

8) Monitoring (Action Plan Follow-up) (Feb. 2015)
Training Course for Technicians of ECG “Maintenance
Techniques for Power Equipment and Implementation
Procedure” (1)

**Post-training Review (Follow up Survey for the Action Plan)
Training Course for Technicians of ECG “Maintenance Techniques for Power
Equipment and Implementation Procedure”**

Around six months after the training course, we sent the Questionnaire about the progress of the Action Plan to the trainees.

And we considered how much the trainees utilize the contents of the training course in their daily jobs through this Questionnaire.

1 . Action Plan

When we see the Action Plan of the trainees, there are many plans to try to utilize the contents of the training course to their daily jobs.

It may be quite natural because the training course is dealing with maintenance technology and implementation procedure which would be used in daily jobs.

Concretely they drew up the following issues as the targets of their Action Plan.

- (1) To discuss the job procedure and safety before starting daily job
- (2) To wear the safety equipment
- (3) To record the daily inspection and problems in daily jobs
- (4) To utilize the technology and knowhow learned in the training course in the daily inspection
- (5) To conduct the periodic inspection by following the procedure learned in the training course
- (6) To try to enhance the maintenance technology through the daily job

2 . Result and Conclusion of the Post-training Review

We could get answers from all the trainees (10) and those answers were shown in following table.

And in this Table, the following points were summarized.

- (1) Progress of the Action Plan
- (2) If not achieved, necessary additional period
- (3) Obstacles to achieve the Action plan
- (4) Additional issues or request to the training course

Four (4) trainees out of 10 trainees answered they achieved their Action Plan and five (5) trainees answered they were on the way.

And remaining one (1) trainee answered impossible because he was assigned to the other section after the training.

As we mentioned in above 1, the Action Plan has the strong relation to the daily job. Therefore we guess that it was difficult for the trainees to answer the progress of the action plan because the image of the achieved situation of the Action Plan was not clear.

We considered that this difficulty reflected to the answer (4 achieved and 5 on going) to judge the progress of the Action Plan.

When we check the answers more in detail, many trainees show the intention to utilize the technology and knowhow learned in the training course in their daily jobs as much as possible.

For example they wrote as follows.

- To discuss the job procedure before starting daily job
- To record the daily inspection
- To conduct the inspection by following the maintenance chart

This kind of intention is very much harmonized with the result of the Questionnaire for trainees` supervisors.

The supervisors pointed out the improvement point of the trainees as follows.

- (1) Safety consciousness is improved.
- (2) The schedule management of the job is improved.
- (3) The meeting before the job and information sharing come to be performed.
- (4) The operating time of job is shortened.
- (5) The job attitude and responsibility are improved.

Considering these conditions, **we can judge that the trainees achieved the Action Plan very well.**

Trainees utilized the knowledge and technology learned in the training course very well and/or they are making effort to utilize them as much as possible.

At the same time, the importance of the maintenance techniques and procedure infiltrate into their daily jobs.

And we can say that big consciousness reform has been performed among them.

3. Additional issues and/or request to the training course

As for the additional issues and/or request to the training course, we got some following requests from the trainees.

- (1) To increase the practical training
- (2) To provide many opportunities to the other ECG technicians

As for the former request, when we provide the measurement instrument and substation for the training, we will be able to provide the training course with more practical issues by using these instrument and facility.

Therefore we can correspond to this request

On the other hand, as for the later request we can't say whether it is possible or not because of the budgetary allocation of ECG.

We will convey these requests to the related people of ECG and request them to provide as many opportunities to the ECG technicians as possible.

Training Course for Technicians of ECG "Maintenance Techniques for Power Equipment and Implementation Procedure (June 2014)
Result of the Post Training Review (6 months after the completion of the course)

	Progress of Action Plan No (re-assigned)	Additional period to achieve A.P. 6 months	Obstacles	Additional Items of the Training
P-1	on going	1 week	- material availability and logistics	- practical work - periodic inspection for substation
P-2	achieved	achieved within two weeks	none	- periodic inspection for substation
P-3	achieved	achieved in a short period	- materials shortage	- Transformer maintenance - Other staff should be trained
P-4	achieved	achieved but depend on the type of job	none	- All the staff should be trained
P-5	on going	- 6 months	-Provision and training of adequate staff -Provision of vehicles	- Maintenance management - leadership skills
P-6	on going	- less than 1 month	- vehicles condition - safty contain for all staff	- Method of fault training
P-7	on going an excel programmed in which we enter all our daily reports. Discussion all planned work before going to site.	- 2 months	- improper planning of work - improper allocation of vehicle	- Practical work
P-8	achieved successfully	- achieved within 6 months	- appropriate tools - vehicles	- prerodic training - fault location
P-9	on going	- soon	- unavailability of tools vehicles and personal protection equipment	- Information and communication Technology

Answer to the Questionnaire

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Samuel Acquah (P-1)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- One OHL team is now the Live Line Team which has brought the action plan to a halt.
- It is difficult getting the message across because I am not serving at the supervisory level.

(2) How long does it take additionally to achieve your Action Plan?

- Six months

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- **I have been relocated to control operations**
- Night and special patrols has not been possible
- Difficulty in getting network information

(4) If you find some additional issues to the training course, please describe.

- The importance of inspection and data needs to be re-echoed to all operational staff

(5) If you find some contents to improve or revise the training course, please describe.

- Nil

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Gershon K. Asiedu (P-2)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- Monthly maintenance of the transformers and improving of upgrading network in some areas. Every month we check on transformer oil level. Patrol of our LV lines and HT network check on weak jumpers, etc. Beside that this month, we are removing oversize fuses in the DP and replaced it with new fuses and the rightsize right as a team (work).

(2) How long does it take additionally to achieve your Action Plan?

- It takes us about one week additionally to achieve on action plan. Also, we look at the ways to action plan.

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- Yes, the difficulty we normally face is the material availability and logistics.

(4) If you find some additional issues to the training course, please describe.

- I believe that more practical work should be added to the programme, because it is theoretical aspect of training.

(5) If you find some contents to improve or revise the training course, please describe.

- Periodic inspection items for substation equipment prevent accident of the substation facilities.

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Paul Kumah (P-3)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- The action plan keeps on improving as every day task is being discussed as a team.

(2) How long does it take additionally to achieve your Action Plan?

- I was able to achieve my action plan within two weeks.

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- No difficulty

(4) If you find some additional issues to the training course, please describe.

(5) If you find some contents to improve or revise the training course, please describe.

- Periodic inspection items for substation equipment prevent accident of the substation facilities.

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Prince Oduro Anim (P-4)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- The action plan on the network patrol, inspection and tree cutting, etc.
- Stabilizes the system with less outages

(2) How long does it take additionally to achieve your Action Plan?

- It takes short period to achieve my action plan due to the training programme.

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- Sometimes we have a difficulty to achieve our action plan due to materials shortage.

(4) If you find some additional issues to the training course, please describe.

- The training programme is very important and useful which should be extended to other staff.

(5) If you find some contents to improve or revise the training course, please describe.

- Transformer maintenance

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Effah Mensah Emmanuel (P-5)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

“Maintenance Techniques for Power Equipment and Implementation Procedure”

(1) How about the progress of your Action Plan?

Please describe.

- The action plan has progressively cut down the hours use in working on fault and planned maintenance.

(2) How long does it take additionally to achieve your Action Plan?

- It depends on the type of job at hand but we do work within the predicted time for all our schedule work for the week.

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- Because of the logistics, we have at our possession, so we don't face any difficulty in achieving our action plan either emergency or planned.

(4) If you find some additional issues to the training course, please describe.

- I will be glad if it can be organised for all our operational staff especially our high tension/ low voltage fault and maintenance team at various regions.

(5) If you find some contents to improve or revise the training course, please describe.

- What we learnt during our training programme is standard, I will not hesitate to write to you if we need to arise.

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Kenneth Assan (P-6)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- It has ensure to improvement of my performance
- Make work planning document available to all direct reports
- Develop a basic day to day monitoring procedure of direct reports job duties

(2) How long does it take additionally to achieve your Action Plan?

- Every six month??

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- Well equipped maintenance audit-team
- Monitoring performance
- Evaluating performance
- Recognition and reward

(4) If you find some additional issues to the training course, please describe.

- Provision and training of adequate staff to enhance productivity
- Provision for vehicles for implementation of all assignments for ensuring continuous supply of reliable power supply

(5) If you find some contents to improve or revise the training course, please describe.

- Good understanding of preventive corrective maintenance management
- Strong management, interpersonal and leadership skills

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Moro Hakuna (P-7)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- We now have an excel programme in which we enter all our daily reports. And also a timetable is prepared for every week planned work/ activity. We discuss all planned work before going to site.

(2) How long does it take additionally to achieve your Action Plan?

- With the once mentioned above it took less than a month to achieve. But with the issue of vehicle we don't know when it will be solved.

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- We cannot protect our network on daily basis because our vehicle is in very bad condition and cannot be used for such work. We need a vehicle which can safely contain all gang members.

(4) If you find some additional issues to the training course, please describe.

- Topics such as DGA should be accepted and our transformer maintenance gang should be given to special training. Also, the OHL gangs need a lines vehicle for their safety and that of the company.

(5) If you find some contents to improve or revise the training course, please describe.

- Methods of fault training in other countries should be studied to improve upon our network.

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan
(Around six months after training course)

Name of the Trainee: Deffor Atsu Edem (P-8)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- Action Plan is on course with the help of my supervisor and working team (Network Maintenance).
- The Action Plan has registered some improvement with our work ethics.

(2) How long does it take additionally to achieve your Action Plan?

- Two months due to familiarity of network and work to be done.

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- Improper planning of work ahead of time is one difficulty and allocation of vehicle for work to be done.

(4) If you find some additional issues to the training course, please describe.

- Practical work needs to be introduced into the training course.

(5) If you find some contents to improve or revise the training course, please describe.

- Regular training courses will improve the Action Plan and practical equipment need to be introduced.

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Seth C. Martey (P-9)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

"Maintenance Techniques for Power Equipment and Implementation Procedure"

(1) How about the progress of your Action Plan?

Please describe.

- It has been very successful.
- Technique and safety methods working to avoid accident
- Weak jumpers are being changed. Bindings are being replaced with PG or PC?? clamps.

(2) How long does it take additionally to achieve your Action Plan?

- Within six months

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- The appropriate tools for the job and permanent vehicle for lines section

(4) If you find some additional issues to the training course, please describe.

- Tools and instruments would be welcome to facilitate the smooth way and working in the overhead system. Periodic training is welcome.

(5) If you find some contents to improve or revise the training course, please describe.

- Fault locations in distribution line and restoration
- Operations and management of power distribution system.

Thank you very much for your Cooperation.

(Follow-up survey of the Action Plan)

The Questionnaire (Interview) to the Trainee about the Progress of the Action Plan

(Around six months after training course)

Name of the Trainee: Matthew Yaw Aboagye (P-10)

Name of the Training Course at ECG:

Training Course for Technicians of ECG

“Maintenance Techniques for Power Equipment and Implementation Procedure”

(1) How about the progress of your Action Plan?

Please describe.

- Now improving; inspection and maintenance plan sheet is being followed up regularly.

(2) How long does it take additionally to achieve your Action Plan?

- Within the shortest possible time

(3) If you face the difficulty to achieve your Action Plan, please describe the reason.

- Yes, unavailability of tools, vehicle and personal protection equipment

(4) If you find some additional issues to the training course, please describe.

- Increase in Information and Communication Technology (ICT) training will help

(5) If you find some contents to improve or revise the training course, please describe.

- No

Thank you very much for your Cooperation.

Action Plan

Action Plan

Name: Samuel Acquah (P-1) _____

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

① Maintenance is time saving and less costly than repairs. _____

② Records keeping and data analysis helps to prevent future faults and breakdowns. _____

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

① Sensitization of my working crew of the importance of maintenance rather than repairs. _____

② Intensifying patrols and inspections to alert future faults. _____

③ recording of all patrols, inspections and repairs carried out for future reference. _____

(Action Plan in a long term)

① Only quality and reliable materials must be procured for maintenance work. _____

② More equipments and instrument must be provided for easy identification and repairs of fault to reduce outage periods. Automation of apparatus also necessary. Eg. Fault indicators, etc. _____

Action Plan

Name: Gershon K. Asiedu (P-2)

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

I very glad to attend this training programme at this moment. Basically I have achieve a lot of
topic like inspection and preventive maintenance on overhead lines and underground cables
and substation equipments.

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

(Action Plan in a long term)

By taking proper handle of our equipment have also regular inspection of our equipments such
as transformers, switchgears and substation and data.

We should stop buying inflexible goods or materials their system.

Finally we should change our attitudes towards work.

Action Plan

Name: Paul Kumah (P-3) _____

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

Power distribution facilities including deterioration and maintenance power distribution
equipment, data management, fault location and restoration.

Line patrol, fault location and preventive maintenance of distribution lines.

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

Before a days work is done, the foreman or the person in charge of work must discuss the
work with his team, how to carry out the work and the dangers involved at the work place.

(Action Plan in a long term)

From time to time, or even in engineering meetings, we must keep on reminding our
colleagues concerning safety. It can even be in a form of seminar reminding us about
techniques and procedures for maintenance of power equipments.

Action Plan

Name: Prince Oduro Anim (P-4) _____

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

① Daily patrol on HT & LV network _____

② Periodical inspection on our substation _____

③ Replacement of crack insulators and offers equipment _____

④ Implementation of safety habits _____

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

① Massive training on the network _____

② Wearing of safety equipment _____

③ Data keeping on daily inspection _____

(Action Plan in a long term)

① Preventive maintenance _____

② Replacement of under size conductor _____

③ Replacement of Broken poles _____

④ Replacement of shattered insulators _____

Action Plan

Name: Effah Mensah Emmanuel (P-5) _____

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

It has enhanced my skill and new technology. _____

Too is adopted. (→ This sentence does not mean anything. I do not understand at all.) _____

Regular inspection should be introduced. _____

Periodic patrol too should be adopted. _____

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

Regular inspection must be practiced now. _____

Periodic inspection must be done to offer the training. _____

(Action Plan in a long term)

Automatic breakers must be introduced to improve the system and also maintain it, fault _____

Locators must be induced especially overhead lines to limit or save time in patrolling fault. _____

Action Plan

Name: Kenneth Assan (P-6)

Training Course: Training Course for Technicians of ECG

Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

Ensure planned maintenance schedule are followed and improve competences of maintenance staff.

To ensure adherence to plan maintenance schedule for both primary and secondary substations.

To ensure that 85% preventive maintenance schedule are compiled.

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

① To ensure that all 33KV and 11KV overhead lines are patrolled as quarterly as per annually maintenance chart

② To reduce transformer damages to less 1% of the total number installed

③ To carried out damage trend analysis on burnt transformers

(Action Plan in a long term)

① Recommended upgrading of transformer when the load exceeds 70% of normal capacity

② Identify all substation with linked drop-out fuse gear

③ To ensure effective preventive and corrective maintenance are done on distribution transformers monthly

Action Plan

Name: Moro Hakuna (P-7)

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

- (1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

Data analysis, monitoring of the network, safety of equipment and personal, importance of
resolve gas analysis.

Automation of our network, planning of work

- (2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

Design a programme for all the various feeders which will include the various problems

Which occurs on each feeders for weekly and yearly analysis of all the fault, the cause and

How is (was) solved.

(Action Plan in a long term)

A monitoring team must be formed and task with the daily monitoring of the network and
finding must be entered in the database and must be worked on as soon as possible.

Automation of our network is the future for the company.

Action Plan

Name: Deffor Edem (P-8)

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

I have learnt about management and utilization of data of maintenance.

Having first hand information about a job to be done, the loads to achieving at good result.

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

If good data keeping is ensure it will enhance good speedy report to wotk and fault.

(Action Plan in a long term)

Management and utilization of data of maintenance department need to keep all records of post event so that reference can easily be made when the need arises.

Action Plan

Name: Seth Cobblah Martey (P-9)

Training Course: Training Course for Technicians of ECG

Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

The techniques of knowing when a wooden pole is weak

The depth, when planting & burying a stay block

Periodic inspection of the terminal pin insulators, strain and jumper connection

P.A Clamps on line GPS must be encouraged.

Safety on the job at all time

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

1. To ensure that direct reports uses all the techniques and safety methods of working to avoid accidents

2. Promptness to attending faults

3. Ensure that proper materials and tools are used for the appropriate jobs of fault

4. Punctuality must be encouraged and laziness punished

(Action Plan in a long term)

1. Weekly patrol of all 33KV overhead lines

2. Cleaning of insulators on the pylons and poles when there is any opportunity especially during annual maintenance

3. Eliminate all bindings of jumpers and replace them with P.A clamps to reduce loses (I^2R)

4. All joints on the overhead line, if jumpers or jointing of broken conductors, the surface must be thoroughly cleaned before the joint and connections

5. All faults must be documented for reference, especially termination failure, jumpers, etc for the appropriate preventive measures to be put in place to prevent re-occurrence.

6. All the overhead lines which pass through the bush, especially where bamboo trees are around the pruning must be given out to the local people for a small fee so that they will be pruning and cleaning under the line to for still any possible contact of trees and the overhead lines. This more often than not are the causes of overhead line breakings in those areas.
7. Periodic in-house training
8. Safety practice discussions must be part of everyday activity
9. Job must be discuss into details for everybody to understand and appreciate the work before it is commenced.

Thank you very much.

Action Plan

Name: Matthew Yaw Aboagy (P-10)

Training Course: Training Course for Technicians of ECG
Maintenance Techniques for Power Equipment and Implementation Procedure

Please write the plan how to utilize the knowledge and techniques which you learnt in this training course.

(1) What did you learn from this training course ?

What is the most useful knowledge or techniques for your job?

That is about prevention maintenance

① on overhead line

② on transformer

③ circuit breaker, fuse gear and all the equipment

(2) Please write the Action Plan how to utilize the above mentioned useful knowledge or techniques for improving or enhancing the quality of your job?

Please write in a short-term and long-term.

(Action Plan in a short-term)

Regular patrol should be conducted once a month for all substations, overhead lines and
all our equipments. Then plan maintenance carry out.

(Action Plan in a long term)

Preventive maintenance, periodical work including operational and any other testing
performed on a piece of equipment to demonstrate the equipments suitability in service
and to maintenance it in proper work condition.

9) Result of the Questionnaire for Trainees` Supervisors (July. 2015)

Training Course for Technicians of Third Countries
“Maintenance Techniques for Power Equipment”
(Overhead Line)

Result of the Questionnaire for Trainees` Supervisors

Training Course for Technicians of the Third Countries "Maintenance Techniques for Power Equipment" (Overhead Line) (July 2014)

3 months after the completion of the course, the Questionnaire was sent to the supervisors of the trainees. Result of the Questionnaire is shown below.

1. Effectiveness of the Training Course from the view of supervisors of the trainees

Total nine (9) supervisors of trainees (six (6) from Gambia and three (3) from Liberia) answered to the questionnaire.

(Total number of the trainees are twelve, six (6) from Gambia, three (3) from Liberia and three (3) from Sierra Leone.)

They answered that they recognized the effectiveness of the training course.

2. Improvement points pointed out by the supervisors

(1) Daily maintenance and operation job has been improved.

(2) Safety consciousness has enhanced.

(3) Inspection skill of cable and transformer has enhanced.

3. Items to be added to the training pointed out by the supervisors

(1) Practical training of fault finding

(2) Maintenance techniques for underground cable and substation

(3) Construction method of pole

As for the training for the third countries, we are planning to conduct "Maintenance Techniques for Power Equipment" course focused on Overhead Line in the first year, Underground Cable in the second year and Inspection on Substation in the third year. Since above information did not convey to the supervisors, they requested the maintenance techniques for underground cable and substation.

Therefore those topics will be treated in the next years.

As for the above-mentioned (1), all the measuring equipment would be provided to the training center, we would like to discuss with C/P how to utilize those equipment in the training courses.

As for the above-mentioned (3), since the installation of the pole for the overhead line is the construction work, not maintenance and operation work, we principally

omit this issue from contents of this training course.

5. Conclusion

Collection rate is 75% but in this restricted condition, we can conclude that the Training Course was implemented effectively to enhance techniques and knowledge of technicians of third countries from the result of the Questionnaire for Trainees` Supervisors,

Training Course for Technicians of Third Countries "Maintenance Techniques for Power Equipment (July 2014)
 Result of the Questionnaire for Trainees` Supervisors (3 months after the completion of the course)

	(1)Improvement of trainees` job	(Improvement points)	(2) if any additional issues of the course	(3) if any requests to the course
G-1	Yes	- use of safety gear use proper tools	none	none
G-2	Yes	- great improvement on his job,mainly power transformer installation	- Power equipment or material tested at the lab	-fault finding on overhead line and underground cable 11/33kV
G-3	Yes	- maintenance skill	none	- underground cable transformer maintenance
G-4	Yes	- great improvement on maintenance skill	-more personal training	none
G-5	Yes	-lot of improvement on his job	none	-line erection - pole positioning
G-6	Yes	-cable inspection	- fault finding on 11/33kV quickly and safely	-substation - load balancing
S-1				
S-2				
S-3				
L-1	Yes	- work schedule and planning - understanding the importance of maintenance	- to excise inspection	- substation maintenance
L-2	Yes	- maintenance procedure	- logistics for maintenance	- substation maintenance
L-3	Yes	- inspection and prevention action	- logistics for maintenance	- substation maintenance

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Abdou Jammeh Title: Electrical Engineer

Name of the trainee: **Lamin Darboe (G-1)**

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

· Yes

If yes, please describe his (or her) improvement.

- Lamin uses his safety gears at all times before working on the overhead lines.
- He also use the proper tools when working with any power equipment.

(2) If you find some additional issues to the training course above, please describe.

(3) If you have any requests to the training course above, please describe.

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Malang Kujabi Title: Electrical Engineer

Name of the trainee: **Yaya Dampha (G-2)**

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

- Yes

If yes, please describe his (or her) improvement.

- Great improvement onto his job, particularly, mainly onto power transformer (installation)

(2) If you find some additional issues to the training course above, please describe.

- Power equipment or material, before to be used in the system, it has to be tested at the lab, the lab result has to be sent to the engineer before they use the material

(3) If you have any requests to the training course above, please describe.

- It will be very important to include fault finding onto overhead lines and underground cable 11/ 33 KV.

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Pa Lamin Dibba Title: Electrical Engineer

Name of the trainee: Yamadan Camara (G-3)

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

- Yes

If yes, please describe his (or her) improvement.

- Better understanding of, and improved maintenance skills on, power equipment

(2) If you find some additional issues to the training course above, please describe.

- NIL

(3) If you have any requests to the training course above, please describe.

- To increase intake

- Include underground cable maintenance

- Consider short duration industrial placements

- Include transformer maintenance (especially rewinding), and switchgear

- Adjusting of time duration

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Francis Manneh Title: Electrical Supervisor

Name of the trainee: Oman Touray (G-4)

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

- Yes

If yes, please describe his (or her) improvement.

- His improvement was excellent in the maintenance of the overhead lines even some of his improvement are:

- 1) Load balancing on the LV line
- 2) Overhead line fault finding
- 3) Pole mounted transformer and pillar unite

(2) If you find some additional issues to the training course above, please describe.

- Some of the additional issues are, we need to train a more personnel

(3) If you have any requests to the training course above, please describe.

- No, there is no request.

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Baboucar Awe Title: Electrical Engineer

Name of the trainee: Ebrima M Jallow (G-5)

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

- Yes, there are lots of improvements in the way he is carrying out his job since receiving the training.

If yes, please describe his (or her) improvement.

- His time management in handling network related faults especially transformer and line problems have improved greatly.

- He has manually learned how to install transformers rather than using crane.

(2) If you find some additional issues to the training course above, please describe.

- None

(3) If you have any requests to the training course above, please describe.

- Training on line erection and pole positioning especially concrete poles and techniques of repairing twisted cables.

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Salifu Dampha Title: Senior Electrical Superintendent

Name of the trainee: **Lamin Ceesay (G-6)**

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

- Yes

If yes, please describe his (or her) improvement.

- Better in cable inspection, LV and MV overhead lines

(2) If you find some additional issues to the training course above, please describe.

- Fault finding on 11/ 33 KV very quickly and safety on both LV and 33KV

(3) If you have any requests to the training course above, please describe.

- Substation reading???

- Load Balancing

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Thomas Z. Gonkerwon Title: T &D Consultant

Name of the trainee: Mayango Koiyan (L-1)

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

There is a great improvement in Mr. Mayango Koiyan work planning and understanding the importance of maintenance, however, due to lack of specialized tools some maintenance works are not possible. Just replacement.

If yes, please describe his (or her) improvement.

Mr. Koiyan has improved in work scheduling and planning.

(2) If you find some additional issues to the training course above, please describe.

Additional issue is the provision of logistics for the trainee to exercise inspections and plan activities and execute same.

(3) If you have any requests to the training course above, please describe.

We will request training in the area of substation maintenance.

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Thomas Z. Gonkerwon Title: T &D Consultant

Name of the trainee: Andrew M. Santee (L-2)

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

(1) Can you find some improvement in the trainee's job after receiving the training course?

Mr. Andrew M. Santee has improved in the knowledge of maintenance inspection and procedures.

If yes, please describe his (or her) improvement.

Mr. Santee has improved in maintenance procedures and repair.

(2) If you find some additional issues to the training course above, please describe.

Additional issue is the provision of logistics for the trainee to exercise maintenance procedures and repair.

(3) If you have any requests to the training course above, please describe.

We will request training in the area of substation maintenance.

Thank you very much for your Cooperation.

The Questionnaire (Interview) to the Supervisor of the Trainee
(Around three months after training course)

Name: Thomas Z. Gonkerwon Title: T &D Consultant

Name of the trainee: Michael G. Zologon (L-3)

Name of the Training Course at ECG

Training Course for Technicians of the Third countries

"Maintenance Techniques for Power Equipment" (Overhead Lines)

- (1) Can you find some improvement in the trainee's job after receiving the training course?
Mr. Michael G. Zologon has improved his understanding of deterioration on distribution equipment and components and the preventive maintenance to avoid same.

If yes, please describe his (or her) improvement.

Mr. Zologon has improved in inspection and preventive actions.

- (2) If you find some additional issues to the training course above, please describe.
Additional issue is the provision of logistic for trainee to exercise the knowledge acquired.

- (3) If you have any requests to the training course above, please describe.
We will request training in the area of substation maintenance and transformer.

Thank you very much for your Cooperation.

