

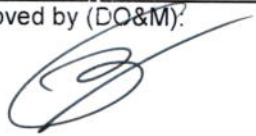
QUALITY MANAGEMENT SYSTEM	POWER GRID COMPANY OF BANGLADESH LTD.					QUALITY PROCEDURES			
	TITLE: PROCEDURE FOR TRANSMISSION LINE MAINTENANCE								
Document No:	QP-TLM-1	Revision No.:	01	Effective Date:	11/11/12	Page:	1	of	4

1. Scope: Applies to the whole of POWER GRID COMPANY OF BANGLADESH LTD.

2. Purpose: To provide necessary supports for maintenance of transmission line which stands out as an indispensable component affecting quality, stability and reliability of power system network.

SL. No.	Activity (including check points)	Ref. Doc.	Responsibility	Freq. /Time	Output
1.0	Planning				
1.1	A master list of Transmission line under jurisdiction of concerned GMD is maintained along with the following information: ⇒ Name of the lines ⇒ Number of Tower in each line ⇒ Tower types with number in each line.	QF-GMD-40	MGMD	As required	Facility record
1.2	Annual maintenance planning: (Scheduled)				
1.2.1	Grid Maintenance Division makes a detailed planning for Annual Maintenance Program for the scheduled maintenance of Transmission line.		DM/AM GMD	Annual	
1.2.2	The prepared annual maintenance plan is then checked for error and/or omission of component (if any) and then submitted to the competent authority for approval.		-do-	-do-	
1.2.3	The plan is then approved & becomes ready for implementation.		-do-	-do-	QF-GMD-20
1.2.4	The finalized maintenance plan will be plotted on a broad sheet and will be displayed in the control room or any other place clearly visible by the concerned personnel.		-do-	-do-	Visual control is ensured
1.2.5	COLOURED pins will be used for displaying/ marking the maintenance activities such as maintenance planned or executed.		-do-	-do-	
1.2.6	Following color codes will be followed ▪ RED – Annual Maintenance program ▪ WHITE – Half yearly Maintenance program ▪ BLUE – Monthly Maintenance program ▪ GREEN – Executed maintenance program		-do-	-do-	
1.3	Planning for monthly inspection & maintenance:				
1.3.1	Grid Maintenance Division makes a detailed planning for monthly inspection and maintenance of Transmission line. <i>(The monthly maintenance schedule is just month wise division of the yearly maintenance schedule. It shows the day wise distribution of yearly maintenance of a particular month, depending on the annual maintenance plan and the status of the machine condition.)</i>	QF-GMD-20	-do-	-do-	Draft plan prepared
1.3.2	Monthly maintenance schedule for the succeeding month should be developed within the last week of current month by the concerned engineer in charge.	Manufacturer's instruction manual.	DM/AM GMD	Monthly	
1.3.2	The monthly line inspection and maintenance schedule should be properly signed by Engineer in Charge and Work in charge (foreman / electrician). <i>(After getting this monthly maintenance schedule the work in charge get acknowledge which work he have to do in the following month.)</i>		DM/AM GMD	As required	QF-GMD-21
2.0	Implementation				
2.1	Scheduled Maintenance:				
2.1.1	A checklist is followed to carry out the inspection and maintenance.		DM/AM GMD	As required	QF-GMD-28
2.1.2	When shutdown of line is required for maintenance work, the engineer in charge will submit a requisition for shutdown of the lines in prescribed format through proper channel.	QF-GMD-20	-do-	-do-	QF-GMD-38

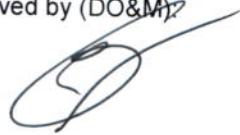
Reviewed by (GMT-1): 

Approved by (DO&M): 

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2.1.3	After getting approval for shutdown copies should be sent to 1. JAM on duty in grid sub-station control room. 2. LDC Control Room	QF-GMD-38	DM/AM GMD	As required	Outage of equipment is obtained
2.1.4	In tentative day the team leader of the working party will submit the work permit form duly filled-up and signed in to the JAM on duty in grid sub-station control room requesting shutdown.	-do-	Team leader of the working party	-do-	QF-GMD-39
2.1.5	The JAM on duty will issue necessary clearance to the team leader of the working party.	WI-PSO-03	JAM GMD	-do-	QF-GMD-18 QF-GMD-39
2.1.6	After getting the requested shutdown of the line & necessary clearance, maintenance work is done as planned in the annual/monthly maintenance program.		DM/AM GMD	-do-	Actual maintenance work done
2.1.7	Proper safety measures must be followed throughout by the maintenance gang.	QD-TSS-01	-do-	-do-	Safety ensured
2.1.8	After completion of maintenance work, team leader of the working party will give clearance to both LDC & concerned Grid sub-station control room.	QF-GMD-39	-do-	-do-	Clearance for energizing
2.1.9	A report will be prepared by the engineer in charge for record including 1. Repair/rectification work done 2. Spare parts issued (If any) 3. Time required for maintenance 4. Persons engaged in the work.	QF-GMD-33 QF-GMD-34 QF-GMD-35	-do-	-do-	QF-HRM-48
2.1.10	The works that can't be completed within the stipulate time frame will be carried forward.		-do-	-do-	Re-scheduling
2.1.11	The maintenance activity display board will be updated as described in clause 2.1.6		-do-	-do-	QF-GMD-20
2.2	Emergency Maintenance:				
2.2.1	Senior executive concerned is informed over telephone about the outage required.		DM/AM GMD	As required	Seniors informed
2.2.2	Team leader of the working party from grid substation 1. Directly contacts LDC control room over telephone for the outage of line(s). 2. Submit the work permit form (<i>duly filled-up and signed in</i>) to the JAM on duty in grid sub-station control room requesting shutdown of the line		Team leader of the working party	-do-	QF-GMD-39
2.2.3	The JAM on duty will issue clearance to the team leader of the working party.	WI-PSO-03	JAM GMD	-do-	QF-GMD-18 QF-GMD-39
2.2.4	After getting the requested shutdown of the line, maintenance work is done as required		DMGMD	-do-	Maintenance work done
2.2.5	Proper safety measures must be followed throughout by the maintenance gang.	QD-TSS-01	-do-	-do-	Safety ensured
2.2.6	After completion of work, team leader of the working party will give clearance to both LDC & concerned Grid sub-station control room.	-do-	-do-	-do-	Clearance for energizing
2.2.7	A report will be prepared by the engineer in charge for record including 1. Repair/rectification work done 2. Spare parts issued (If any) 3. Time required for maintenance 4. Persons engaged in the work.		-do-	-do-	QF-HRM-48
2.3	Break down Maintenance:				
2.3.1	Whenever a fault occurs in transmission line the tripping record is analyzed to confirm whether there is a breakdown.	QF-GMD-15	MGMD DM/AM GMD	As required	Fault identified
2.3.2	DGM-GC & GMT-1/2 concerned is informed about the break down within quickest possible time.		MGMD DM/AM GMD	-do-	Superiors informed

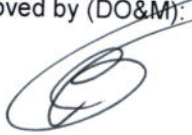
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2.3.3	Line patrol groups will move for total line inspection (tower to tower basis) & send feedback information confirming the nature of fault.		DMGMD Foreman of line petrol group	As required	Nature of fault identified
2.3.4	Action plan for repairing and maintenance of the line is taken up immediately.		DM/AM GMD	-do-	Action plan
2.3.5	Team leader of working party will submit the work permit form filled-up and signed in to the JAM on duty in grid sub-station control room for isolation of the line.		Team leader of the working party	-do-	QF-GMD-39
2.3.6	After getting the requested shutdown of the line and necessary clearance, repair work is done (as required).		-do-	-do-	QF-GMD-28 QF-GMD-29
2.3.7	Proper safety measures must be followed throughout the work by the maintenance gang.	QD-TSS-01	-do-	-do-	Safety ensured
2.3.8	After completion of maintenance work, team leader of the working party will give clearance to both LDC & concerned Grid sub-station control room ensuring suitability of the line for charging and safety.	WI-PSO-03	-do-	-do-	QF-GMD-39
2.3.9	A report will be prepared by the engineer in charge for record including 1. Cause of break down 2. Repair/rectification work done 3. Spare parts issued 4. Time required for maintenance 5. Person participated in maintenance work.	QF-GMD-28 QF-GMD-29	DM/AM GMD	-do-	QF-HRM-48
2.4	Monthly Line inspection & maintenance:				
2.4.1	Officer in charge of the line inspects the line bi-monthly.		DM/AM GMD	As planned	
2.4.2	Each line is inspected visually twice in a month by lineman/foreman. Every tower of the line is inspected.		DM/Am GMD Lineman	-do-	QF-GMD-28
2.4.3	Maintenance to be carried out in the line is identified.		DM/AM GMD	-do-	QF-GMD-28
2.4.4	Repair works are carried out, if no outage is required.		-do-	-do-	QF-GMD-28
2.4.5	Trees growing under and/or around are immediately trimmed if outage and police protection is not required		-do-	-do-	QF-GMD-29
2.4.6	Proper safety measures must be followed throughout by the maintenance gang.	QD-TSS-01	-do-	-do-	Safety ensured.
2.4.7	A report will be prepared by the engineer in charge for record including 1. Repair/rectification work done 2. Spare parts issued (if necessary) 3. Time required for maintenance 4. Person participated in the work.		DMGMD	-do-	QF-HRM-48
2.4.8	Program schedule for maintenance works will be submitted for necessary approval of outage and/or police protection, (as the case may be) except those done as per 2.4.5.		-do-	-do-	QF-GMD-20
3.0	SAFETY PROCEDURES TO FOLLOW				
3.1	NO MATTER HOW IMPORTANT THE WORK IS, SAFETY OF THE PERSONNEL MUST BE THE PRIME CONCERN.	QD-TSS-01	Everybody	Continuous	Safety of both personnel and equipment is ensured
3.2	Safety of both man (maintenance gang) and equipment must be considered.	-do-	DM/AM GMD	Continuous	
3.3	Team leader of the working party must ensure that, the line is de-energized, isolated from the system & properly grounded (by both Earth Switch & locally) and & safe for working.	-do-	Team leader of the working party	-do-	
3.4	COLOURED Tags must be used for easy recognition of line under maintenance and/or out of operation.	-do-	-do-	-do-	
3.5	No person, would be allowed to take part in work without wearing appropriate protective gears like Helmet, Safety Belt, Protective Shoe, Gloves, & Eye protecting Glasses etc. (as necessary in cases.)	-do-	-do-	-do-	

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4.0	Monitoring				
4.1	Maintenance Records & Reports are maintained for monitoring & future reference.		DM/AM GMD	Continuous	As required
5.0	Recording:				
5.1	<u>Recording:</u>				
5.1.1	Records of maintenance works including the spare parts used and the list of manpower engaged are maintained for future reference.		DM/AM GMD	As required	QF-GMD-28
5.1.2	All kind of maintenance work should be recorded, both in the maintenance log & in maintenance / inspection card of relevant line.		-do-	-do-	QF-GMD-34 QF-GMD-35
5.1.3	Work in charge must put brief note on maintenance work in maintenance log duly signed by him and will submit the same to the engineer in charge.		-do-	-do-	QF-GMD-34
5.1.4	The engineer in charge will check & verify the report on maintenance work. If he finds the report satisfactory, then he will sign in the maintenance log & will keep the same in proper place.		-do-	-do-	QF-GMD-34
5.1.5	A history card is maintained for all equipment where records of all breakdowns maintenance and major repair works & modifications are recorded.		-do-	-do-	QF-GMD-33
5.1.6	Break down maintenance work should be recorded in all three maintenance record cards: maintenance log, maintenance/inspection card and history card.		-do-	-do-	QF-GMD-33 QF-GMD-34 QF-GMD-35
5.2	<u>Reporting:</u>				
5.2.1	After the completion of annual maintenance program, Manager of concerned GMD will submit the report to the management.				
5.2.2	In the case of Emergency & Break down maintenance Manager of concerned GMD will submit the report to the management describing probable cause of failure and the remedial action taken to rectify the fault	QF-GMD-28 QF-GMD-29	MGMD	As required	QF-HRM-48
6.0	Follow-up Action for improvement				
6.1	Report on Emergency & Breakdown maintenance along with the maintenance log, maintenance/ inspection card and history card will be studied to identify the most frequent cause of failure.	QF-GMD-33 QF-GMD-34 QF-GMD-35	GMT-1/GMT-2, DGM (Grid Circles), MGMD	As required	Analysis for improvement
6.2	In the each equipment history card and in maintenance log, there is a column for cause of maintenance and from the information recorded in this column the engineer in charge would be able to identify the most frequent cause of failure.				
6.3	Recommendation of remedial action necessary to prevent the recurrence of the same in future (If possible) will be prepared. So that concerned MGMD can take necessary actions to reduce the number of failure to the satisfactory level.	-do-	GMT-1/GMT-2, DGM (Grid Circles), MGMD	-do-	Proposal for improvement
6.4	Recommendation of remedial action will be submitted to the Management.	-do-	GMT-1/GMT-2	-do-	
6.5	Management will give proper instruction/ guide equipment to follow.	-do-	DT, MR GMT-1/GMT-2	-do-	
7.0	The effectiveness of the procedure of transmission line maintenance activities followed in PGCB will be evaluated by the management.	QF-IQA-05 QF-IQA-06	MD, MR, Management review Committee	During internal audit	QF-MNG-01
8.0	Actions will be taken on the basis of evaluation by the Management.	QF-MNG-01	MD,MR, GMT-1/GMT-2	When required	Improvement

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