

INITIAL ELECTRICAL ASSESSMENT REPORT (EAR)

Factory Name: **TITAS SWEATER INDUSTRIES LTD.**
Address: **Kashimpur Road, Gazipur, Bangladesh. Gazipur
Dhaka Bangladesh**
Assessor: **Sumerra**
Date: **28 May 2014**





Introduction to the Report

The following report contains a site profile and summary of non-conformities identified during an onsite assessment commissioned by the Alliance for Bangladesh Worker Safety (Alliance) and conducted by a third-party Qualified Assessment Firm (QAF). The assessment was conducted against the Alliance for Bangladesh Worker Safety Assessment Protocols (APs) and Fire Safety and Structural Integrity Standard, which is harmonized with the factory assessment guidelines developed by Bangladesh University of Engineering and Technology (BUET) for the Bangladesh National Tripartite Plan of Action (NTPA). The goal of the Alliance process is to provide clear and practical technical requirements by which Bangladeshi Ready Made Garment (RMG) Factories producing for Alliance members may be consistently and fairly evaluated for fire, structural, and electrical safety in a non-duplicative manner. Each assessment will prompt action plans that will be used by RMG factories to systematically and sustainably improve safety conditions for garment workers. Beyond tracking and reporting on action steps taken in a transparent manner, the Alliance organization and its members will seek to further support factory improvements through technical assistance, training, implementation support for functional Worker Committees, and in some cases financial assistance and wage support for workers if factories are closed for remediation.

The contents of the report do not constitute a guarantee of compliance with the applicable laws, the Alliance Standard or the absolute or continued safety against fire, electrical and/or structural integrity issues that may lead to injury or loss of life. The report is designed to provide a non-exhaustive summary of risk issues, based on a limited sampling and duration of time onsite by the named QAF. Neither the QAF nor the Alliance can certify or guarantee the quality, outcome, or effectiveness of actions taken in response to the report.

For more information and report feedback please go to: www.bangladeshworkersafety.org.



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FOR BANGLADESH WORKER SAFETY

GENERAL INFORMATION

General Information

Factory Name:	TITAS SWEATER INDUSTRIES LTD.
Address:	Kashimpur Road, Gazipur, Bangladesh. Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	
Audit Duration:	2 Days
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	7/11/2014
Final Report Date :	7/14/2014
Are all action items from previous assessment complete? :	N/A
Buildings in Complex :	1
Is the building(s) owned or rented by the Factory?:	Owned
Number of Building Levels (Stories) :	6 Storied RCC structural building.
Approximate Building Area (SF) :	total area = 22035 + 24462x4 + 9791 = 129674 sft.
Date of Building Construction :	Construction period of this building is up to 4 storied 2003 & rest 4th, 5th floor was constructed 2008.
Date of Last Building Renovation/Addition :	2008 (4th & 5th Floor)
Ancillary Structures in Complex :	Boiler. Chemical Electrical LT room
Approximate Ancillary Structures Area (SF) :	1 storied Tin shade - for Generator, Sub station & boiler which area 15'3"x10'6" + 25'x18' + 28'6"x9'10" = 890 sft.
Number of Occupants :	1950 persons

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Provide brief description of the electrical system for each building.:	11 KV overhead line is connected through 250KVA, 11/0.415KV ONAN, 3 Phase transformer and connected with MCCB rating 400A to LT and PFI Panel.
Physical location of Substation? :	The Substation is located on the ground floor of a separate building, located toward the East of the site.
What equipment/loads does the UPS serve? :	Fire alarm, elevators emergency lighting and exit signage comprise the UPS load.



ASSESSMENT FINDINGS

Electrical System Maintenance

Question:	Have workers that operate and maintain the electrical system received electrical safety training? Is training documentation on site?	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Workers have not received electrical safety training. There is no training documentation at factory site.	
Source of Findings:	Document Review: No Documents are available.	
Suggested Plan of Action:	Develop and implement an electrical safety program. Include key topics such as lock out/tag out procedures, personal protective equipment requirements. Agenda, materials, and attendance should be documented and kept on file for review.	
Suggested Deadline Date:	05 Sep 2014	
Standard:	Reference NFPA 70e for example	
Question:	Is a periodical Insulation Resistance Measurement Program established and recorded?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	A periodical Insulation Resistance Measurement Program is not established and recorded	
Source of Findings:	Document Review: No document of inspection was provided.	
Suggested Plan of Action:	Develop an Insulation Resistance Measurement Program that ensures deterioration of insulation resistance will be identified quickly. Testing should be in compliance with InterNational Electrical Testing Association (NETA). All transformers, switchgears etc. shall be subject to an insulation resistance measurement test to ground after installation but before any wiring is connected. Insulation tests shall be made between open contacts of circuit breakers, switches etc. and between each phase and earth.	
Suggested Deadline Date:	05 Sep 2014	
Standard:	Alliance Standard Part 10 Section 10.13.4 Insulation Tests and 10.13.8 Electrical Inspections	
Question:	Are thermographic scans of electrical equipment completed at least every	



	three years?
Priority Level:	Medium
Non-Compliance Level:	3
Description:	No thermographic scanning is conducted.
Source of Findings:	Worker Interviews: Management confirms no thermographic scanning is conducted.
Suggested Plan of Action:	Complete thermographic scans at least on a three year cycle. Thermographic scans should be completed in accordance with the Standard for Infrared Inspection of Electrical Systems & Rotating Equipment and NFPA70B or a comparable standard.
Suggested Deadline Date:	05 Sep 2014
Standard:	Alliance Standards Part 10 Section 10.13.8 Electrical Inspections
Question:	Transformers do not contain harmful substances such as PCBs.
Priority Level:	Medium
Non-Compliance Level:	3
Description:	Factory management could not provide analysis report confirming composition of transformer oil.
Source of Findings:	Document Review: No documents were available.
Suggested Plan of Action:	Confirm and document the composition (PCB or PCB-free) of insulating fluid used in transformers. If not PCB-free, establish a PCB management plan (including spill management plan, signage, training, etc.).
Suggested Deadline Date:	05 Sep 2014
Standard:	Not Applicable
Question:	Are periodic safety inspections of the electrical system components completed and documented?
Priority Level:	Medium
Non-Compliance Level:	3
Description:	There have been no completed and documented safety inspections of the electrical system components.
Source of Findings:	Document Review: No documents available.
Suggested Plan of Action:	Establish a periodic inspection program to ensure the electrical systems are free from damage, debris, dirt, lint, etc. Maintain records concerning inspections and follow up actions.



Suggested Deadline Date:	05 Sep 2014
Standard:	Alliance Standard Part 10 Section 10.13 Inspection and Testing and Part 13 Section 13.6 Housekeeping
Question:	A transformer oil analysis is routinely completed on main service transformers.
Priority Level:	Low
Non-Compliance Level:	3
Description:	The management team could not provide transformer oil analysis report and stated that it was not routinely completed
Source of Findings:	Document Review: No documents were available.
Suggested Plan of Action:	Complete an oil analysis on applicable transformers at appropriate intervals based on voltage and power.
Suggested Deadline Date:	05 Sep 2014
Standard:	Alliance Standard Part 10 Section 10.13.8 Electrical Inspections

Electrical System Conditions

Question:	Is electrical wiring/cables sized according to capacity of circuit breakers (No higher rated circuit breakers with lower rated wiring)?
Priority Level:	High
Non-Compliance Level:	3
Description:	Observed several cases of electrical wiring/cables size that are not appropriate according to capacity of circuit breakers (higher rated circuit breakers with lower rated wiring).
Source of Findings:	Photograph: Photo of circuit breakers
Suggested Plan of Action:	Install appropriately sized circuit breaker according existing wire size.
Suggested Deadline Date:	19 Sep 2014
Standard:	Alliance Standard Part 10 Section 10.3.1 Electrical Connections.





Question:	No multi looping of wiring/cables observed at circuit breakers within switchboards and/or distribution boards.	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Multi looping of cables observed at circuit breakers within all distribution boards.	
Source of Findings:	Photograph: Photo of Multi looping of cables observed in generator room	
Suggested Plan of Action:	Remove multi looping of wiring/cables at all distribution boards and switchboards.	
Suggested Deadline Date:	05 Sep 2014	
Standard:	Alliance Standard Part 10 Section 10.3 Electrical Wiring and Cabling	
Question:	All metal in the building is connected to the building earthing/grounding system such as metal rebar in concrete, metal frame of building, or metal water pipe.	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	All metals (e.g. utility piping) were not connected to the building earthing system.	
Source of Findings:	Visual Assessment: All metals were not connected to the building earthing system.	
Suggested Plan of Action:	Provide Earthing connection to all exposed-conductive metal connected to electrical equipment's installations and utility service such as metallic water/gas/steam pipes etc.	
Suggested Deadline Date:	05 Sep 2014	
Standard:	Alliance Standard Part 10 Section 10.10 Earthing	
Question:	The substation room has adequate ventilation.	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	It is the engineers opinion that airflow ventilation in the substation room may not be sufficient. No calculations were provided regarding appropriate level of ventilation.	
Source of Findings:	Visual Assessment: Adequate ventilation is not present in sub station room.	
Suggested Plan of Action:	Sufficient ventilation should be provided in order to dissipate heat losses from electrical equipment. Adequate ventilation must be provided to dissipate the	



	heat generated by the transformer and other equipment. The ventilation must be sufficient to maintain a maximum room temperature of 35 degrees Celsius when all transformers are operating at rating. Air inlets and outlets must be arranged to achieve an even distribution of air flow over the transformers. For natural ventilation, a rule of thumb to follow is to allow 1sqm of inlet area and 1sqm of outlet area per 1000 kVA. Consult a qualified electrical engineer to determine the required ventilation rates based on the installed equipment.	
Suggested Deadline Date:	22 Aug 2014	
Standard:	Alliance Standard Part 10 Section 10.13.7.1 Inspection of Substation Installations.	
Question:	Do switchboards and/or distribution boards have clear identification markings?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	There was no permanent identification found on MDB, LT and HT Switch Gear in the factory.	
Source of Findings:	Photograph: Photos of no permanent identification marking	
Suggested Plan of Action:	All distribution boards shall be marked "Lighting" or "Power", as the case may be, provided a unique ID number (e.g. MDB-1) and also be marked with the voltage and number of phases of the supply. Each shall be provided with a circuit list giving diagram of each circuit which it controls and the current rating for the circuit and size of fuse element (panel schedule).	
Suggested Deadline Date:	08 Aug 2014	
Standard:	Alliance Standard Part 10 Section 10.7 BNBC Part 8 Section 2.11.5.4	
Question:	Are electrical wiring/cables properly identified?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Electrical cables are not properly identified all DBs, LT and panels.	
Source of Findings:	Photograph: Photo of electrical cables without labeling.	
Suggested Plan of Action:	Phase, line, neutral, etc. should be easily identifiable by the use of approved color coding or cable tags and codes. Where not indicated by color, every cable core of a fixed wiring installation should be identifiable at its terminations and its length by appropriate labels or coding. All cables connecting switch boards and equipment must be identified (cable tags)/panel schedule.	
Suggested Deadline Date:	05 Sep 2014	
Standard:	Bangladesh Electricity Rules 1937 Rule 51 and 56	



Question:	Electrical connections at equipment, fixtures, etc are properly secured.
Priority Level:	Medium
Non-Compliance Level:	1
Description:	Day care center ground floor of office building found exposed live parts on the ceiling fan
Source of Findings:	Photograph: Exposed ceiling fan cables
Suggested Plan of Action:	Assure that canopies of all ceiling fans are closed and no wiring or coils are exposed. Electrical connections for lighting should also be properly enclosed and secured.
Suggested Deadline Date:	08 Aug 2014
Standard:	Alliance Standards Part 10 Section 10.3.1 Electrical Connections
Question:	Are electrical insulation mats provided in front of substation, switchboards and/or distribution boards?
Priority Level:	Low
Non-Compliance Level:	3
Description:	There are no rubber mats in front of substation, switchboards or distribution boards.
Source of Findings:	Visual Assessment: No rubber mat provided in front of substation.
Suggested Plan of Action:	Provide electrical insulation mats in front of all live front switchboards, panels, and distribution boards (esp. the substation 1&2 locations noted). As per NFPA 70e, mats of insulating rubber or other suitable floor insulation shall be provided for the operator where the voltage to ground exceeds 150 (Sumerra recommends for 50 Volts for enhanced safety).
Suggested Deadline Date:	08 Aug 2014
Standard:	Alliance Standard Part 10 Section 10.13.7 Inspection of the Installation.
Question:	Required equipment and safety signage is posted within the room.
Priority Level:	Low
Non-Compliance Level:	3
Description:	There was no "electric danger/caution" signage in the Substation room
Source of Findings:	Visual Assessment: No proper signage in substation room.
Suggested Plan of Action:	Signs must be posted at entry points warning unqualified people to keep out of substations. Panels should be marked with appropriate "electronic danger/caution" signs. WARNING should be used on the outside of the





	transformer or substation and DANGER signs and labels for the inside of a transformer, for equipment on the inside of a substation. Sumerra recommends review and conformance to ANSI Z535 or equivalent standard. As per NFPA 110.21 signage should be permanently affixed, not hand-written, and durable enough to withstand the environment. Install a sign that provides details on electrical shock first aid procedures. Signage should also include instructions on artificial respiration.
Suggested Deadline Date:	08 Aug 2014
Standard:	Alliance Standard Part 10 Section 10.3.7, Section 10.7.3, and 10.13.7, NFPA 70 Chapter 1 Article 110.21, and Bangladesh Electricity Rules of 1937 Rule 46
Question:	Phase separators are provided between terminals on circuit breakers.
Priority Level:	Low
Non-Compliance Level:	3
Description:	Phase separators are not installed in the generator panel board.
Source of Findings:	Photograph: Photo of phase non compliant installation in the generator panel board.
Suggested Plan of Action:	Install phase separators between terminal connections at the generator panel board.
Suggested Deadline Date:	05 Sep 2014
Standard:	Alliance Standard Part 10 Section 10.3.1 Electrical Connections



Emergency Power System

Question:	Are emergency power switchboards, distribution boards, and circuits properly identified?
Priority Level:	High
Non-Compliance Level:	3
Description:	Emergency power switchboards, distribution boards, and circuits were not properly identified
Source of Findings:	Visual Assessment: No signs observed.
Suggested Plan of Action:	Permanently mark all boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits so they will be readily identified as a component of an emergency circuit or system. The required marking can be by color code, the words "emergency system," or any other method that identifies the box or enclosure as a component of the emergency system.
Suggested Deadline Date:	08 Aug 2014



Standard:	NFPA 70 Chapter 7 Article 700.10 Wiring, Emergency System	
Question:	Is the generator frame earthing (grounding) provided at two separate points?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Generators' frame earthing (grounding) are not provided at two separate points.	
Source of Findings:	Visual Assessment: Generators are grounded at single point.	
Suggested Plan of Action:	Provide two separate points earthing for generators (370 KVA and 330 KVA Generator).	
Suggested Deadline Date:	22 Aug 2014	
Standard:	Alliance Standard 10.8.2.2	
Question:	Are inspection, maintenance, and testing procedures of the emergency generator being completed and documented?	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	Inspection, maintenance, and testing procedures of the emergency generator have not been completed and documented.	
Source of Findings:	Document Review: No inspection documents are available for review.	
Suggested Plan of Action:	Establish a routine maintenance and testing program for the emergency generator. The program shall be based on all of the following: (1) Manufacturer's recommendations (2) Manufacturer's Instruction manuals (3) Requirements of NFPA 110 Chapter 8 Generator testing and maintenance should be fully documented and available for review.	
Suggested Deadline Date:	05 Sep 2014	
Standard:	NFPA 110 Chapter 8	
Question:	Is the appropriate type and number of firefighting equipment installed inside the generator room?	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	No fire extinguishers were observed in the generator room.	
Source of Findings:	Visual Assessment: No fire extinguishers were observed in the generator room.	



Suggested Plan of Action:	Provide appropriate type and quantity of fire fighting equipment inside the generator room for Safety.	
Suggested Deadline Date:	08 Aug 2014	
Standard:	Is the appropriate type and number of firefighting equipment installed inside the generator room?	
Question:	Are inspection, maintenance, and testing procedures of the UPS being completed and documented?	
Priority Level:	Low	
Non-Compliance Level:	3	
Description:	No inspection, maintenance, and testing procedures of the UPS being completed and documented	
Source of Findings:	Visual Assessment: No inspection or testing documents available.	
Suggested Plan of Action:	Establish an inspection testing, and maintenance program for the Uninterruptable Power Supply (UPS) and associated components. The program must based on the following: (1) Manufacturer's recommendations (2) Manufacturer's instruction manuals (3) Minimum Requirements of NFPA 111 Chapter 8 (4) Minimum Requirements of NFPA 70B Chapter 28 All testing should be documented and available for review.	
Suggested Deadline Date:	05 Sep 2014	
Standard:	Alliance Standard Part 13 Section 13.11 NFPA 111 Chapter 8 NFPA 70B Chapter 28	