

Project Name:	SEC EHVPD RISK ASSESSMENT			Contract No:	Permit No.	Reference No.
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	
(EI) Environmental Impact	Minimal environment harm incident with workplace	Material Environment harm (RST)	Serious environmental harm incident (RMT)	Major environmental incident (RLT)	Major environmental harm – Incident Irreversible	
(BI/MD) 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				
(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	5 (M)	10 (M)	15 (H)	20 (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.	4 (M)	8 (M)	12 (H)	16 (Ex)	20 (Ex)
(3) POSSIBLE	The unwanted event has occurred in the business at some time: or could happen within 10 years.	3 (L)	6 (M)	9 (M)	12 (H)	15 (H)
(2) UNLIKELY	The unwanted event has occurred in the business at some time: or could happen within 20 years.	2 (L)	4 (M)	6 (L)	8 (M)	10 (M)
(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)	2 (L)	3 (L)	4 (L)	5 (L)

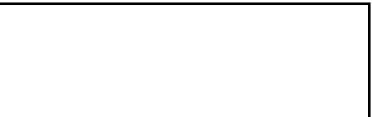
RA TEAM (NAMES)	DESIGNATION	SIGNATURES	TASK/ACTIVITY/PROCESS NAME	PERSON EXPOSED	Risk Rating	Risk Level	Guidelines for Risk Matrix
1. Engr. Hesham Awad	1. HVAC Site Manager	1. _____	HVAC Work	PERSON EXPOSED	16 to 25	(Ex) - Extereme	Stop operation and review controls- Eliminate, avoid risk & , implement high priority action plans
				E – SEC Employee / Consultant	12 to 15	(H) – High	Proactively manage & implement specific controls/action plans-Review after 7 days
				C – Contractors / Sub - contractors	8 to 10	(M) - Medium	Actively manage & monitor – Additional controls is advised & review after 30 days
				O – Others, such as Public, visitor and clients.	1 to 6	(L) - Low	Risk acceptable – Monitor & manage as appropriate with frequent review
			WORK LOCATION:				
			Complete Ss				

DEPARTMENT/AREA:	APPROVED BY MANAGER/SUPERVISOR:	DATE: 08-09-2019	NEXT REVIEW DATE:
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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 Consequences X Likelihood = Risk Ranking			RISK REDUCTION ACTION PLAN Consequences X Likelihood = Risk Ranking										
No.	Workplace/Activity/ Process/ Equipment/Materials	HAZARD	Risks Issue (Possible incident) [What can go wrong] (Accident/ill health to persons, fire or property loss)	EXISTING CONTROLS	Person Exposed			Consequence	Likelihood	Risk Ranking	IMPROVED EXISTING CONTROLS / IMPLEMENTING NEW CONTROLS	Consequence	Likelihood	Risk Ranking	Follow up by Whom (name) & By When (date)	Controls Implemented Yes/No
					E	C	O									
1	Obtain Permit to Work	<ul style="list-style-type: none"> Unauthorized work to be performed within a defined location and boundary Uncontrolled personnel entering a restricted location Unidentified hazards with unplanned safety mitigating measures Inadequate coordination and area control protocol 	<ul style="list-style-type: none"> Accident resulting serious injury or death to worker Significant property and appurtenances damage Loss of production Significant cost due to damages Governmental violation Environmental complaint 	<ul style="list-style-type: none"> Permit to Work shall be obtained as a pre-requisite to perform work Work shall not be started until duly approved Permit to Work is available at site and that Safety Toolbox meeting was conducted A safe work practice shall be implemented to reduce the possibilities of accident / incident Permit Receiver and Permit Issuer shall visit together at the site to ensure that workplace hazards are adequately identified and mitigating measure shall be established Permit to Work shall be displayed at the 	✓	✓		4	4	16	<ul style="list-style-type: none"> Site Manager, Supervising Engineer, Foreman shall designate a Permit Receiver competent enough to take responsibility in securing the Permit to Work Permit Receiver shall be trained and authorized by the Manager to receive a Permit to Work Permit Receiver shall be responsible to oversee for the safety of all workers under his Permit to Work Manager, Supervisor, Foreman and all workers shall adhere to all requirements set forth in the Permit to Work, Risk Assessment, Method 	4	2	8	Hesham Awad	Yes

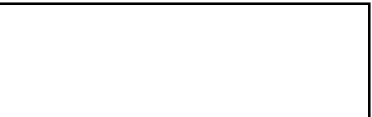
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				worksite <ul style="list-style-type: none"> Permit Receiver shall not leave the area for the whole duration of work Work shall not proceed without the presence of approved Permit to Work with the Permit Receiver overseeing the activity Permit Receiver shall account all workers under his Permit to Work before the start of work 					Statement, Job Safety Procedure and other relevant safety practices and standards <ul style="list-style-type: none"> All workers shall attend the toolbox meeting on a daily basis conducted by the Supervising Engineer, Foreman and Permit Receiver All workers attending the toolbox meeting shall sign on the attendance sheet attached to the specific Permit to Work 							
2	Preparation of tools, materials and equipment	<ul style="list-style-type: none"> Contact with sharp edges Improper use of personal protective equipment Working in awkward position 	<ul style="list-style-type: none"> Sharp edges if not identified and isolated causes skin laceration and cuts Wearing inadequate PPE may cause physical injuries Not observing proper posture could cause muscle spasm and body pain 	<ul style="list-style-type: none"> Valid permit to work should be obtained. Tool box talk should be conducted prior the work commence. Appropriate personal protective equipment should be available like coverall, safety shoes, hand gloves, eye protection, and etc. Observe proper posture and natural working position Tools and equipment shall inspected by competent person Tools that will be used for the Test and Pre-commissioning shall be calibrated and certified by third party as required 	✓	✓		4	3	12	<ul style="list-style-type: none"> Tool, materials and equipment shall be identified and selected prior the actual Testing and Pre-commissioning Foreman shall take the lead in selection of tool and materials All tools and equipment to be use shall be in good working condition inspected by competent person 	3	2	6	Hesham Awad	Yes
3	Mobilization of equipment to Substation building	<ul style="list-style-type: none"> Unsecured tools, equipment & materials Over speeding Adverse weather condition Uneven surfaces Workers struck by transport vehicle 	<ul style="list-style-type: none"> Unsecured/ overloading could cause collapse or fall of materials Over speeding/ may cause damage of equipment, property/materials and injury of a person Passing to uneven surfaces may cause fall of materials and 	<ul style="list-style-type: none"> Observe speed limit within the vicinity around of substation Materials should to be secured properly during mobilization by providing adequate binder without damaging the equipment Mobilization of materials on normal weather condition Use and pass in a stable access Closed supervision by the engineer, supervisor or foreman must be observed Unload equipment in a designated area 	✓	✓		5	3	15	<ul style="list-style-type: none"> Provide trained flagman/ banks man to guide vehicles used to mobilize testing equipment Install barricade around the vehicle when unloading the equipment When the equipment weighed more than 30 kg, lifting equipment shall be used Commissioning Engineer shall be responsible in ensuring that driver will transport the testing equipment in most safest manner 	4	2	8	Hesham Awad	Yes

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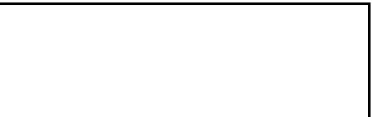
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			<ul style="list-style-type: none"> overturning of equipment • Vehicular accident resulting significant damage to equipment and serious injury to worker 	<ul style="list-style-type: none"> • Designate spotter or escort vehicle when transporting critical testing equipment • Guide workers at the location where transport vehicle will pass • Vehicle driver shall exercise defensive driving technique and shall not rush or exceed proper speed 												
4	Review of drawings and as-built plans for the planning of installation and commissioning	<ul style="list-style-type: none"> • Ergonomics hazards • Awkward positioning • Inadequate storage of materials 	<ul style="list-style-type: none"> • Body sprain • Chronic musculoskeletal disorder • Loss or damage to property 	<ul style="list-style-type: none"> • Contractor shall establish a war room to where review of documents is undertaken • War room shall be equipped with table, ergonomic chair, storage cabinet and etc. • Commissioning Engineer shall be responsible in proper storage of documents 	✓	✓		4	4	16	<ul style="list-style-type: none"> • Only authorized personnel can enter the war room • Make a borrowers log book to monitor the loaned documents 	3	2	6	Hesham Awad	Yes
5	Visual check and inspection of all materials and equipment	<ul style="list-style-type: none"> • Opening of panel board • Pinch point • Caught in between panel board door • Congested head room • Overhead hazard 	<ul style="list-style-type: none"> • Hand laceration or cut, bruise, contusion • Head injury or bruise 	<ul style="list-style-type: none"> • Only competent person shall open the panel board or electrical equipment • Commissioning team who will conduct the visual inspection shall not simultaneously check same equipment to avoid contact with each other • Verify that equipment is safe to open without the requirement to wear arc flash rated clothing • Workers shall wear appropriate PPE with clear safety glass, hardhat when conducting visual inspection • Hardhat and Safety glass shall be worn as mandatory PPE when opening panel board 	✓	✓		4	4	16	<ul style="list-style-type: none"> • Commissioning Engineer shall closely monitor the personnel performing visual inspection • Safety Officer shall monitor compliance and provide advice to pre-commissioning team as necessary • Limit the number of personnel who will conduct visual inspection 	4	2	8	Hesham Awad	Yes
		<ul style="list-style-type: none"> • Use of substandard elevated platform • Fall from elevated platform • Slip, trip and fall on same level 	<ul style="list-style-type: none"> • Body sprain or back injury • Accident resulting injury to worker • Ill health 	<ul style="list-style-type: none"> • Use standard ladder when accessing elevated spaces • Ladder to be use shall not electrical conductor • Ladder shall be capable to carry 4x the weight of the user • Ladder shall be used by one personnel 	✓	✓		4	3	12	<ul style="list-style-type: none"> • Conduct housekeeping on the area to be inspected day before the activity • Remove obstruction and unnecessary materials on the access and on the equipment to be inspected • Ladder or working platform used in 	3	2	6	Hesham Awad	Yes

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				at a time • Ladder or working platform shall be adequate to reach area for inspection • Full body harness shall be worn if personnel is exposed to a fall of more than 1.8 meter					energized equipment shall be adequately grounded or earthed							
		• Inadequate illumination • Poor visibility	• Eye strain • Visual impairment	• Electrical equipment to be inspected shall be provided with adequate lighting system • Electrical spaces without permanent lighting shall be installed with temporary lighting • Worker shall only wear clear safety glass, dark glass is not allowed inside the substation	✓	✓		4	4	16	• Lighting shall be installed day before the actual inspection date • Lighting shall be adequate to provide illumination to the point of visual inspection • Flash light can be used during inspection to some congested spaces	3	2	6	Hesham Awad	Yes
		• Contact with electricity • Shock hazard • Energized electrical equipment/panel	• Electric shock • Injury to worker • Ill health • Damage to property • Fire due to short circuit	• Perform lockout/tagout to de-energized electrical equipment • Test the equipment, cable or wire for potential stored energy • Notify affected personnel when performing lockout/tagout • Personnel shall not touch energized equipment • Only authorized personnel shall open the energized panel • When using stick, it shall be of non-conductor materials	✓	✓		5	4	20	• When opening electrical panel board of more than 600V AC, qualified personnel within limited approach boundary shall wear arc rated clothing as recommended by NFPA 70E • Assess the approach boundary before allowing personnel from come closer to electrical equipment	5	2	10	Hesham Awad	Yes
6	Earth/Grounding survey and testing	• Improper handling of testing equipment • Handling of tools, earth spikes, wiring • Slip, trip and fall	• Damage to asset and equipment • Electric shock, skin burn • Inappropriate test result • Accident resulting injury to worker	• Install barricade around the testing area including the earth matting being tested and provide adequate safety sign to communicate activity and hazards involve • Only competent person shall conduct earth/grounding testing • Competent person shall closely communicate with the assistant to avoid contact with electricity • Tools, earth spikes and wiring shall be handled in a manner to avoid damage	✓	✓		4	3	12	• Toolbox meeting shall be conducted by the competent person on a daily basis emphasizing the risk involve on the activity and its mitigating measure to eliminate or minimize the impact • Tools, earth spikes and other equipment shall be inspected by competent person before using to the site	4	2	8	Hesham Awad	Yes

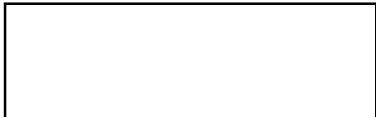
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				<ul style="list-style-type: none"> and incurred injury Wear appropriate hand gloves when installing earth spikes Implement proper cable management to avoid dangling, short circuit, damage to wire and tripping accident 												
		<ul style="list-style-type: none"> Struck by moving equipment and vehicle 	<ul style="list-style-type: none"> Vehicular accident Accident resulting Injury to personnel Property damage of adjacent structure or appurtenances 	<ul style="list-style-type: none"> Establish equipment access and shall be free from any obstruction Designate parking area Designate location for unloading of materials Designate spotter and flagman to guide all equipment and personnel movement Workers shall wear properly the high visibility vest 	✓	✓		4	4	16	<ul style="list-style-type: none"> Site management plan shall be prepared, approved and implemented to avoid property damage and personnel accident 	4	2	8	Hesham Awad	Yes
		<ul style="list-style-type: none"> Exposure to extreme environmental temperature (outside areas more than 50deg.C) 	<ul style="list-style-type: none"> Heat exhaustion Heat cramps Heat stress Ill health to personnel 	<ul style="list-style-type: none"> Adjust work timing and exposure of the workers to extreme environmental temperature Allow frequent rest time if needed Provide rest shelter with shade near to the workplace Provide supplemental hydration powder or liquids Reminds to drink plenty of water Taking or recording the heat index at the workplace Provide a drinking water cooler at site 	✓	✓		4	4	16	<ul style="list-style-type: none"> Provision of air-conditioned shelter if needed Provide appropriate clothing during hot weather Establish a complete heat illness prevention program Safety awareness / training related to heat stress, etc. 	3	2	6	Hesham Awad	Yes
7	Installing of Duct and Equipment	<ul style="list-style-type: none"> Inadequate warning notification Lack of information 	<ul style="list-style-type: none"> Accident resulting serious injury or death to other worker 	<ul style="list-style-type: none"> Activity shall be disseminated to all affected workers day before the actual testing 	✓	✓		5	4	20	<ul style="list-style-type: none"> Commissioning Engineer shall be responsible on a proper information dissemination Warning notice shall be posted on a strategic location of the building day before the actual testing indicating start and end date, exact location of the testing indicated on a floor plan 	5	2	10	Hesham Awad	Yes
		<ul style="list-style-type: none"> Pinch point Congested head room Overhead hazard 	<ul style="list-style-type: none"> Hand laceration or cut, bruise, contusion Head injury or bruise Body sprain or back 	<ul style="list-style-type: none"> Workers shall wear appropriate PPE when going to the congested areas Assign adequate number of worker to manually lift the cable 	✓	✓		4	3	12	<ul style="list-style-type: none"> Arrange testing equipment in a manner that worker maintains its natural back curve and not over bending down the floor 	3	2	6	Hesham Awad	Yes

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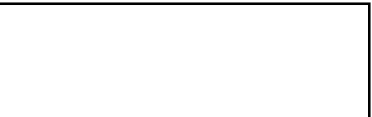
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		<ul style="list-style-type: none"> Ergonomic hazard 	injury	<ul style="list-style-type: none"> Hardhat and Safety glass shall be worn as mandatory PPE when opening panel board 					<ul style="list-style-type: none"> Foreman or Commissioning Engineer shall closely monitor the activity Place testing equipment on a table fitted ergonomically to the workers 							
		<ul style="list-style-type: none"> Improper handling of Installing the materials and equipment Handling of tools Slip, trip and fall 	<ul style="list-style-type: none"> Damage to asset and Electric shock, skin burn Inappropriate test result Accident resulting injury to worker 	<ul style="list-style-type: none"> Only competent person shall operate Engineer shall identify the exact location where the installing equipment be installed Affected area shall be adequately barricaded with safety sign to communicate activity and hazards involve Engineer shall closely communicate with the assistant to avoid contact with electricity 	✓	✓		4	4	16	<ul style="list-style-type: none"> Toolbox meeting shall be conducted by the competent person on a daily basis emphasizing the risk involve on the activity and its mitigating measure to eliminate or minimize the impact Tools and other equipment shall be inspected by competent person before using to the site Post adequate safety sign to the adjacent equipment so that other worker will be warned 	4	2	8	Hesham Awad	Yes
		<ul style="list-style-type: none"> Contact with electricity Shock hazard Energized electrical equipment/panel 	<ul style="list-style-type: none"> Electric shock, skin burn Injury to worker Ill health Damage to property Fire due to short circuit 	<ul style="list-style-type: none"> Test the equipment, cable or wire to ensure zero potential energy Notify affected personnel when performing lockout/tagout Adequate safety sign shall be posted at the adjacent equipment Personnel shall not touch energized equipment Commissioning Engineer shall ensure that there shall be no unnecessary personnel within the affected area during the testing 	✓	✓		5	4	20	<ul style="list-style-type: none"> When opening electrical panel board of more than 600V AC, qualified personnel within limited approach boundary shall wear arc rated clothing as recommended by NFPA 70E Assess the approach boundary before allowing personnel from come closer to electrical equipment 	5	2	10	Hesham Awad	Yes
		<ul style="list-style-type: none"> Inadequate illumination Poor visibility 	<ul style="list-style-type: none"> Eye strain Visual impairment 	<ul style="list-style-type: none"> Electrical equipment to be tested shall be provided with adequate lighting system Electrical spaces without permanent lighting shall be installed with temporary lighting Worker shall only wear clear safety glass, dark glass is not allowed inside the substation 					<ul style="list-style-type: none"> Lighting shall be installed day before the actual testing date Lighting shall be adequate to provide illumination to the point of visual inspection Flash light can be used during inspection to some congested spaces 				Hesham Awad	Yes		
		<ul style="list-style-type: none"> Use of substandard elevated platform 	<ul style="list-style-type: none"> Body sprain or back injury 	<ul style="list-style-type: none"> Use standard ladder when accessing elevated spaces 	✓	✓		4	4	16	<ul style="list-style-type: none"> Conduct housekeeping on the area to be inspected day before the activity 	4	2	8	Hesham Awad	Yes

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		<ul style="list-style-type: none"> Fall from elevated platform Slip, trip and fall on same level 	<ul style="list-style-type: none"> Accident resulting injury to worker Ill health 	<ul style="list-style-type: none"> Ladder to be use shall not electrical conductor Ladder shall be capable to carry 4x the weight of the user Ladder shall be used by one personnel at a time Ladder or working platform shall be adequate to reach area for inspection Full body harness shall be worn if personnel is exposed to a fall of more than 1.8 meter 					<ul style="list-style-type: none"> Remove obstruction and unnecessary materials on the access and on the equipment to be inspected Ladder or working platform used in energized equipment shall be adequately grounded or earthed 						
8	Housekeeping	<ul style="list-style-type: none"> Improper manual handling/ lifting of equipment and material 	<ul style="list-style-type: none"> Muscular injuries (Back pain, strain, fractures) Pinch/crash points resulting hand injuries 	<ul style="list-style-type: none"> Ensure to plan correct manual lifting procedures and body positioning before the actual lift. Only 20 kg allowed lifting by an individual. Use buddy system if load exceed. Use hand protection (cotton gloves minimum) during handling of materials. Keep hands away from pinch/crash points Ensure safe and clear pathways before lifting. 	✓	✓	4	4	16	<ul style="list-style-type: none"> Provide material handling equipment for transport of heavy and large materials / equipment. Inspection oh Material Handling equipment prior to use Provide Manual handling Training to the workers. 	3	2	6	Hesham Awad	Yes
9	Closing of Permit to Work	<ul style="list-style-type: none"> Poor housekeeping Undisposed waste materials Unaccounted workers Inadequate communication Poor storage of chemical, flammable and combustible materials and etc. Unattended unsafe condition Unsecured electrical equipment, energized equipment 	<ul style="list-style-type: none"> Significant property and appurtenances damage Governmental violation Environmental complaint Loss of production Accident resulting serious injury or death to worker Significant cost due to damages 	<ul style="list-style-type: none"> Permit Receiver shall ensure that housekeeping in done before, during and after the work All waste materials generated from the work shall be disposed properly and shall not be left unattended at the worksite Mobile equipment shall properly parked on a designated equipment laydown All materials used at the site such as chemicals, flammable and combustible materials shall be stored at the designated storage at the end of each day Electrical equipment shall be properly secured, distribution board closed and 	✓	✓	4	4	16	<ul style="list-style-type: none"> Permit Receiver shall account all worker under his Permit to Work and ensure all have signed out on the attendance sheet and clear of the area Supervising Engineer and Foreman shall adhere to the proper housekeeping and storage of materials at the designated location Site Manager shall be responsible on the effective implementation of the Permit to Work Permit Issuer shall visit the work location to verify good housekeeping was conducted before closing the Permit to Work 	4	2	8	Hesham Awad	Yes



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