

**PROJECT NAME**

**ACTIVITY– UPS System Testing and Commissioning**

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Serial No.	Sub-Activities	Hazards Identified (Generic & Task)	Risks Involved (People & Property)	Risk Rating			Control Measures	Residual Risk
				Severity	Probability	Initial Risk		
1.	Prepare work area	<ul style="list-style-type: none"> <li>Unauthorized, untrained workers</li> </ul>	<ul style="list-style-type: none"> <li>Cuts</li> <li>Abrasions</li> </ul>	2	A	L	<ul style="list-style-type: none"> <li>TBT/DSTI shall be conducted by the foreman/ safety officer prior to work commencement.</li> <li>Task specific safety training to be provided.</li> <li>Authorized personnel to undertake the job.</li> <li>Daily safety inspection should be carried out and eliminate the hazard.</li> </ul>	Low (ALARP)
2.	Manual Handling	<ul style="list-style-type: none"> <li>Incorrect lifting of loads</li> <li>Sharp edges.</li> <li>Placing the object while fingers underneath.</li> <li>Slip/trip/fall ( same level )</li> <li>Unsafe posture</li> </ul>	<ul style="list-style-type: none"> <li>Back Injuries</li> <li>Cut to finger</li> <li>Strain</li> <li>Musculoskeletal Injuries</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>Any lifting tasks shall be carried out by persons those physically capable to do so</li> <li>No employee should be asked to carry loads above his capacity and in any case no load shall exceed 30kg per man.</li> <li>Mass of the load is more then to be equally shared</li> <li>Deploy enough number of personnel for lifting depending upon the type of load to be lifted.</li> <li>Use mechanical aids such as trolley etc.</li> <li>Load not to be lifted above your shoulder height</li> <li>Keep your fingers away from pinch point while placing the load.</li> <li>Materials shall not be carried through Pedestrian access.</li> <li>Area shall be illuminated with adequate lighting.</li> <li>Appropriate personal protective equipments shall be used while manual handling of materials and loads.</li> </ul>	Low (ALARP)

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3.	Traffic and road management	<ul style="list-style-type: none"> <li>• Collision with vehicles/ fixed installations.</li> <li>• Poor identification</li> <li>• Unauthorized/ untrained Operator/ driver, banks men</li> <li>• Poor access for vehicle</li> <li>• Public movement</li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Property damage</li> <li>• Fracture</li> <li>• Penalty/ compensation</li> </ul>	4	B	M	<ul style="list-style-type: none"> <li>• Prior to start obtain all relevant approval from traffic department in connection to the use of road.</li> <li>• Trained and experienced operator/ driver and banks men to be appointed for the activity.</li> <li>• Restricted to unauthorized and public to Enter the area.</li> <li>• Public vehicles and transport to be restrict to enter the work area and proper alternative way to be provided.</li> <li>• Warning sign boards to be placed and area To be well barricaded.</li> <li>• High visibility vest to be provided to flagman to increase visibility.</li> <li>• Flagman to be positioned to the areas Wherever required.</li> <li>• Close supervision to be done at all times.</li> </ul>	Low (ALARP)
4.	Unloading, shifting and placing load bank by fork lift or crane	<ul style="list-style-type: none"> <li>• Unauthorized, Untrained Workers</li> <li>• Lifting failure.</li> <li>• Unsafe lifting.</li> <li>• Swinging of material</li> <li>• Damaged sling/wire rope or a chain</li> <li>• Poor maintenance of vehicle</li> <li>• Speedy operation</li> <li>• Over turn</li> <li>• Over load</li> <li>• Poor communication</li> <li>• Poor lighting</li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Fractures</li> <li>• Property damage</li> <li>• Injury to personal</li> <li>• Sprain and strain</li> <li>• Crush</li> <li>• Cuts</li> </ul>	4	C	H	<ul style="list-style-type: none"> <li>• Pre check to be carried out by the operator prior to start the work to ensure that no hydraulic leaks, or other visible damages seen.</li> <li>• Ensure the crane and forklift engaged is tested and having valid license and the operators has valid license and approved 3<sup>rd</sup> party certificate.</li> <li>• Engage trained and third party certified riggers shall be provided.</li> <li>• Barricade and warning signs shall be provided for the area where lifting operation is carried out to restrict the entry.</li> <li>• Check list shall be maintained for the vehicles prior to start any work</li> <li>• Use tagline for control of swing and alignment.</li> </ul>	M (ALARP)

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							<ul style="list-style-type: none"> <li>• All lifting equipments and gears shall have valid third party certificate.</li> <li>• The crane must be stopped when the wind speed exceeds 38km/hr.</li> <li>• Never exceed the SWL marked on the crane.</li> <li>• All load shall be secured prior to lifting.</li> <li>• The crane and trucks inspection shall be conducted periodically and record maintained.</li> <li>• Vehicle not to be left unattended at site (ie, to be switch off mode if required and keys removed)</li> <li>• Operators and rigger must wear reflecting vest and adequate PPE ( Shoe, helmet, leather gloves, goggles, over all )</li> <li>• Vehicle routes kept free of obstructions (with spillages being cleaned up promptly)</li> <li>• Operator and rigger shall be known on the rigging procedure.</li> <li>• Adequate lighting shall be provided for the work location.</li> </ul>	
5.	Use of Hand tools ( Screw driver )	<ul style="list-style-type: none"> <li>• Slip, trip and fall</li> <li>• Damaged / worn out hand tools</li> <li>• Flying objects</li> <li>• Mushroom Heads</li> <li>• Using incorrect type</li> </ul>	<ul style="list-style-type: none"> <li>• Fatigue</li> <li>• Trigger finger</li> <li>• Cuts and abrasions</li> </ul>	3	C	M	<ul style="list-style-type: none"> <li>• Defective tools should not be issued or used to perform the task, to be checked by store keeper</li> <li>• Don't extend the spanner by using a pipe as an extension bar</li> <li>• Hand tools shall be free from oil, grease &amp; etc.</li> <li>• Chisel's head shall have safety cap to avoid finger injury.</li> <li>• Never use a file as a lever</li> <li>• Never use a screw driver as a chisel</li> <li>• Use eye/ face protection when there is flying materials hazard, wear gloves while required to protect the hands</li> <li>• Use right tools for the job</li> </ul>	Low (ALARP)

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6.	Testing & commissioning using by multi meter	<ul style="list-style-type: none"> <li>• Unauthorized/ untrained Person</li> <li>• Faulty Instrument</li> <li>• Improper identification</li> <li>• Electrocutation</li> </ul>	<ul style="list-style-type: none"> <li>• Electric shock and Burns</li> <li>• Cut and abrasion</li> </ul>	3	B	M	<ul style="list-style-type: none"> <li>• Competent and trained person only to do the Testing and commissioning.</li> <li>• PTW to be applied and obtained prior to start work</li> <li>• Ensure that the circuit is not live before using the instrument.</li> <li>• Calibrated / certified instrument only shall be used.</li> <li>• Authority's clearance shall be acquired if required.</li> <li>• Manufacturer recommendation shall be strictly implemented during testing and commissioning.</li> <li>• Lock out tag out ( LOTO) procedure to be followed during testing &amp; commissioning.</li> <li>• Appropriate standard warning signs related to testing and commissioning shall be displayed at the conspicuous locations.</li> <li>• Emergency procedure shall be briefed to all personnel prior to start the activity.</li> <li>• Emergency evacuation plan shall be readily available according to site condition and briefed to the workforce prior to start.</li> <li>• Trained first aider, fire warden and emergency vehicle to be available at the site during the activity.</li> <li>• Emergency contact numbers shall be displayed at work location for easy communication</li> <li>• All personnel's involved shall be made aware of first aid treatment related to electric injuries.</li> </ul>	Low (ALARP)

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7.	Working with electricity	<ul style="list-style-type: none"> <li>• Electricity</li> <li>• Conductors ( water, metal, concrete )</li> <li>• Broken wires</li> <li>• Improper plug, case</li> <li>• Overloading</li> </ul>	<ul style="list-style-type: none"> <li>• Electrocutation or death</li> <li>• Burns and shocks</li> <li>• Muscle contraction</li> <li>• Heart , lung Paralysis</li> <li>• Fire</li> </ul>	4	B	M	<ul style="list-style-type: none"> <li>• Only those persons who have been adequately trained and certified in the work of electricity to undertake the task.</li> <li>• Temporary live cable management plan shall develop and implement during the activity.</li> <li>• Electrical work shall not be carried out in wet conditions.</li> <li>• Do not overload to the circuits.</li> <li>• Don't use homemade electrical accessories and use industrial type only.</li> <li>• Disconnect main power supply before commencing of work.</li> <li>• Defective tools and equipment should not be used, report it and replace it immediately.</li> <li>• Communicate to all concerned personnel about T &amp; C.</li> <li>• Barricade the location and warning signage shall be placed where circuits and equipments are energized.</li> <li>• Temporary power supply shall be taken through standard rated MCBs &amp; RCBs.</li> <li>• Temporary power supply cables shall not have joints.</li> <li>• PPE should be worn at all time while working in energized circuits. ( Insulated gloves, Electric resistivity shoe )</li> </ul>	Low (ALARP)
8.	While working at night shift	<ul style="list-style-type: none"> <li>• Poor illumination</li> <li>• Slip/trip/fall</li> </ul>	<ul style="list-style-type: none"> <li>• Fatality</li> <li>• Cuts</li> </ul>	3	B	M	<ul style="list-style-type: none"> <li>• Work notification shall be applied and obtained prior to start the night work from main contractor.</li> <li>• Sufficient illumination shall be provided.</li> <li>• Light post shall be secured to avoid fall.</li> </ul>	Low (ALARP)

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							<ul style="list-style-type: none"> <li>Proper cable management system shall be followed</li> <li>All materials shall be staged in proper manner without obstacles</li> </ul>	
9.	Working in hot weather	<ul style="list-style-type: none"> <li>Heat Stress</li> </ul>	<ul style="list-style-type: none"> <li>Dehydration</li> <li>Sunburn</li> <li>Skin Cancer</li> </ul>	2	B	M	<ul style="list-style-type: none"> <li>Drink plenty of water</li> <li>Employees shall be trained about heat stress symptoms &amp; first aid measures.</li> <li>Avoid highly physical tasks during the hottest time of the day.</li> <li>Isotonic drinks shall be provided.</li> <li>Provide sufficient rest breaks based on the humidity &amp; temperature conditions.</li> <li>Heat stress management plan shall be developed and implemented during the activity.</li> </ul>	Low (ALARP)
10.	Work Completion	<ul style="list-style-type: none"> <li>Poor housekeeping</li> <li>Slip/trip/fall</li> </ul>	<ul style="list-style-type: none"> <li>Fire</li> </ul>	2	A	L	<ul style="list-style-type: none"> <li>General housekeeping, Remove all surplus and unwanted waste materials from the work place.</li> <li>All necessary precautions will be adopted to prevent fire</li> </ul>	Low (ALARP)

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**RISK MATRIX**

					Probability				
					A	B	C	D	E
Severity	People	Assets	Environment	Reputation	Improbable 1 in 100,000 Years	Remote 1 in 10,000 Years	Occasional 1 in 1000 years	Probable 1 in 100 years	Frequent 1 in 10 years
5-Catstrophic	Multiple fatalities or permanent total disabilities	Extensive damage	Massive effect	International impact	<p align="center"><b>High Risk</b></p> <p align="center"><b>Medium Risk (ALARP)</b></p> <p align="center"><b>Low Risk</b></p>				
4-Severe	Single fatalities or permanent total disabilities	Major damage	Major effect	National impact					
3-critical	Major injury or health effects	Local damage	Localised effect	Considerable impact					
2-Marginal	Minor injury or health effects	Minor damage	Minor effect	Minor impact					
1-Negligible	Slight injury or health effects	Slight Damage	Slight effect	Slight impact					

<b>HIGH</b>	<b>3-E</b> <b>4-C,D,E</b> <b>5-B,C,D,E</b>
<b>MEDIUM</b>	<b>1-D,E</b> <b>2-B,C,D,E</b> <b>3-A,B,C,D</b> <b>4-A,B</b> <b>5-A</b>
<b>LOW</b>	<b>1-A,B,C</b> <b>2A</b>