



## STANDARD OPERATING PROCEDURE

FORM NO.HSE/CORP/4

|  |          |   |          |    |           |         |              |             |
|--|----------|---|----------|----|-----------|---------|--------------|-------------|
|  | ACTIVITY | Installation of electric pole/tower /cable in Mines |          |    | SITE      | SMC     | DEPARTMENT   | Mining      |
|  | SOP NO.  | IMFA/SOP/SMC/MINING/19                              | REVISION | 00 | EFF DATE: | 19.6.14 | NO. OF PAGES | Page 1 of 8 |

| Step No. | Activity (WHAT)                     | Associated Requirements/ Hazards/ Impact                  | Process / tools / PPEs (HOW)   | Responsibility (WHO)  | Remarks / Reference   |
|----------|-------------------------------------|---|--|-----------------------|-----------------------|
| 1        | Inspection of work area             | <b>OH&amp;S – Nil</b>                                     |  |                       |                       |
|          |                                     | <b>Environment - Nil</b>                                  |  |                       |                       |
|          |                                     | <b>Quality –</b><br>i)Inspect the work place              | i)Before the work to be started, inspect the work area,<br><br>ii)Determine the potential hazard and access of the work place.                     | Electrical Supervisor | DOC.NO. WI/OPRN/19    |
| 2        | Shifting of electric poles or tower | <b>OH&amp;S –</b><br>i)Endangering traffic.               | i)During pole hauling operation, all loads shall be secured to prevent displacement and a red flag shall be displayed at the trailing end of pole. | Electrical Supervisor | DOCNO. HIRA/MINING/19 |
|          |                                     | <b>Environment - Nil</b>                                  |  |                       |                       |
|          |                                     | <b>Quality –</b><br>(i)Shifting of electric pole or tower | i-a)While shifting, precautions shall be exercised to prevent blocking of road ways.<br>i-b)No shifting will be executed during dark hours.        | Electrical Supervisor | DOC.NO. WI/OPRN/19    |
| 3        | Storing of materials                | <b>OH&amp;S –</b><br>i)Electrocution                      | i)No materials shall be stored under energized lines or in the vicinity of energized equipment   | Electrician           | DOCNO. HIRA/MINING/19 |



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|   |  |  |   |  |                          |
|---|--|--|---|--|--------------------------|
|   |  | <b>Environment -</b><br>i)E-waste                    | i)Collect the E-waste(unused cable,wire damaged appliances and fittings etc.), segregate and store them properly.   | Electrician  |                          |
|   |  | <b>Quality –</b><br>i)Storing of materials           | i)Store the usable materials in order.  | Electrician  | DOC.NO.<br>WI/OPRN/19    |
| 4 | Fixing of poles or tower               | <b>OH&amp;S –</b><br>i)Fall of suspended load        | .i)During fixing operations, no person shall stay or work under a pole/tower or a structure suspended by a crane or similar equipment.  | Electrical Supervisor  | DOCNO.<br>HIRA/MINING/19 |
|   |  | Environment – Nil                                    |   |  |                          |
|   |  | <b>Quality –</b><br>i)Supervision<br><br>ii)Guarding | (i)When machine will be engaged for the job, should be under the supervision of a competent person.<br><br>(ii)Ensure the guarding and take necessary precautions to restrict the persons into lifting area | Mines Foreman/<br>Mining Mate<br><br>Mines Foreman/<br>Mining Mate | DOC.NO.<br>WI/OPRN/19    |
| 5 | Installation, repairing or maintenance | <b>OH&amp;S –</b><br>i)Electrocution                 | i)Any work of installation, repairing or maintenance shall not be carried out without following a proper shut down procedure.   | Electrician  | DOCNO.<br>HIRA/MINING/19 |
|   |  | Environment - Nil                                    |   |  |                          |
|   |  | <b>Quality-</b><br>i)Follow shut down procedure      | i-a)Intimate shift in charge about shut down requirement.<br>(b)Ask the sub station attender for required SHUT DOWN and fill up the Form.<br>(c)The sub station attender will cut off                       | Electrical Engineer/<br>Shift Incharge                             | DOC.NO.<br>WI/OPRN/19    |



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|   |                   |   |  |  |                          |
|---|-------------------|---|--|--|--------------------------|
|   |                   | <p>ii)Ensure shut down</p> <p>iii)Shut down will be taken from the substation.</p> <p>iv)Installation of cable</p> <p>v)Use joint box</p> | <p>power from the feeder and make the system(AB switch) locked.<br/>           (d)Then he will hand over the key and original copy of the form to the requisitioner.<br/>           (e)The requisitioner will retain key until the work is completed.<br/>           (f)After the line work is over, the person who has taken SHUT DOWN ask to switch ON after producing line clearance to the substation attender with the original copy of shut down requisition slip and key.</p> <p>ii)Ensure the shutdown if any work of installation, repairing or maintenance work will be carried out.</p> <p>iii)No secondary place will be chosen for taking shut down. Shut down shall be taken from substation only.</p> <p>iv)No wiring except armoured cable will be used in the installation.</p> <p>v)Cable joint will go through joint box only. No joint in between the poles will be allowed in the installation.</p> | <p>Shift Incharge</p> <p>Electrician</p> <p>Electrician</p> <p>Electrician</p> |                          |
| 6 | Working at height | <p><b>OH&amp;S –</b></p> <p>i)Fall of person due to damage of climbing ladders</p>  | <p>i)Inspection shall be made to determine that the ladder or other elevated structures are capable of sustaining the additional stresses during climbing.</p>   | Electrician  | DOCNO.<br>HIRA/MINING/19 |



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|   |                          |   |  |                                       |                       |
|---|--------------------------|---|--|---------------------------------------|-----------------------|
|   |                          | <p>ii)Fall from height</p> <p>iii)Fall of tools from height</p>                   | <p>ii)While working at elevated locations on poles, towers or other structures, safety belt must be used by work persons.</p> <p>iii)No person shall stay just below the pole where work person is engaged at height.</p>  | <p>Electrician</p> <p>Electrician</p> |                       |
|   |                          | <b>Environment – Nil</b>  |  |                                       |                       |
|   |                          | <b>Quality –</b>  |  |                                       |                       |
|   |                          | i)Check the safety belt   | i)Safety belts shall be inspected before use and each day to determine that they are in safe working condition.  | Electrical Supervisor                 | DOC.NO. WI/OPRN/19    |
|   |                          | ii)Use tool kit while working at height   | ii)Tool loops may be used for the purpose of holding tools.  | Electrician                           |                       |
|   |                          | iii)In case of emergency  | iii)When emergency permits the work at night, spot lights or portable lights shall be provided to perform the work safely.   | Electrical Engineer                   |                       |
| 7 | Working at overhead line | <b>OH&amp;S –</b><br>i)Communication conductor get contacted with energised lines | <p>i-a)Unless protected by insulating materials, bare wire communication conductors on power poles or structures shall be treated as energised lines</p> <p>b)Telecom lines should be at least 40 inches below power lines . When working at height , make sure to maintain appropriate approach distance at all times.</p> <p>ii)Grounding to tower shall be made with a tower clamp capable of conducting the anticipated fault current.</p> | Electrician                           | DOCNO. HIRA/MINING/19 |



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|   |  |   |   |                       |                       |
|---|--|---|---|-----------------------|-----------------------|
|   |  | ii)Energize the tower due to fault current                        |   | Electrical Supervisor |                       |
|   |  | <b>Environment - Nil</b>  |   |                       |                       |
|   |  | <b>Quality -</b><br>i)In excess of taken shut down                | i)Extra precaution by Grounding & short-circuiting:<br>In case of working in over head line, all conductors should be discharged by the discharge rod and shorted with the earth before the working line. | Electrician           | DOC.NO. WI/OPRN/19    |
| 8 | Installation & Removal of wire line      | <b>OH&amp;S –</b><br>i)Injury by sudden collapse of electric pole | i)Before installing or removing wire or cable, consider the strains to which poles and structures will be subjected and prevent failure of supporting structures.   | Electrical Supervisor | DOCNO. HIRA/MINING/19 |
|   |  | <b>Environment- Nil</b>   |   |                       |                       |
|   |  | <b>Quality –</b><br>i)House keeping                               | i)Remove the damaged cable or fittings from the operational area.   | Electrician           | DOC.NO. WI/OPRN/19    |
| 9 | Digging of hole for the erection of pole | <b>OH&amp;S –</b><br>i)Fall of person in un protected hole        | i)Digging of holes made for pole erection shall not be left unattended or unguarded in areas where employees are currently working.   | Electrician           | DOCNO. HIRA/MINING/19 |
|   |  | <b>Environment - Nil</b>  |   |                       |                       |



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|         |   |  |  |  |                          |
|---------|---|--|--|--|--------------------------|
|         |   | <b>Quality –</b><br>i) Digging and pole fixing                       | i-a)Before digging ensure there is no hidden power source.<br>i-b)Any digging in the mines under the supervision of a competent person.<br>i-c)Work of fixing pole shall be immediately carried out after digging. | Electrical Supervisor/<br>Statutory person | DOC.NO.<br>WI/OPRN/19    |
| 10      | Excavation and trenching  | <b>OH&amp;S –</b><br>i)Electrocution by damage to buried power cable | i)During excavation or trenching, efforts shall be made to determine the location of such facilities and work conducted in a manner designed to avoid damage and subsequent danger.                                | Electrician                                | DOCNO.<br>HIRA/MINING/19 |
|         |   | <b>Environment - Nil</b>   |  |  |                          |
|         |   | <b>Quality –</b><br>i)Caring for underground facilities              | i-a)When new electric cable laid underground, they shall be protected as necessary to avoid damage.<br>i-b)Marker shall be fixed to know the exact cable pass.   | Electrical Supervisor                      | DOC.NO.<br>WI/OPRN/19    |
| 11      | General precautions   | <b>OH&amp;S –</b><br>i)Electrocution                                 | i)Do not mistakenly lift an energized line while performing tree trimming work.  | Electrician                                | DOCNO.<br>HIRA/MINING/19 |
|         |   | i)Electrocution  | ii)Look for the low clearances of the cable crossing the road and take immediate action for heightening the same .   | Electrician                                |                          |
|         |   | <b>Environment - Nil</b>   |  |  |                          |
|         |   | <b>Quality -</b><br>i)Be alert during tree trimming                  | i)Identify the conductor close to the tree branches. Prior to work de-energise them. Care for the damage to overhead line.   | Electrician                                | DOC.NO.<br>WI/OPRN/19    |
| ii)Look | ii)Look to the sparks, glowing wires, smoke, evidence of cross telecommunications and | Electrician  |  |  |                          |



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|--|--|---|---|--|--|
|  |  | <p>iii) Listen</p> <p>iv) Be alert</p> <p>v) Use voltage tester</p> <p>vi) Use PPEs.</p> <p>vii) Work in the presence of responsible person</p> <p>viii) Prevent confined space working</p> <p>ix) On approach of inclement weather</p> <p>x) Avoid short-cut</p> | <p>electrical /power lines.</p> <p>iii) Listen for buzzing, humming or hissing sounds. These sounds may indicate large amounts of electric current.</p> <p>iv) Be alert to the smell of smoldering/burning insulation, smoke or ozone caused by the electrical energy.</p> <p>v) Before touching any electrical parts test the object with a voltage tester.</p> <p>vi) Appropriate PPE e.g. insulated rubber gloves, safety goggles, safety shoes and clothing etc. are to be used.</p> <p>vii) Use of vehicles, cranes and other equipment in restricted or hazardous areas shall at all times be controlled by a responsible person.</p> <p>viii) Work place will be safe and suit for free movement of the work persons and if needed to work at confined place then suitable protective measures will have to be taken.</p> <p>ix) At the first sign of a rain or storm, technicians should prepare to close up any wire, cable or construction work and discontinue the job until storm conditions have passed.</p> <p>x) Appropriate work practices and procedures are to be followed. Cutting the amount of work place safety will never be</p> | <p>Electrician</p> <p>Electrician</p> <p>Electrician</p> <p>Electrical Supervisor/<br/>Mines Foreman</p> <p>Electrical Supervisor</p> <p>Electrician</p> <p>Electrician</p> <p>Electrician</p> |  |
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|  |  |  | allowed. |  |  |
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|  |  |   |
|--|--|---|
| <b>Name</b><br><b>Designation</b><br><b>Signature:</b><br><b>Date:</b> | <b>Prepared by</b><br><br><b>M.K. Samal</b><br>Mines Manager | <b>Approved by</b><br><br><b>S. Patni</b><br>Sr. GM-SCM |
|--|--|---|

**NOTE :**

**SIX DIRECTIONAL HAZARD IDENTIFICATION DURING JOB :**

In addition to the above SOP, a 6-directional hazard identification sheet shall be used before start of the job. While executing the job at site, any hazards from six directions (**NORTH, SOUTH, EAST, WEST, TOP, BUTTOM**) to be assessed based on physical observation, common sense & experience. Controls shall be taken for any hazards thus identified.

**TRAINING RECORD OF SOP :**

The Training on this SOP with six directional hazards is to be imparted to concerned employee and contract workers by Shift In-Charge / Deptt. Head as applicable. The Training Record to be maintained in a register with signature of the individual employees before starting of the job.