



HAZARD IDENTIFICATION AND RISK ASSESSMENT & REGISTER OHS



Risk Assessment (Baseline and full RA)																					
TASK/ACTIVITY/PROCESS NAME:				BUS 2 DIFF RELAY TEST				DEPARTMENT/AREA:		HSE											
RA Number:				1				DATE:		30/10/2025											
SEVERITY / CONSEQUENCE (Impact/Hazard Effect) (Where an event has more than one 'Loss Type', choose the 'Consequence' with the highest rating)																					
Loss Type Additional "Loss Types" may exist for an event. Identify & rate accordingly				(1) Insignificant			(2) Minor		(3) Moderate		(4) Major		(5) Catastrophic								
(S/H) Harm to People (Safety/Health)				First Aid Case/Exposure to Minor Health Risk			Medical Treatment Case Exposure to Major Health Risk		Loss Time injury / Reversible Impact on Health		Single Fatality or Loss of Quality of Life / Irreversible impact on Health		Multiple Fatalities / Impact on health Ultimately Fatal								
(E) Environmental Impact				Minimal environment harm incident with workplace			Material Environment harm (RST)		Material Environment harm (RMT)		Major environmental incident (RLT)		Major environmental harm – Incident Irreversible								
(B/N/D) Business Interruption / Material / Fire Damage & Other Consequential Losses				No disruption to operation / 1000 SR to Less than 10K SR			Brief Disruption to Operation / 10k SR to Less Than 100K SR		Partial Shutdown/100k SR to Less than 1M SR		Partial Loss of Operation/1M SR To Less than10M SR		Substantial or Total Loss of Operation / 10M SR and more								
LIKELIHOOD				Examples (Consider Near-Hits as well as actual events)				RISK RATING / PROFILE													
(5) ALMOST CERTAIN				The unwanted event has occurred frequently : Occurs in order of (1) or more per year & is likely to reoccur within 1 year				11 (M)		16 (H)		20 (H)		23 (Ex)		25 (Ex)					
(4) LIKELY				The unwanted event has occurred infrequently : Occurs in order of less than once per year & is likely to reoccur within 5 yrs.				7 (M)		12 (M)		17 (H)		21 (Ex)		24 (Ex)					
(3) POSSIBLE				The unwanted event has occurred in the business at some time: or could happen within 10 years.				4 (L)		8 (M)		13 (H)		18 (H)		22 (Ex)					
(2) UNLIKELY				The unwanted event has occurred in the business at some time: or could happen within 20 years.				2 (L)		5 (L)		9 (M)		14 (H)		19 (H)					
(1) RARE				The unwanted event has never known to occur in the business or it is highly unlikely to occur within 20 years.				1 (L)		3 (L)		6 (M)		10 (M)		15 (H)					
RA TEAM (Names)				DESIGNATION				SIGNATURE		RISK RATING		RISK LEVEL		GUIDELINES FOR RISK MATRIX							
Waleed Ahmed				Safety Engineer						15 to 25		(Ex) - Extreme		Stop operation and review controls- Eliminate, avoid risk & implement High priority action plans							
Osman Muhammad				Site Engineer						8 to 12		(H) - High		Proactively manage & implement specific controls/action plans- Review after 7 days							
Umair Hussan				Electrical Engineer						4 to 6		(M) - Medium		Actively manage & monitor – Additional controls is advised & review after 14 days							
Ismail khan Rasool khan				Technician						1 to 3		(L) - Low		Risk acceptable – Monitor & manage as appropriate with frequent review							
DEPARTMENT / AREA:				ECO LIMITED ARABIA CONTRACTING COMPANY. Repair / Maintenance & construction of main distribution Relay and Substation Equipment at north and north-east areas				APPROVED BY / MANAGER or SUPERVISOR				Waleed Ahmed		DATE:		21/10/2025		NEXT REVIEW DATE:		1/18/2026	
Identify the hazard on the given task and conduct assessment of the actual site condition, all identified risk should provide with a plan to eliminate or control the risk.																					
HAZARD IDENTIFICATION				CONTROL		RISK ASSESSMENT			RISK REDUCTION ACTION PLAN												
Item #	Work Activity (Process, Equipment, Materials)	Hazards	Risks Issue (Possible incident) [What can go wrong] (Accident / ill health to persons, fire or property loss)	Existing Controls	Consequence	Likelihood	Risk Ranking / Profile	Improve existing controls / implement new controls		Consequence	Likelihood	Risk Ranking / Profile	Follow up by Whom (name) & By When (date)		Controls Implemented Yes/No						
1	Site preparation and mobilization	Slips, trips, and falls	During mobilization, workers may trip over scattered tools or cables, resulting in twisted ankles, minor fractures, or back strain. Poor lighting and uneven flooring inside the control room can increase the likelihood of injury or equipment damage if heavy items fall or workers lose balance while moving materials.	Worksite inspected before mobilization, access paths cleared, adequate lighting arranged, and safety briefing conducted. Tools and materials organized properly on racks, while extension cables are routed safely away from walkways. Safety officer monitors site setup for safe layout before work begins.	3	3	9	Introduce mandatory pre-task area inspection checklist, place floor marking tape for safe walking routes, provide non-slip mats near working areas, ensure all workers wear anti-slip safety shoes, and assign one person for maintaining continuous housekeeping during the entire relay replacement process.		2	2	4	Osman Muhammad ElAmin		Yes						
2	Transporting relays and tools	Manual handling, lifting	Workers may suffer muscle strain, shoulder pain, or hand injuries while carrying tools, relays, or test equipment. Heavy lifting or awkward posture can lead to back injury. Dropping a relay may damage sensitive components or injure feet. Slippery floors can make handling even more hazardous, causing workers to fall.	Workers trained in manual handling, two-person lift rule enforced, lifting trolleys provided, and all tools carried in proper bags. Safety shoes with steel toe caps and gloves are mandatory. Work planned to minimize unnecessary lifting distance by placing storage area close to control room.	3	3	9	Introduce lifting aids for all relays above 15 kg, conduct refresher manual handling training weekly, mark safe lifting zones using tape, ensure trolleys have anti-slip handles, and assign one supervisor to monitor equipment transfer between storage and control room during shift hours.		2	2	4	Osman Muhammad ElAmin		Yes						
3	Dismantling of old relays	Sharp edges, dust, tool mishandling	During removal of old relays, workers can suffer cuts from sharp metal edges or get dust irritation in eyes or lungs. Incorrect use of screwdrivers may result in slips that cause hand injuries or damage the relay panel surface. Dropped screws can fall inside live compartments creating hazards during reassembly.	Work performed only after confirming isolation, workers use safety gloves, dust masks, and goggles. Tools checked before use to ensure handles are intact and insulated. Supervision ensures panels are opened carefully. Area cleaned regularly to prevent debris accumulation inside cabinets.	3	3	9	Provide printed label machines to replace handwritten tags, conduct cross-check of disconnected cables by two technicians, take high-resolution pre-removal photos, and arrange adjustable chairs or stands to reduce bending strain during repetitive labeling work for long hours.		2	2	4	Osman Muhammad ElAmin		Yes						

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4	Cable disconnection and labeling	Wrong identification, cable strain	If cables are wrongly identified, labeled, or pulled forcefully, future connection may cause malfunction or complete relay failure. Incorrect labeling can also lead to confusion during testing and delay project completion. Workers may experience wrist strain from continuous cable manipulation or eye fatigue during close inspection.	Work performed under supervision of qualified electrical engineer using approved wiring diagrams. Labeling done using existing color code and ferrules. Workers provided with adequate light, gloves, and cable identification chart. Supervisor verifies each cable before disconnection or removal.	3	3	9	Provide printed label machines to replace handwritten tags, conduct cross-check of disconnected cables by two technicians, take high-resolution pre-removal photos, and arrange adjustable chairs or stands to reduce bending strain during repetitive labeling work for long hours.	2	2	4	Osman Muhammad ElAmin	Yes
5	Installation of new relay	Wrong alignment, tool slippage	Relay may be fixed incorrectly, leading to future vibration issues or loose connections. Tool slippage can cause hand injuries or relay damage. If mounting screws are overtightened, the plastic relay casing may crack. Unstable work platforms may result in dropped tools or relays, causing property damage.	Workers trained on relay installation as per manufacturer's guidelines. Proper mounting screws used, and stable working position ensured. Tools are inspected daily, and relay placed on anti-static mat. Work supervised by senior engineer during installation to ensure correct torque settings.	3	3	9	Provide torque-controlled screwdriver, ensure stable step stools or platforms are available for elevated panels, add visual alignment markers on panel faceplates, and introduce inspection sheet to be signed by supervisor confirming correct torque and relay position before testing.	2	2	4	Osman Muhammad ElAmin	Yes
6	Relay wiring and termination	Loose wiring, wrong connection	Loose terminals or incorrect wiring can lead to overheating or malfunction once power is restored. Poor crimping may cause arcing, equipment damage, or delayed signal response. Worker may suffer hand fatigue from repetitive crimping or finger injuries when handling small conductors for extended periods.	Wiring carried out by experienced electricians with supervision. Proper crimping tools and insulated pliers used. Each termination checked visually and by tug test. Work performed in well-lit area to prevent identification errors. Drawings and color codes displayed near panel.	3	3	9	Introduce a double-check system for every termination, use torque screwdriver for tightening terminals, schedule short rest breaks every two hours to reduce fatigue, and label all terminations digitally using printed markers verified through photographs before panel closure.	2	2	4	Osman Muhammad ElAmin	Yes
7	Functional check (no voltage)	Configuration or test setup errors	Even in shutdown condition, wrong test setup or incorrect simulation wiring can cause relay misoperation or false signal response. Human error in configuration may damage sensitive test equipment or waste time. Poor coordination between team members can lead to confusion or repeated testing.	Functional checks done using calibrated test kit and verified drawings. Engineers follow pre-approved test procedure. Test points clearly marked and reviewed before execution. All test activities performed under supervision and recorded for traceability.	2	3	6	Conduct pre-test coordination meeting, assign one test leader to control communication, use checklist for each relay tested, attach test results with photographs, and ensure test kit operators are trained on equipment configuration specific to that relay model.	1	2	2	Osman Muhammad ElAmin	Yes
8	Coordination with SEC representative	Communication gap, work delay	Miscommunication during shutdown coordination can result in improper sequence of isolation or energization steps later. Wrong timing of relay testing may cause schedule delays or missed verification steps. Lack of communication records can lead to disputes or misunderstandings on work progress and safety status.	All coordination handled through written communication (WhatsApp/email), daily toolbox meetings include SEC representative, and one person assigned as focal contact. Work permit system ensures proper authorization before every task.	2	3	6	Introduce formal communication logbook signed by both ECO and SEC representatives, document start and completion times, confirm every instruction verbally and in writing, and use handheld radios with predefined channel for continuous coordination during testing and inspection.	1	2	3	Osman Muhammad ElAmin	Yes
9	Housekeeping and waste disposal	Cable pieces, metal debris	Debris, packaging waste, or leftover materials can cause tripping, puncture injuries, or short circuits when substation re-energizes. Sharp wire ends and dust can harm technicians during future maintenance. Poor waste control may also violate site environmental and housekeeping standards.	Daily cleanup conducted by technicians before leaving site. Waste bins provided, and supervisor performs visual inspection. All metallic waste and insulation cuttings disposed properly. Housekeeping discussed during toolbox talks to maintain continuous awareness.	2	3	6	Introduce housekeeping checklist signed by engineer and safety officer, segregate waste bins by type (metal, plastic, paper), schedule final inspection after completion, and ensure worksite photographed before handover to SEC for verification of cleanliness and safety.	1	2	3	Osman Muhammad ElAmin	Yes
10	Final inspection and demobilization	Forgotten tools, open panels	Tools or materials left behind may cause tripping or short circuit when energized. Open panels may allow dust or moisture ingress, damaging sensitive components. Unsecured areas may also lead to unauthorized entry or accidental energization risk once shutdown is lifted.	Final tool checklist completed before demobilization. Panels inspected and closed by supervisor. Site walkdown done with SEC representative. All doors locked, and "Work Completed" tags displayed before leaving substation.	2	2	4	Introduce joint inspection form signed by ECO and SEC, label each panel "Ready for Energization," verify tool count using tool control logbook, and take photographic record of cleaned and closed panels before final handover to client.	1	2	2	Osman Muhammad ElAmin	Yes