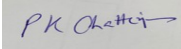

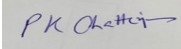


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Activity: Installation & Testing of BMS				Prabir		Safety Officer			

No	ACTIVITY	IDENTIFIED HAZARDS/RISKS	People Involved	Base Risk Ranking (Without Controls)				CONTROL MEASURES	Residual Risk Ranking (With Controls)				Person Responsible
				L	S	Risk Score	Risk Rating		L	S	Risk Score	Risk Rating	

1	Delivering, unloading and storing of DDC Panel, Damper Actuator, Thermostat, Field Devices using pickup and unloading by manual handling	Plant and Traffic movement <ul style="list-style-type: none"> Run over by vehicles/plants Hit by reversing equipment Overhead obstructions Vehicle break down Property damage Collision with other vehicles Falling objects 	Operatives Staff/visitors	3	4	12	Med	1. Delivery/ collection drivers shall be subject to McLaren induction/Training with regards to traffic management. 2. Ensure exclusion zone is set up around the preparation work area and all plant movement and checked by supervisor 3. Traffic light batons shall be provided for banks man at night 4. All plant to have a fully trained banks man present all times. 5. No plant to reverse without banks man. 6. Ensure access route are sufficient and safe to use. 7. Do not take rest in or under vehicles 8. Proper barricade and safety signboard provided on open excavation 9. All vehicles must be fitted with reverse alarm / Flashing light. 10. The work place and all access to be well illuminated. 11. Enforce Speed limit 12. Ensure all vehicles entering the site is	1	4	4	Low	Site Eng. Supervisor, Foreman,
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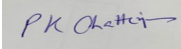
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								properly maintained and reported if found any defect 13. Ensure materials are secured/tied in pallet trolley to avoid fall from trolley. 14. STARRT Card must be briefed to the operatives 15 No unloading activity will carry if high wind, rain or poor visibility.					
2	Manual Handling	1 Improper Manual Handling technique 2 Wrong Posture 3 Poor visibility 4 Lack of access & egress 5 Back aches 6 Slippery surfaces	Operatives involved in work	3	4	12	Med	1. Work briefing must be conduct before starting the activity. 2. Eliminate the need for manual handling by using mechanical aid. 3. Operatives must be trained for safe manual handling 4. If unsure of the load weight, check with supervisor. 5. Ensure proper manual handling procedure 6. Ensure adherence with sufficient and appropriate PPE. 7. Limit load carrying to 20kg per person 8. Supervisor must make sure while manual handling loads individual task and environment to be considered to reduce the risk of manual handling. Manual Handling assessment will be carried by SAF 68	1	4	4	Low	Supervisor, Foreman, Site Eng.

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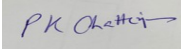
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3	Material storing	1 Loose & unsecured material 2 smoking at storage area 3 Incorrect storage & improper materials stacking 4 Fire 5 Slip, Trip & Fall	Operatives Staff/storekeeper	3	4	12	Med	1. Ensure accesses are kept clear at all times. 2. Housekeeping to be carried out regularly throughout the day when required 3. Supervisor to ensure operatives are stacking material neatly and stacks are stable and in a safe condition 4. Provide adequate lighting especially during night hours 5. Appropriate space is allowed around storage areas for employees to move around safely without the risk being trapped between stacked 3 materials. 6. No smoking signage must be displayed in storage area and strictly to be followed smoking policy 7. Fire extinguisher must be available in storage area in fore point. 8. Emergency number must display in storage area 9. Fragile materials must be stored in a safe manner with caution signage.	1	4	4	Low	Supervisor, Foreman, Site Eng.
4	Installation of DDC Panel, Damper Actuator,	Work at height Fall form height	Operatives/Staff/ Visitors Others	3	4	12	Med	1) Only trained and authorised personnel to carry out the task. 2) Ensure the PTW in place. 3) Ensure proper working platform with complete	1	4	4	Low	Supervisors Foreman, Site Eng.

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8	Thermostat, Field Devices using Mobile tower for access	Falling objects Over loading Fragile surface Access & egress						fall protection 4) Ensure Full body harness and 100% Tie off 5) Ensure the scaffold platform is properly erected with "Safe to use" tag. 6) Ensure castor wheels are locked and out rigger in place. 7) Hand tools must be secured/tethered 8) Work materials strictly not allowed to be stored on platform except for working tools 9) Always comply with the WLL & man loading capacity 10) Ensure unauthorised person not allowed to modify the scaffolding and if needed to any changes then must be modified by trained and certified scaffolder. 11) Must clean the work area after completion the job. 12) Ensure safe access to the working platform 13) Scaffold access must be free from obstruction 14) During installation and connection activity ensure that nobody will enter in side Duct for resting or keeping any food item and no debris will remain inside. 15) Work area must barricade with signage and watchman must monitor no unauthorised person will enter inside exclusion zone 16) Ensure sufficient illumination in work area. 17) Work area should clean and remove all the debris end of shift.					
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								18) Ensure that working near fragile surface special care of body and eye protection with necessary PPE.					
5	Cable glanding and termination in to DDC Panel (Not energized) using drill machine and hole saw cutter.	Physical Injuries like laceration, foreign parts in eyes, finger injury Entanglement with sharp edge tools Noise and dust Spark and Fire	All operatives involved	3	4	12	Medium	1. PAT test to be conduct and maintain register. 2) All the power tools must be 110 volt and safe to use 3.All power supplies should be installed & connected by a competent electrician. 4). RAMS to be briefed to the operatives before start the activity and maintain the record. 5.Hot work permit to be obtained and work area must free from combustibile item 6. Fire extinguisher in place with fire blanket. 7. Noise protection to be use 8) Eye protection must be used. 9) Work force should alert while using sharp edge tools to avoid entanglement with clothing. 10) Close supervision and necessary PPE.	1	4	4	Low	Supervisor, Foreman, Testing Eng.
6	Testing and Commissioning of DDC Panel	Electric Shock Electrocution Exposed Energized Terminals Fire Burn Failure of testing kits	Involved all person	4	4	16	High	1) Permit to work to be obtained for Testing & Commissioning 2) STARRT card must briefed before starting the work 3) Before starting any test, make a precise plan, detailed approved program and circuit wiring for the test and ensure all permit procedure is followed 4) Ensure that proper safety PPE is used. These include safety shoes, safety helmet, safety	1	4	4	Low	Testing Engineer Supervisor Foreman

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		Explosion						gloves(Rubber-Electrical), Rubber mat, insulated ladders 5) Fire extinguisher, Fire blanket shall be in place 6) Tag all breakers and switches. Use padlocks wherever possible. Disconnected terminals shall be covered and provide with adequate separations. 7) Unauthorized personnel must be kept away from the test area. Barricade the area with warning signs boards. 8) Ensure no metal body is in touch with any test terminal and adequate fall protection for the dissembled metal bodies. 9) Physical inspection around transformer area is to be carried out with the general arrangement drawing 10) All test leads shall be properly connected to the transformer terminal with suitable fall protection 11) Exposed terminal shall be covered with suitable insulation. 12) The use of electrical safety, Arc Flash safety grounding, and LOTO. Procedures should always be followed to ensure personal safety when testing and commissioning of DDC Panel					
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No	ACTIVITY	IDENTIFIED HAZARDS/RISKS	People Involved	Base Risk Ranking (Without Controls)				CONTROL MEASURES	Residual Risk Ranking (With Controls)				Person Responsible
				L	S	Risk Score	Risk Rating		L	S	Risk Score	Risk Rating	

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								13) Always use proper tools and instruments must be valid calibrated certificates 14) Only qualified and certified persons to do all testing 15) Ensure the transformer is proper ground connections 16) All hand tools must be insulated 17) Operatives hands should not wet and dress must be dry also 18) Make sure the entire team continues the use of electrical safety procedures use of established electrical safety procedures.					
7	Testing and commissioning of 24 volt Damper actuator	Over Voltage Electrocution Exposed Energized Terminals Fire Burn Failure of testing kits Explosion. Fatality	Operatives involved	3	4	12	Med	1) Ensure Proper RAMS briefing with sign off sheet signed by all involved personnel 2) Before commencing the overvoltage, power frequency test and insulation resistance test shall be carried out. 3) Proper access /egress in the work area 4) Never touch the megger test leads while the handle being cracked 5) The operation of all electrical and mechanical interlocks on the damper actuator shall be checked to	1	4	4	Low	Site Eng Supervisor Foreman

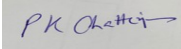
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				L	S	Risk Score	Risk Rating		L	S	Risk Score	Risk Rating	

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								ensure that they operate in a positive manner. 6) The people involved inspecting; commissioning and testing of switchgear will need to be made familiar with the procedures. 7) Ensure warning signage and barricading the area 8) Ensure LOTO permit procedure maintained and briefed to the operatives 9) Ensure Proper illumination in work area. 10) Ensure PPE must be using to avoid electrical shock. 11) Area must be free from debris and good housekeeping.					
8	Working near live services	Unauthorized Person Contact with live services Inadvertent release of energy Electrical Hazard Electrocution Electric Burn Short circuit Fire Lack of barricade and warning signs Trip/Fall Property Damage	Operatives/Staff/ all surrounding personnel working with in the area	4	5	20	High	1) Ensure proper PTW is in place and correct isolation procedure have been carried out (i.e. LOTO) 2) Ensure STARRT card is duly filled by responsible person 3) Ensure Proper RAMS briefing with sign off sheet signed by all involved personnel. 4) All tools and equipment properly pre-inspected and colour coded 4) Post Warning Signs & Caution Tags in the Concern Area. 5) Un-Authorized Persons Visible Warning Signs Must be in place in the work area. 7) Visual Inspection of Cables If Any Damage 8) Maintain good housekeeping	1	5	5	Low	Supervisor Foreman Site Eng

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		Personnel injury						9) Ensure proper Firefighting equipment is in place and easily accessible. 10) Ensure sufficient and appropriate PPE always.					
9	Use of Ladder	Falling from height Working on Uneven ground Falling objects	Operatives/ Staff/	3	4	12	Medium	Ladder is not to use daily basis but in certain cases where there is very narrow place and even podium ladder not possible to fix in that cases Ladder can use if permission granted from McLaren Safety 1) Only light work, off short duration and work in which the operative can maintain secure hand and foot hold can be undertaken form a ladder 2) Never try to overreach with any ladders 3) Check the ladder is of suitable quality for industrial use and is in good condition 4) Maintain a minimum of 3 points of contact with stepladders at all times (feet/thighs/hands) If possible avoid the use of stepladders at a working height of 2 meters and more. 5) Check the ladder legs (and stays) are fully deployed or locked (depending on type) to maintain maximum base dimensions and the step ladder is orientated to provide maximum stability. 6) Stepladders/ladders has to be used on leveled ground/firm base 7) Ensure that during using ladder from the top 2 steps is blocked to avoid climb on that.	1	4	4	Low	Site Engr Sup Foreman


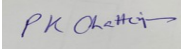
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								8) The ladder securely fixed to prevent slipping outwards or sideways or securely footed at all times. 9) Person must hold the ladder while another operative working on it 8) Materials should not be placed above the thread of ladders/step ladders 9) Do not carry any materials in one hand while climbing or getting down from ladder 10) Ensure the area under the ladder is barricaded especially if it is being used in a public area. 11) Ensure the ladder is electrical insulated podium type if working in live services					
10	Use of power tools such as, Drill machine,	Damaged cable insulation, Sockets. Electrocution Electric shock Short circuit Trip/Fall Noise Hearing loss Vibration Dust	Operatives and staff	3	4	12	Med	1) All portable electrical equipment must be PAT tested and color coded. Make sure the test dates are visible on the equipment. 2) Ensure all power tools 110 volt and maintained 3) PTW to be obtained, prior to commencing the task 4) Damaged industrial sockets and power cables must be removed. 5) Ensure the electrical cable is not damaged and has not been repaired with insulating tape or unsuitable connectors. 6) Ensure cables from power tools shall be	1	4	4	Low	Supervisor Foreman Site eng.


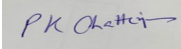
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								organized so as not to present a tripping hazard 7) Only trained competent operatives to operate the power tools. 8) Ensure proper and regular maintenance of equipment that takes account of noise 9) Ensure proper hearing protection always. 10) Make sure people use the right tool for the job and are trained to use it correctly 11) Ensure defective tools that require maintenance is reported for repair or replacement. 12) Instruct workers to keep their hands warm and dry, and to not grip a vibrating tool too tightly. Workers should allow the tool or machine to do the work. 13) Ensuring proper job rotation and limiting time operatives working with power tools and hand tools. 14) use dust mask					
11	Use of Hand tools and Testing kit	Improper selection of hand tools. Damaged and Defective Hand tools Hand injuries Pinch point Ergonomics	Operatives/Staff	3	3	9	Medium	1) Hand tools should be visually inspected for defects, prior to use. 2) Competent certified Engineer must use testing kit 3) Select right tools for right Job 4) Ensure no Homemade or makeshift tools to be used at site 5) All the test kit power connection must be in	1	3	3	Low	Site Eng. Supervisor Foreman

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		Repetitive strain injury						good condition and no loose connection 6) Ensure Hand tools are Stored in accordance with the manufacturer's instructions. 7) Ensure hands are not in direct line of fire while working with hand tools. 8) Ensure all the testing kits are calibrated from authorized lab. 9) Electrical Permit need to obtain for using Testing kit if above 110V. 10) Only authorized persons are allowed during testing activity and area must be barricaded with caution signage. 11) Ensure appropriate PPE always.					
12	Working at night time	Poor visibility due to darkness / poor illumination Lone worker	Operatives/staff	3	4	12	Medium	1) Ensure proper night work permit is obtained 2) Proper lighting system should be in place 3) Ensure proper Communication / Coordination and close supervision 4) Industrial safe torches to be available for emergency situations 5) High visibility Traffic Vest for personnel's in night shift 136) Avoid lone working and always ensure buddy system while working at night 7) Employees to be trained and understand McLaren Crises plan.	1	4	4	Low	Site Engr Supervisor Foreman
13	Adverse weather condition	Rain, Sand Storm	All employee, visitors	4	4	16	High	1 Weather report must be monitored and informed to work force.	1	4	4	Low	Site Eng. Supervisor

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		Fog Slippery surface Risk of electrocution Flying debris, Slip, Tripping and fall						2 No activity shall be allowed during adverse weather condition on site 3 Protect the Power tools/DB from rain water to avoid short circuit. 4 Ensure during adverse weather or Foggy weather no lifting operation and no vehicle movement. 5 After clear the weather make sure all power tools are safe to use. 6 No work at height during high wind and rain 7 In case of emergency, call McLaren/Emergency number					Foreman
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5 Approved By: Name Vishnu Mohan Position PM Signature 

RISK ASSESSMENT & CONTROL GUIDELINES

1. Executing Steps:

1.1. Planning

- Construction and HSE team must ensure that hazard identification is complete.
- Construction and HSE team must prioritize the hazard issues, which are of significant in nature. (It means that risks have well established legal requirements, potentially high risks).
- Construction and HSE team to prepare the risk assessment plan for the priorities identified hazards for these potential high risks.

1.2. Risk Assessment

Risk is the probability of an event occurring in a given set of circumstances. The 'event' is an exposure to hazard. The hazard is the potential to cause harm. The risk assessment is the technique of evaluating not just the likelihood of an event occurring, but also the outcome will be in terms of injury, loss, damage or harm.

1.3. Risk Assessment Process

The process of carrying out a risk assessment should be as follows.

- Identify the hazards.
- Identify who might be harmed and how.
- Evaluate the risk and implement the control measures.
- Record the significant findings.
- Review the assessment and update if necessary.

1.4. Examination of the Hazards and Risk Associated

- Competent staff must be used in examining the risk associated with the identified hazard.
- Competent staff should examine following aspect to determine the risk involved:
 - Examine the existing control measures in place.
 - Identify employees at risk.
 - Likelihood of risk.
 - Severity
 - Risk level and their tolerability.

1.5. Evaluating the risk:

Once the necessary information has been obtained on the hazards encountered by work activities, next stage is to access the risks.

1.5.1. Risk Rating Score

Risk rating score is a combination of two factors.

- The severity of the risk that could injure persons or cause damage to plant.
- The likelihood of the risk that it could happen (Probability).

RISK RATING = LIKELIHOOD X SEVERITY

NOTE: Each activity has to be assessed for the risk value for determining the level of Severity and likelihood are mentioned in the table below.

		SEVERITY				
LIK ELI HO OD		No Injury (1)	Minor Injury (2)	Moderate Injury (3)	Major Injury (4)	Catastrophic (5)
	Rarely (1)	1	2	3	4	5
	Unlikely (2)	2	4	6	8	10
	Possible (3)	3	6	9	12	15
	Likely (4)	4	8	12	16	20
	Almost Certain (5)	5	10	15	20	25
RISK LEVEL:		Low		Medium		High

