (Project Team and Property disposition and data handover)	1-Jan-16	15-Jan-16	[Full-time inputs bar]												
5.4	Final Report	15-Oct-15	15-Jan-16	[Deliverable - requires Review, Update as required bar]												

[Light Blue]	Partial Inputs
[Red]	Full Time Inputs
[Brown]	Deliverable
[Dark Blue]	Deliverable - need basis
[Green]	Deliverable- requires Review, Update as required



Appendix F

Region Wise Work
Plan

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

Sindh / Balochistan Region (PDP) WORK PLAN - Rev 01 - Updated, 17 August, 2015

ID	Task Name	Deliverable Discos	Total Items	Percentage Sampling	Sample Qty	Start Date (M /D /Y)	Finish Date (M /D / Y)	2015	
								Aug	Sep
-	Inspection & Verification Phase					Thu 8/6/15	Fri 9/18/15	[Green bar spanning Aug 6 to Sep 18]	
1	AMR Meters Various Categories	HESCO	12803	1%	128	Mon 8/17/15	Fri 8/21/15	[Blue bar spanning Aug 17 to Aug 21]	
2	LDI (Load data improvement) AMR Meter for Grid station	HESCO	581	30%	174	Thu 8/6/15	Thu 8/13/15	[Blue bar spanning Aug 6 to Aug 13]	
3	Line Man Tool Kit	HESCO	4400	0.50	22	Mon 8/10/15	Thu 8/13/15	[Blue bar spanning Aug 10 to Aug 13]	
4	LT Capacitors	HESCO	715	10%	72	Mon 8/24/15	Fri 9/11/15	[Blue bar spanning Aug 24 to Sep 11]	
5	AMR Meters For Cost of service Study	HESCO	24	50%	12	Mon 8/17/15	Fri 8/21/15	[Blue bar spanning Aug 17 to Aug 21]	
6	Outage Reduction Devices	HESCO	153	50%	76	Thu 8/6/15	Thu 8/13/15	[Blue bar spanning Aug 6 to Aug 13]	
7	LDI (Load data improvement) AMR Meter for Grid station	SEPCO	594	30%	178	Mon 8/24/15	Fri 8/28/15	[Blue bar spanning Aug 24 to Aug 28]	
8	Line Man Tool Kit	SEPCO	4400	0.50	22	Mon 8/24/15	Fri 8/28/15	[Blue bar spanning Aug 24 to Aug 28]	
9	LT Capacitors	SEPCO	2019	10%	202	Mon 8/24/15	Fri 9/11/15	[Blue bar spanning Aug 24 to Sep 11]	
10	LT Capacitors	QUESCO	16007	2.50	400	Mon 9/14/15	Fri 9/18/15	[Blue bar spanning Sep 14 to Sep 18]	
11	Line Man Tool Kit	QUESCO	4400	0.50	22	Mon 9/14/15	Fri 9/18/15	[Blue bar spanning Sep 14 to Sep 18]	
12	LDI (Load data improvement) AMR Meter for Grid station	QUESCO	670	10%	67	Mon 8/31/15	Wed 9/2/15	[Blue bar spanning Aug 31 to Sep 2]	

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

Punjab Region (PDP) Work Plan - Rev 01 - Updated, 17 August, 2015

ID	Task Name	Deliveable Discos	Total Items	Percentage Sampling	Sample Qty	Start Date (M /D /Y)	Finish Date (M /D /Y)	2015											
								Aug			Sep								
-	Inspection & Verification Phase					Mon 8/3/15	Fri 9/18/15												
1	LT Capacitors	MEPCO LESCO FESCO Total	45615 1058 1033 47706	2%	953	Mon 8/3/15	Fri 9/18/15												
2	Electronic Meters	MEPCO refixing FESCO Total	16685 7561 24246	2%	542	Mon 8/3/15	Fri 9/18/15												
3	RF- Enabled Meter	LESCO	6417	4%	257	Mon 8/3/15	Mon 8/31/15												
4	AMR Meters for various Customer Categories	MEPCO LESCO Total	761 84 845	4%	34	Mon 8/3/15	Mon 9/14/15												
5	AMR Meter for Hi-End	MEPCO	29687	2%	593	Mon 8/3/15	Fri 9/18/15												
6	AMR Meter for cost of service study	LESCO	122	10%	12	Tue 8/4/15	Fri 9/4/15												
7	LDI-AMR Meters on Grid Stations	MEPCO LESCO FESCO GEPCO Total	1379 1797 1101 891 5078	12%	620	Mon 8/3/15	Mon 9/14/15												
8	Hand Held Unit (HHU)	MEPCO	538	15%	81	Mon 8/15/15	Fri 8/28/15												
9	HT Capacitors	MEPCO	40	10%	4	Thu 8/6/15	Tue 9/8/15												
10	ABC Cables	MEPCO	296 KM	5%	15	Tue 8/4/15	Mon 8/31/15												
11	Deck Loader for Linemen	MEPCO	70	11%	8	Fri 8/7/15	Sun 9/6/15												
12	Suzuki Ravis for Linemen	MEPCO	30	20%	6	Sat 8/8/15	Fri 9/4/15												
13	Outage Reduction Devices	MEPCO LESCO FESCO GEPCO Total	1254 784 703 853 3594	10%	360	Mon 8/10/15	Thu 9/10/15												
14	Line Man T&P (Ladders, Gloves, Belts , Hard Hats, High Visibility vests, spanners, pliers, wrenches, clamps, drilling machines, tool kits, grounding sets, training aids.	MEPCO LESCO FESCO GEPCO	25000	2%	500	Fri 8/7/15	Wed 9/2/15												
15	Supply of Metering Panels and Data Communication	LESCO GEPCO	26	15%	4	Sun 8/16/15	Tue 9/8/15												
16	LLM FESCO-June 20, 2015	Faisalabad	1	100%	1	Tue 8/25/15	Fri 8/28/15												
17	NTDC Design Center Upgrade & Training (hardware + software)	Lahore	188	50%	94	Fri 9/4/15	Thu 9/10/15												
18	Supply & delivery of Application Servers, Storage Area Network (SAN), Display Portals	GEPCO LESCO MEPCO FESCO	62	50%	31	Fri 8/7/15	Fri 9/4/15												
19	Supply, delivery, installation and training of equipment for NTDC IT Department	Lahore	38	50%	19	Thu 8/27/15	Fri 8/28/15												

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

KPK & ISL (PDP & EPP) WORK PLAN - Rev 01 - Updated, 17 August, 2015

ID	Task Name	Deliveable Discos	Total Items	Percentage Sampling	Sample Qty	Start Date (M /D /Y)	Finish Date (M /D /Y)	2015	
								Aug	Sep
-	Inspection & Verification Phase					Mon 8/3/14	Tue 9/15/15		
1	AMR Meters Various Categories	PESCO	98	25%	25	Mon 8/17/15	Tue 8/25/15		
2	AMR Meters for high end consumers	PESCO	10,007	1%	100	Mon 8/17/15	Tue 8/25/15		
3	AMR Meters for Cost of Service Study	PESCO	123	10%	12	Mon 8/17/15	Tue 8/25/15		
4	CSP Transformers	PESCO	55	25%	14	Mon 8/24/15	Tue 8/25/15		
5	Hand held units (HHUs)	PESCO	900	10%	90	Wed 8/26/15	Fri 8/28/15		
6	Deck Loader for line man	PESCO	70	10%	7	Wed 8/26/15	Thu 8/27/15		
7	Suzuki Ravi for line men	PESCO	30	10%	3	Wed 8/26/15	Thu 8/27/15		
8	ABC Cable (Km)	PESCO	85	2%	2	Wed 8/26/15	Thu 8/27/15		
9	LT capacitors	PESCO	2,367	2%	47	Fri 8/28/15	Thu 9/3/15		
10	RF-Enabled Meters	PESCO	3,872	1%	39	Mon 8/31/15	Wed 9/2/15		
11	Electronic Meters	PESCO	25,480	0.20%	51	Mon 8/31/15	Wed 9/2/15		
12	Outage Reduction Devices	PESCO	2,400	1%	24	Wed 9/2/15	Fri 9/4/15		
13	Linemen Tools (Ladders, Gloves, Belts, Hard Hats, High Visibility Vests, Spanners, Pliers, Wrenches, Drilling Machines, Clamps, Tool Kits, Hot Sticks, Grounding Sets, Training Aids etc.)	PESCO	4,400	0.50%	22	Thu 9/3/15	Tue 9/8/15		
14	LDI (Load data improvement) AMR Meter for Grid station	PESCO	1,062	10%	106	Wed 8/26/15	Tue 9/1/15		
15	LDI AMR Meters	TESCO	121	10%	15	Wed 8/26/15	Thu 8/27/15		
16	AMR Meters Various Catagories	IESCO	343	10%	34	Mon 8/3/15	Thu 8/6/15		
17	Hand Held Units (HHUs)	IESCO	13	50%	7	Mon 8/3/15	Mon 8/3/15		
18	LT Capacitors	IESCO	788	5%	39	Mon 8/17/15	Fri 8/21/15		
19	Outage Reduction Devices	IESCO	862	10%	86	Mon 8/24/15	Fri 8/28/15		
20	Lineman Tools(Ladders Gloves Belts hard Hats, High Visibilty Vests , Spanners, Pliers, Wrenches, Drilling Machine, Clamps, Tool kits, Hot Sticks, Grounding Sets, Training Aids etc)	IESCO	4,400	0.50%	22	Tue 9/1/15	Thu 9/3/15		
21	LDI (Load data Improvement) AMR Meter For Grid Station	IESCO	1,139	15%	176	Mon 9/7/15	Fri 9/11/15		



Appendix G

Percentage Sampling
(PDP & EPP)

Percentage Sampling for Sindh/ Balochistan Region

Table 1: Percentage Sampling for Sindh/ Balochistan Region.

Serial No.	Task Name & Deliverables	Deliverable Discos	Total Items	Percentage Sampling	Sample Quantity
1.	AMR Meters Various Categories	HESCO	12803	1	128
2.	LDI (Load data improvement) AMR Meter for Grid station	HESCO	581	10	174
3.	Line Man Tool Kit	HESCO	4400	0.5	440
4.	LT Capacitors	HESCO	715	10	72
5.	AMR Meters For Cost of service Study	HESCO	24	50	12
6.	Outage Reduction Devices	HESCO	153	10	76
7.	LDI (Load data improvement) AMR Meter for Grid station	SEPCO	594	10	178
8.	Line Man Tool Kit	SEPCO	4400	0.5	440
9.	LT Capacitors	SEPCO	2019	10	202
10.	LT Capacitors	QUESCO	16007	5	400
11.	Line Man Tool Kit	QUESCO	4400	0.5	440
12.	LDI (Load data improvement) AMR Meter for Grid station	QUESCO	670	10	67

Percentage Sampling for KPK/ Islamabad region

Table 2: Percentage Sampling for KPK/ Islamabad region.

Serial No.	Task Name	Deliverable Discos	Total Items	Percentage Sampling	Sample Quantity
1.	AMR Meters Various Categories	PESCO	98	25%	25
2.	AMR Meters for high end consumers	PESCO	10007	1%	100
3.	AMR Meters for Cost of Service Study	PESCO	123	10%	12
4.	CSP Transformers	PESCO	55	25%	14
5.	Hand held units (HHUs)	PESCO	900	10%	90
6.	Deck Loader for line man	PESCO	70	10%	7
7.	Suzuki Ravi for line men	PESCO	30	10%	3
8.	ABC Cable (Km)	PESCO	85	2%	2
9.	LT capacitors	PESCO	2367	2%	47
10.	RF-Enabled Meters	PESCO	3,872	1%	39
11.	Electronic Meters	PESCO	25,480	0.20%	51
12.	Outage Reduction Devices	PESCO	2,400	1.00%	24
13.	Linemen Tools (Ladders, Gloves, Belts, Hard Hats, High Visibility Vests, Spanners, Pliers, Wrenches, Drilling Machines, Clamps, Tool Kits, Hot Sticks, Grounding Sets, Training Aids etc.)	PESCO	4400	0.50%	22
14.	LDI (Load data improvement) AMR Meter for Grid station	PESCO	1062	10%	106
15.	LDI AMR Meters	TESCO	121	10%	15
16.	AMR Meters Various Categories	IESCO	343	10%	34
17.	Hand Held Units (HHUs)	IESCO	13	50%	7

Technical Work Inspection for USAID's Energy Policy Project and Power Distribution Project
Percentage Sampling

18.	LT Capacitors	IESCO	788	5%	39
19.	Outage Reduction Devices	IESCO	862	10%	86
20.	Lineman Tools(Ladders Gloves Belts hard Hats, High Visibility Vests , Spanners, Pliers, Wrenches, Drilling Machine, Clamps, Tool kits, Hot Sticks, Grounding Sets, Training Aids etc.)	IESCO	4400	0.50%	22
21.	LDI (Load data Improvement) AMR Meter For Grid Station	IESCO	1139	15%	176
22.	Transformer Oil Tests	PESCO&TESCO	218	100%	218
23.	Repair of 40 MVA PTF Shahibagh	PESCO	1	100%	1
24.	Implementation of Automated Metering System (AMR)	PESCO	141	10%	14
25.	Complete Rewinding of 40 MVA, 132/66 KV PTF-Chakdara	PESCO	1	100%	1
26.	Supply of PTF Cooling Fans & Circuit Breakers	PESCO&TESCO	348	10%	35
27.	Supply of 132kV Circuit Breakers-PESCO	PESCO	7	100%	7
28.	Supply of 03 Toyota HIACE High Roof Vans	PESCO	3	100%	3
29.	Supply of 132 KV Circuit Breaker , CT, Capacitor Cell -Installation and Commissioning	PESCO	3,1,100	100%	3,1,100
30.	03 new PTF and Outdoor BusBar System, Cables etc. at Hattar, DI Khan and Jamrud	PESCO	3	100%	3
31.	Repair & Rehabilitation of Power Transformer-PESCO(Gadoon)	PESCO	1	100%	1
32.	Supply of Power Transformer Oil IEC-60296 at Chakdara	PESCO	1	100%	1
33.	Supply of Testing Equipment for P&I Vans	PESCO	33	100%	33
34.	Supply and Delivery Of 11kV metal Clad Switch Gear Incoming panels Supply and Delivery Of Total 4km 1000 MCM. Indoor	PESCO	3	100%	3

Technical Work Inspection for USAID's Energy Policy Project and Power Distribution Project
Percentage Sampling

	Termination Kits For 1000 MCM. Outdoor Termination Kits for 1000 MCM.				
35.	Telescopic Bucket trucks (Delivered at PESCO warehouse On (April 28, 2015)	PESCO	4	100%	4
36.	Nine Transmission Lines Tower repairs	PESCO	9	100%	9
37.	LLM PESCO-May 8, 2015	PESCO	1 set	100%	1 set
38.	Supply Of PPEs and Earth sets For PESCO grid stations	PESCO	540	50%	270
39.	Supply Of Tools And Equipment For transmission Lines and Grid	PESCO	92	50%	46
40.	LLM IESCO (April 13, 2015)	IESCO	1set	100%	1 set

Percentage Sampling for Punjab Region

Table 3: Percentage Sampling for Punjab Region.

Serial No.	Task Name	Deliverable DISCOS	Total Item	Percentage Sampling	Sample QTY
1.	LT Capacitors	MEPCO, LESCO, FESCO	47706	2	953
2.	Electronic Meters	MEPCO refixing, FESCO	24246	2	542
3.	RF- Enabled Meter	LESCO	6417	4	257
4.	AMR Meters for various Customer Categories	MEPCO, LESCO	845	4	34
5.	AMR Meter for Hi-End	MEPCO	29687	2	593
6.	AMR Meter for cost of service study	LESCO	122	10	12
7.	LDI-AMR Meters on Grid Stations	MEPCO, LESCO FESCO, GEPCO	5078	12	620
8.	Hand Held Unit (HHU)	MEPCO	538	15	81
9.	HT Capacitors	MEPCO	40	10	4
10.	ABC Cables	MEPCO	296 KM	5	15
11.	Deck Loader for Linemen	MEPCO	70	11	8
12.	Suzuki Ravis for Linemen	MEPCO	30	20	6

13.	Outage Reduction Devices	MEPCO, LESCO FESCO, GEPCO	3594	10	360
14.	Line Man T&P (Ladders, Gloves, Belts , Hard Hats, High Visibility vests, spanners, pliers, wrenches, clamps, drilling machines, tool kits, grounding sets, training aids.	MEPCO, LESCO FESCO, GEPCO	25000	2	500
15.	Supply of Metering Panels and Data Communication	LESCO, GEPCO	26	15	4
16.	LLM FESCO-June 20, 2015	Faisalabad	1	100	1
17.	NTDC Design Center Upgrade & Training (hardware + software)	Lahore	188	50	94
18.	Supply & delivery of Application Servers, Storage Area Network (SAN), Display Portals	GEPCO, LESCO MEPCO, FESCO	62	50	31
19.	Supply, delivery, installation and training of equipment for NTDC IT Department	Lahore	38	50	19



Appendix H

Inspection and
Verification Forms

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

TWI_LIST OF INSPECTION AND VERIFICATION FORMS

S.no	Form Reference	Description
1	Form B	Inspection and visit report performa
2	Form C	Transformer inspection performa
3	Form D	11 kv i/c panels / switchgear performa
4	Form E	132 KV current transformer inspection performa
5	Form F	132 kv circuit breaker inspection performa
6	Form G	LT capacitor inspection performa
7	Form H	HT capacitor inspection performa
8	Form I	3-phase smart energy meter inspection performa
9	Form J	3-phase ht type smart energy meters inspection performa
10	Form K	RFE static energy meter inspection performa
11	Form L	Hand held units performa
12	Form M	Outage reduction device performa

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM B: INSPECTION & VISIT REPORT PERFORMA

Date		Location	
Purpose of visit			
Inspection			
Contact reference			
Equipment			
System name			
Serial #			
Visit schedule	Planned	Actual	
Date of Visit			
Observation			
Recommendation			
Enclosure			
Prepared by	Checked by	Approved by	

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT
FORM C: TRANSFORMER INSPECTION PERFORMA

S. No.	Item Description	Status	Remarks
1	Transformer Name Plate and Data Verification.		
2	Certified Dimensions and drawings for the Transformers to be checked.		
3	HV bushing & LV bushing shall be inspected.		
4	CT Ratios to be confirmed.		
5	Tap Changers and drive Mechanism shall be inspected. Tap changers control and Indication Manual/Auto (raise or lower) to be checked.		
6	Protection devices, Control Panel shall be inspected.		
7	Winding Connection & Vector Group shall be confirmed.		
8	Alarm Monitoring and trip Signal from Transformers to be checked.		
9	Transformer Rating on ONAN and ONAF to be confirm for Operating maximum Load.		
10	Radiator shall be inspected.		
11	Air bleed and Oil drain Valves shall be inspected and Expansion Joints fitted out of the transformer and Cooler ends shall be inspected as applicable		
12	Fan Motors shall be inspected.		
13	Tank and accessories corrosion shall be inspected.		
14	Conservator Tank with Oil level gauge to be inspected.		
15	Silica gel, Breather shall be inspected.		
16	Pressure Relief devices to be inspected and OLTC Oil Surge Relay shall be inspected.		
17	Transformer Oil Valves shall be inspected.		
18	Heaters in the control Cabinet to be checked.		
19	Earthing Terminals to be inspected.		
20	Bucholz relay gas testing Valves shall be inspected.		
21	Transformer Oil shall be inhibited mineral oil free from additives.		
22	HV Neutral terminals and LV neutral terminals earthed through Resistor to be inspected.		
23	Bushing and earth connections are fully rated to withstand Short Circuit.		
24	Terminal marking shall be inspected or clearly and permanently shown.		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM C: TRANSFORMER INSPECTION PERFORMA

S. No.	Item Description	Status	Remarks
25	Labels to confirm for gas release, gas sampling and Bucholz test points. Labels on cooling fan & Pumps and associated MCB shall be inspected.		
26	Wiring Sizes for Control, Power and for CTS to confirm.		
27	FAT Reports.		
28	SAT Reports.		
29	Transformer Oil dielectric Test Reports to be verified.		
30	Transformed DGA Analysis Report to be verified.		
31	Furan Analysis (If Required).		
32	Spare parts and Tools shall be inspected.		
33	Validity of Test Certificates.		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT
FORM D: 11 KV I/C PANELS / SWITCHGEAR PERFORMA

S. No.	Item Description	Status	Remarks
1	11KV I/C Panels/Switchgear Name Plate and Data Verification		
2	Visual Inspection(A walk around the panel keeping in view the safe limits of approach abnormal sound or smell		
3	1. Ground leveling 2. Condition of finish paint 3. Coupling with adjacent panel 4. End plates		
4	General condition of HV & LV compartments		
5	Termination of 11 Kv incoming power cables & shield grounding Phase Marking/tags Condition of CTs/PTs , their mounting with sign of any crack		
6	Indicating lamps in LV compartment		
7	CB counter operation/reading		
8	Panel Ground		
9	Oil/SF-6 gas pressures if applicable		
10	Vacuum Degree		
11	Condition of bus bar and cable side connectors of VCB. Any sign of heating/pitting		
12	VCB contact Wipe		
13	Mechanical inspection (Cleaning, adjustments, lubrications)		
14	Wiring Checks/dressing Status of terminals Identifications/feruling Control Cables dressing		
15	Arm contacts of cable/bus bar side/Signs of overheating		
16	Auxiliary Plug in connector Trolley rack-out guide ways (Alignment, cleaning and lubrication)		
17	Status of associated LV control compartment 1. Cable marking and dressing 2. Vermin proofing 3. Terminals status 4. Door packing/heaters/panel lighting 5. Installation and proper grouting 6. Relays and meters installed and their status		
18	Availability & nature of spare parts		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM D: 11 KV I/C PANELS / SWITCHGEAR PERFORMA

S. No.	Item Description	Status	Remarks
19	Checking of FAT/SAT reports		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM E: 132 KV CURRENT TRANSFORMER INSPECTION PERFORMA

S. No.	Item Description	Status	Remarks
1	132KV Current Transformer Name Plate and Data Verification		
2	Visual Inspection (A walk around the CB from ground level keeping in view the safe limits of approach)		
3	Terminal Marking 1. Primary 2. Secondary		
4	Available Ratios Connected ratio		
5	Number of cores with accuracy class & VA burden.		
6	Unused core shorted		
7	Oil level		
8	Primary terminals/connections		
8	Ground connections		
9	Status of porcelain housing and its general condition		
10	Status of secondary connections/connection box		
11	Wiring Checks/dressing Status of terminals Identifications/feruling Control Cables dressing		
12	Steel Support Structures • General Status • Tightness of nuts and bolts • Galvanizing status		
13	Foundations: 1. Intact 2. Chipped 3. Cracked 4. Grouting Nuts/Bolts		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM E: 132 kV CURRENT TRANSFORMER INSPECTION PERFORMA

S. No.	Item Description	Status	Remarks
14	Status of associated control and relay panels inside control room 1. CT secondary cores properly wired up for intended purpose 2. Cable marking and dressing 3. Vermin proofing 4. Terminals 5. Door packing/heaters/panel lighting 6. Installation and proper grouting		
15	Availability & nature of spare parts		
16	Checking of FAT/SAT reports		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM F: 132 kV CIRCUIT BREAKER INSPECTION PERFORMA

S. No.	Item Description	Status	Remarks
1	132 kV Circuit breaker Name plate and Data verification.		
2	Certified Dimensions and Visual Inspection(A walk around the CB from ground level keeping in view the safe limits of approach.		
3	Existing Civil Foundation will be checked.		
4	SF-6 Gas pressure as per ambient temperature.		
5	SF-6 Gas pressure low pressure. 1. Alarm setting low pressure. 2. Lock out setting abnormal low pressure.		
6	Oil/Air Pressure where applicable.		
7	Ground Connections.		
8	Operating Mechanism and Cubicle . • Door Packing. • Lightening. • Heating/ Anti- condensation. • General cleaning. • Vermin proofing. • Lubrications. • Spring Charging Motor and its smooth operation of charging spring.		
9	Terminal Connectors Status.		
10	Contact resistance test/reports.		
11	SF-6 gas monitoring content tests/reports.		
12	SF-6 gas purity test.		
13	Timing Tests/reports.		
14	Local/remote closing /opening and counter reading checks.		
15	Minimum voltage close/open.		
16	Spring charging checks (Normal/abnormal/noisy). 1. Electrical. 2. Manual.		
17	Mechanical adjustment of all the three poles.		
18	Wiring Checks/dressing. Status of terminals. Identifications/feruling.		
19	Control Cables dressing.		
20	Hydraulic Oil level where applicable.		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM F: 132 kV CIRCUIT BREAKER INSPECTION PERFORMA

S. No.	Item Description	Status	Remarks
21	Hydraulic Oil Pressure where applicable.		
22	Sliding/moving parts lubrications.		
23	Counter Reading/operation		
24	Steel Support Structures • General Status • Tightness of nuts and bolts • Galvanizing status		
25	Foundations: 1. Intact 2. Chipped 3. Cracked 4. Grouting Nuts/Bolts		
26	Status of associated control and relay panels inside control room 1. Annunciations/alarms 2. indications status 3. Status of monitoring relays. 4. Status of main protective relays with make & type 5. DC/ trip circuit monitoring 6. Wiring Status 7. Ferule Marking 8. Cable marking and dressing 9. Vermin proofing 10. Terminals 11. Door packing/heaters/panel lighting 12. Installation and proper grouting		
27	Availability & nature of spare parts		
28	Checking of FAT/SAT reports		
29	Last Overhauling/testing dates		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM G: LT CAPACITOR INSPECTION PERFORMA

EQUIPMENT TITLE	LT CAPACITOR		
S. No.	Description / Item Name	Observation	Remarks
1	Make		
2	Type		
3	Origin		
4	Model No./ Sr. no.		
5	Location		
6	Installation Date		
B	Parameters		
B1	Rated Capacity		
B2	KVAR Rating for Each Pack		
B3	No. of packs		
C	Installation / Verification		
C1	Installation Condition		
C2	Capacitor Packs Conditions		
Remarks			
Filled by	Position	Signature	Date

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM H: HT CAPACITOR INSPECTION PERFORMA

EQUIPMENT TITLE	HT CAPACITOR		
S. No.	Description / Item Name	Observation	Remarks
1	Make		
2	Type		
3	Origin		
4	Model No.		
5	Location		
6	Installation Date		
B	Parameters		
B1	Rated Capacity		
B2	KVAR Rating for Each Pack		
B3	No. of packs		
C	Installation / Verification		
C1	Installation Condition		
C2	Bushing Condition		
C3	Capacitor Packs Conditions		
Remarks			
Filled by	Position	Signature	Date

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM I: 3-PHASE SMART ENERGY METER INSPECTION PERFORMA

EQUIPMENT TITLE	3-PHASE SMART ENERGY METER (ELECTRONIC METER)		
S. No.	Description / Item Name	Observation	Remarks
A1	Make / Origin		
A2	Type		
A3	Model No./ Sr. No.		
A4	Connection Type		
A5	Location		
A6	Installation Date		
B	Parameters		
B1	Rated Capacity		
B2	Installation Condition		
D	DISPLAY STATUS		
D1	Rective Power (Kvarh)		
D2	Active Power (KWh)		
C	GSM /GPRS Status (Yellow LED)		
C1	Modern Status/ SIM registration with Network (Blinking)		
C2	No Power to Modem (OFF LED (Yellow)		
E	ERROR CODES		
E1	Phase Failure (113)		
E2	Reverse Energy (117)		
E3	Battery Low (126)		
E4	Door Open (127)		
E5	EEPROM 1 error (1 to3)		
E6	EEPROM 2 error (4 to 5)		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM I: 3-PHASE SMART ENERGY METER INSPECTION PERFORMA

EQUIPMENT TITLE	3-PHASE SMART ENERGY METER (ELECTRONIC METER)		
E7	Billing registers Error (11 to 35)		
E8	Meter should re-programmed (101 to 137)		
Remarks			
Filled by	Position	Signature	Date

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM J: 3-PHASE HT TYPE SMART ENERGY METERS INSPECTION PERFORMA

EQUIPMENT TITLE	3-PHASE HT TYPE (CT & PT) OPERATED (TOD/TOU) SMART ENERGY METERS		
S. No.	Description / Item Name	Observation	Remarks
A1	Make / Origin		
A2	Type		
A3	Model No./ Sr. No.		
A4	Connection Type		
A5	Location		
A6	Installation Date		
B	Parameters		
B1	Rated Capacity		
B2	Installation Condition		
C	DISPLAY STATUS		
C1	Rective Power		
	(Kvarh)		
C2	Active Power		
	(KWh)		
D	GSM /GPRS Status (Yellow LED)		
D1	Modem Status/ SIM registration with Network (Blinking)		
D2	No Power to Modem (OFF LED (Yellow)		
E	ERROR CODES		
E1	Phase Failure (113)		
E2	Reverse Energy (117)		
E3	Battery Low (126)		

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM J: 3-PHASE HT TYPE SMART ENERGY METERS INSPECTION PERFORMA

EQUIPMENT TITLE	3-PHASE HT TYPE (CT & PT) OPERATED (TOD/TOU) SMART ENERGY METERS		
E4	Door Open (127)		
E5	CT Failure (121)		
E6	PT Failure (122)		
E7	EEPROM 1 error (1 to3)		
E8	EEPROM 2 error (4 to 5)		
E9	Billing registers Error (11 to 35)		
E10	Meter should re-programmed (101 to 137)		
Remarks			
Filled by	Position	Signature	Date

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM K: RFE STATIC ENERGY METER INSPECTION PERFORMA

EQUIPMENT TITLE	RADIO FREQUENCY ENABLED STATIC ENERGY METERS		
S. No.	Description / Item Name	Observation	Remarks
A1	Make / Origin		
A2	Type		
A3	Model No./ Sr. No.		
A4	Connection Type		
A5	Location		
A6	Installation Date		
B	Parameters		
B1	Rated Capacity		
B2	Installation Condition		
C	DISPLAY STATUS		
C1	Rective Power		
	(Kvarh)		
C2	Active Power		
	(KWh)		
Remarks			
Filled by	Position	Signature	Date

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM L: HAND HELD UNITS PERFORMA

EQUIPMENT TITLE	HAND HELD UNITS		
Sr. No.	Description / Item Name	Observation	Remarks
A1	Make / Origin		
A2	Type		
A3	Model No./ Sr. No.		
A4	Location		
A5	Receiving Date		
A6	Working Condition		

Remarks

Filled by	Position	Signature	Date

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM M: OUTAGE REDUCTION DEVICE PERFORMA

EQUIPMENT TITLE	OUTAGE REDUCTION DEVICE		
Sr. No.	Description / Item Name	Observation	Remarks
A1	Location		
A2	Load Break Fused Dropout Cutouts 100/200 amp Bushing Installation Condition Alignment		
A3	Off Load Switch Bushing Installation Condition Alignment		
A4	Gang Operated Switch Bushing Installation Condition Alignment Position		
A5	Fault Indicator Installation condition Position		
Remarks			
Filled by	Position	Signature	Date



Appendix I

Non Compliance
Report Forms

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM A: - NON COMPLIANCE REPORT PERFORMA

Part A - ORIGNATION

Audit / Inspection Ref.		NCR No	EPP	Date	
Contractor:	AEAI	Subcontractor:		Program	EPP
Scope / System / Drawing # & Rev. etc.					
NON COMPLIANCE DETAILS					
Classification (Major / Minor)		Reply required by:			
Raised by:	Name	Position	Signature	Date	
Halcrow					

Part B - CORRECTION

Proposed Corrective Action to be taken:

Date to be completed by:

Name	Position	Date	Signature

TASK ORDER # AID-391-TO-15-00006, TECHNICAL WORK INSPECTION FOR USAID'S ENERGY POLICY PROJECT AND POWER DISTRIBUTION PROJECT

FORM A: - NON COMPLIANCE REPORT PERFORMA

Part A - ORIGNATION

Audit / Inspection Ref.		NCR No	PDP	Date	
Contractor:	IRG	Subcontractor:		Program	PDP
Scope / System / Drawing # & Rev. etc.					
NON COMPLIANCE DETAILS					
Classification (Major / Minor)		Reply required by:			
Raised by:	Name	Position	Signature	Date	
Halcrow					

Part B - CORRECTION

Proposed Corrective Action to be taken:

Date to be completed by:

Name	Position	Date	Signature