

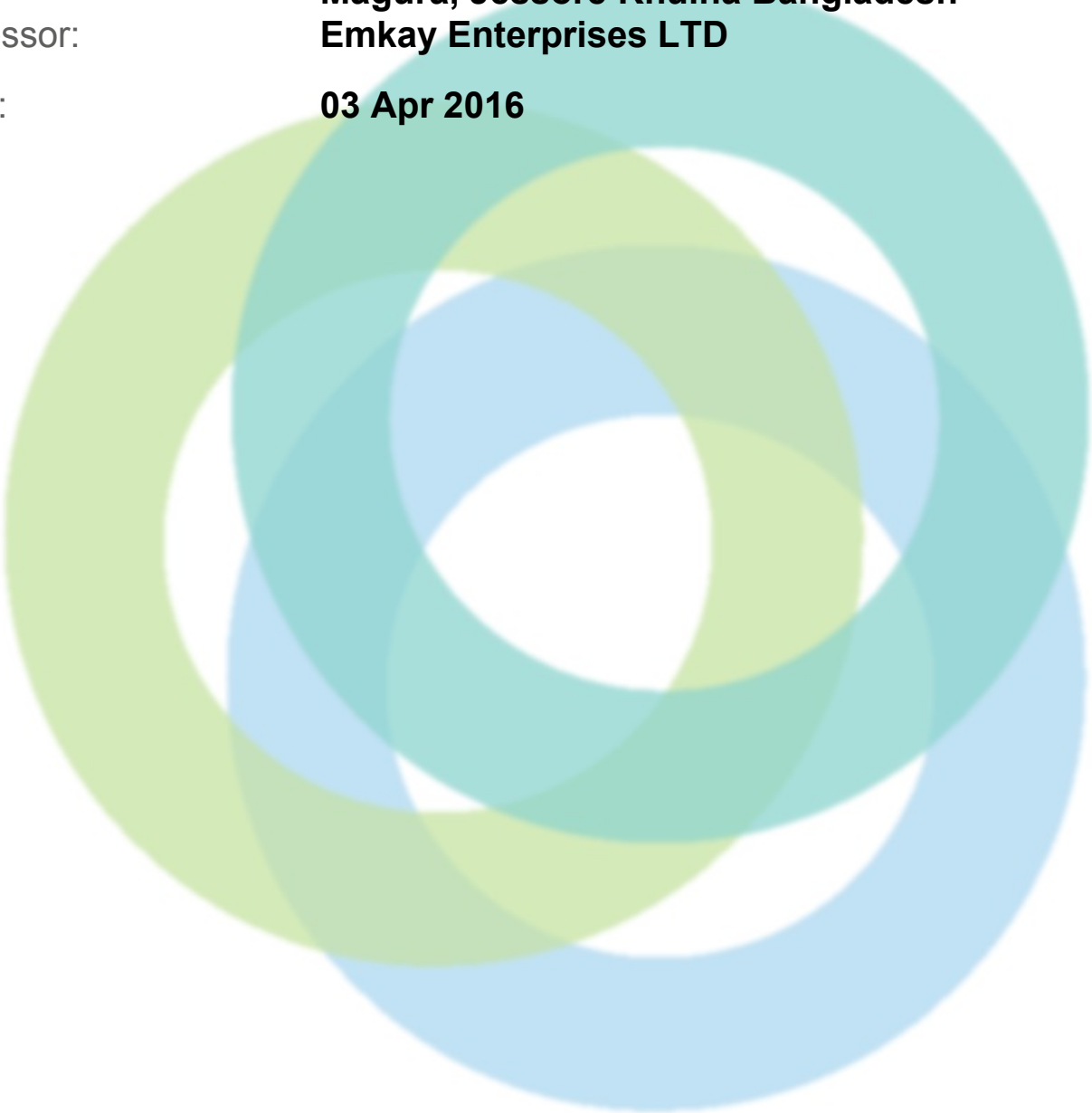
INITIAL ELECTRICAL ASSESSMENT REPORT (EAR)

Factory Name: **SAN Apparel Limited**

Address: **Village Amtoil, PS- Sreepur, Dist. Magura, Jessore
Magura, Jessore Khulna Bangladesh**

Assessor: **Emkay Enterprises LTD**

Date: **03 Apr 2016**



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.





GENERAL INFORMATION

General Information	
Factory Name:	SAN Apparel Limited
Address:	Village Amtol, PS- Sreepur, Dist. Magura, Jessore Magura, Jessore Khulna Bangladesh
Country:	Bangladesh
Province:	Khulna
City:	Magura, Jessore
Zip Code:	743263
Audit Duration:	1 Days 0 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	05 April 2016
Final Report Date :	To be filled out by the "Alliance QA" representative
Are all action items from previous assessment complete? :	N/A
Buildings in Complex :	There are 8 buildings, 1 main and 7 ancillary structures.
Is the building(s) owned or rented by the Factory?:	Owned
Number of Building Levels (Stories) :	Main Building: 1-story
Approximate Building Area (SF) :	Main building: 86,600 SF
Date of Building Construction :	All buildings: 2015-16
Date of Last Building Renovation/Addition :	None
Ancillary Structures in Complex :	There are 7 ancillary structures.
Approximate Ancillary Structures Area (SF) :	Total: 120,208 SF. 1. Ancillary-1 (Compliance building): 42,230 SF; 2. Ancillary-2 (Fabric storage): 44,036 SF (GF: 22,018 SF, 1st: 22,018 SF); 3. Ancillary-3 (Finished goods & Canteen building): 23,392 SF (GF: 11,696 SF, 1st: 11,696 SF); 4. Ancillary-4 (Generator building): 4,480 SF; 5. Ancillary-5 (Boiler building): 4,470 SF; 6. Ancillary-6 (Spare Machine Storage): 1,000 SF; 7. Ancillary-7 (Fire Pump Room): 600 SF.

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Number of Occupants :	Total Occupants: 398. 1. Main building: 384; 2. Ancillary-1 (Compliance building): 2; 3. Ancillary-2 (Fabric storage): 2; 4. Ancillary-3 (Finished goods & Canteen building): 2; 5. Ancillary-4 (Generator building): 3; 6. Ancillary-5 (Boiler building): 5; 7. Ancillary-6 (Spare Machine Storage): 0; 8. Ancillary-7 (Fire Pump Room): 0.
Provide brief description of the electrical system for each building.:	The Facility receives power from the REB. Substation room and the power distribution network composed of one oil filled ONAN type Transformer (1250 KVA), one PFI panel, one HT panel, one LT panel, eight MDB. Two diesel generators of 500KVA have been provided as standby power source.
Physical location of Substation? :	Separate building outside main facility.
What equipment/loads does the UPS serve? :	No UPS has been provided.



ASSESSMENT FINDINGS

Electrical System Information

Question:	Are as-built electrical drawings indicating information such as panel and circuit locations throughout the building(s) available for review?
Priority Level:	High
Non-Compliance Level:	3
Description:	As-built electrical drawings were not available for review but proposal drawings were found on site.
Source of Findings:	Document Review: Documents were not available.
Suggested Plan of Action:	Have a qualified electrical engineer develop as-built drawings detailing key components and capacity of the electrical system in accordance with Alliance requirements.
Suggested Deadline Date:	05 Jun 2016
Standard:	Alliance Standard Part 10 Section 10.3.7

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:	Documents regarding electrical safety training program have not been developed.
Source of Findings:	Document Review: Documents were not 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, etc. Reference NFPA 70E for example program requirements.
Suggested Deadline Date:	05 Jun 2016
Standard:	Reference NFPA 70e for example
Question:	Is a periodical Insulation Resistance Measurement Program established and recorded?
Priority Level:	Medium



Non-Compliance Level:	2
Description:	Insulation Resistance Measurement Program and measurement records have not been established.
Source of Findings:	Document Review: Documents were not available.
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:	07 Jun 2015
Standard:	Alliance Standard Part 10 Section 10.13.4 Insulation Tests and 10.13.8 Electrical Inspections
Question:	Transformers do not contain harmful substances such as PCBs.
Priority Level:	Medium
Non-Compliance Level:	1
Description:	No document found to verify that the transformer does not contain harmful substances such as PCBs.
Source of Findings:	Document Review: Documents were not available.
Suggested Plan of Action:	Conduct a complete oil analysis to determine the content of PCBs in transformer oil and consider replacing transformers found with harmful substances to reduce health hazards.
Suggested Deadline Date:	05 Jun 2016
Standard:	Not Applicable
Question:	A transformer oil analysis is routinely completed on main service transformers.
Priority Level:	Low
Non-Compliance Level:	1
Description:	Transformer oil analysis is not completed routinely on main service transformer.
Source of Findings:	Document Review: Documents are not available.
Suggested Plan of Action:	Perform a transformer oil analysis on applicable transformers at appropriate intervals based on voltage and power.
Suggested Deadline	05 Jun 2016



Date:		
Standard:	Alliance Standard Part 10 Section 10.13.8 Electrical Inspections	
Electrical System Conditions		
Question:	All equipment is efficiently earthed and properly connected to the required number of earth electrodes.	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Electrical equipment is not efficiently earthed and properly connected to the required number of earth electrodes. For an example: LT panel and PFI panel were not earthed properly. Only one earthing cable of 300 sqmm used for three 300 sqmm cable per phase.	
Source of Findings:	Visual Assessment: Visually inspected during assessment.	
Suggested Plan of Action:	Provide efficient earthing for all equipment at required locations and properly connect using the required number of earth electrodes. Refer to the BNBC for required number of electrodes.	
Suggested Deadline Date:	05 Jun 2016	
Standard:	Alliance Standard Part 10 Section 10.13.7.1 Inspection of Substation Installations.	
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 non conductive metallic parts (such as metal utility pipes, trays etc) are not connected to the grounding system of the building.	
Source of Findings:	Visual Assessment: Visually inspected during assessment.	
Suggested Plan of Action:	Connect all metal in the building to the building earthing system such as metal rebar in concrete, metal frame of building, or metal water pipe.	
Suggested Deadline Date:	05 Jun 2016	
Standard:	Alliance Standard Part 10 Section 10.10 Earthing	
Question:	Indications of overheating, overloading, or signs of burning were not observed.	
Priority Level:	High	
Non-Compliance Level:	2	



Description:	During thermographic scan, some hotspots were observed at multiple locations. Refer to Thermographic Survey Report for detailed information.	
Source of Findings:	Visual Assessment: Inspected with thermal imager.	
Suggested Plan of Action:	Determine the cause of overheating, overloading, or signs of burning and take proper action. Suggested plan for specific issues have been incorporated in the Thermographic Survey Report.	
Suggested Deadline Date:	17 Apr 2016	
Standard:	Alliance Standard Part 10 Section 10.3.5	
Question:	Shielding or additional insulation is provided for wiring exposed to external heat sources.	
Priority Level:	High	
Non-Compliance Level:	1	
Description:	Cables are kept in close proximity to the steam pipes near the humidity panels.	
Source of Findings:	Photograph: Cables are kept in close proximity to the steam pipes.	
Suggested Plan of Action:	In order to avoid the effects of heat from external sources one of the following methods should be used to protect wiring systems: (1) shielding; (2) placing 900 mm (36 in.) from the source of heat; (3) local reinforcement or substitution of insulating material.	
Suggested Deadline Date:	05 Jun 2016	
Standard:	Alliance Standards Part 10 Section 10.3.4.2 External heat sources.	
Question:	Are all internal components of switchboards and/or distribution boards properly concealed (No missing circuit breaker or knockout covers)?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Cable entry hole at the bottom-plate of the panel was found unsealed after installation of the cable (also cable glands were not used). Cable-insulation may get damaged due to sharp edges of the hole.	
Source of Findings:	Photograph: Cable entry hole is kept open in MDB panel.	
Suggested Plan of Action:	Provide cable gland according to the respective cable size for cable entry and exit so that the cables are not stressed on the sharp edges of the hole of panels. Provide covers (of noncombustible material) if any additional gap remains after installing cable glands.	
Suggested Deadline Date:	08 May 2016	



Standard:	Alliance Standard Part 10 Section 10.3.9 Sub-Distribution Boards	
Question:	Are all switchboards and/or distribution boards properly grounded (earthed)?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	In several panels, earthing cables were found undersized or not available during assessment. For example, MDB panel's earthing was found undersized and compressor panel earthing was not available.	
Source of Findings:	Visual Assessment: Visually inspected during assessment.	
Suggested Plan of Action:	Provide proper grounding for switchboards and distribution boards utilizing proper size of earthing cables and sufficient number of earth electrodes.	
Suggested Deadline Date:	05 Jun 2016	
Standard:	Alliance Standard Part 10 Section 10.10.2 Circuit and System Earthing	
Question:	Do switchboards and/or distribution boards have capacity information labels?	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Distribution boards do not have capacity information labels posted. For example, compressor room panel does not have capacity information label.	
Source of Findings:	Photograph: Capacity information label was not posted near compressor panel.	
Suggested Plan of Action:	Provide capacity information labels (Maximum current rating, number of circuit breakers, rated capacity of circuit breaker, etc.) for Switchboards and/or distribution boards. Display panel schedule on panel door (inner side) printed on a sheet made of non-combustible material.	
Suggested Deadline Date:	22 May 2016	
Standard:	Alliance Standard Part 10 Section 10.7 Main Switch, Switchboards And Metal Clad Switchgear and 10.13.7 Inspection of the Installation	
Question:	The substation room has adequate ventilation.	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Substation room (Transformer and LT panel room) is not provided with sufficient ventilation provisions. Louvers in windows were installed but no ventilation-fan or provision for ventilation-fan was observed during inspection.	
Source of Findings:	Visual Assessment: Visually Inspected during assessment.	



Suggested Plan of Action:	Provide adequate means of ventilation for the substation room. Consult a qualified electrical engineer to determine the required ventilation rates based on the installed equipment.
Suggested Deadline Date:	05 Jun 2016
Standard:	Alliance Standard Part 10 Section 10.13.7.1 Inspection of Substation Installations.
Question:	Are switchboards and/or distribution boards free of dust and debris?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Excessive deposition of dust and unused nut-bolts were observed in MDB panels during assessment (at bottom of the panels).
Source of Findings:	Photograph: Excessive deposition of dust at bottom of the panel.
Suggested Plan of Action:	Disconnect the panel from the electrical service and clean interior components of all dust and debris. Seal all openings within the enclosure to prevent dust and debris from entering.
Suggested Deadline Date:	08 May 2016
Standard:	Alliance Standard Part 10 Section 10.3.9.1 Enclosures
Question:	Are switchboards and/or distribution boards provided with physical means to prevent the installation of more over current devices than that number for which the panel board was designed, rated, and listed.
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Unused space on DIN rail channel inside the Humidity panel room was observed without any physical means to prevent installation of more circuit breakers than it was designed for.
Source of Findings:	Photograph: Blank space on DIN rail channel to install more circuit breaker.
Suggested Plan of Action:	For switchboards and/or distribution boards, provide the physical means to prevent the installation of more over current devices than that number for which the panel board was designed, rated, and listed following NFPA 70 section 408.54. Verify the existing load does not exceed the panel rating.
Suggested Deadline Date:	05 Jun 2016
Standard:	Alliance Standards Part 10 Section 10.7 Main Switch, Switchboards and Metal Clad Switchgear





Question:	Stranded conductors having a nominal cross-sectional area 6mm ² or greater are provided with cable sockets. Conductors below 6 mm ² without cable sockets, all strands at the exposed ends are soldered together or are crimped using suitable sleeve or ferrules.
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Bigger size cable-sockets (lugs) were used during termination of the cable and appropriate tools (puncher) were not used during punching the sockets.
Source of Findings:	Photograph: Bigger size cable-socket used for termination in compressor panel.
Suggested Plan of Action:	Terminate cable with cable socket of appropriate size. Ensure all the strand of cable remains in socket without cutting any strand and adequate mechanical strength for avoiding loose connection. Use appropriate punching tools (i.e. hydraulic punch) during termination work. Hammer shall not be used for punching sockets.
Suggested Deadline Date:	22 May 2016
Standard:	Alliance Standards Part 10 Section 10.3.8.3 Cable Ends
Question:	Do switchboards and/or distribution boards have clear identification markings?
Priority Level:	Medium
Non-Compliance Level:	1
Description:	None of the panels were provided with any identification markings. For example, humidity panels do not have any identification marking.
Source of Findings:	Photograph: Humidity panels do not have any identification marking.
Suggested Plan of Action:	Provide clear and permanent identification marks on all distribution boards, switchboards, sub main boards and switches and post proper caution/danger signage in all electrical panel boards.
Suggested Deadline Date:	24 Apr 2016
Standard:	Alliance Standard Part 10 Section 10.7 BNBC Part 8 Section 2.11.5.4
Question:	Electrical wiring and conduit is properly supported.
Priority Level:	Medium
Non-Compliance Level:	1
Description:	In substation, HT cable is not properly supported (kept on the floor). Insulation of the cable may get damaged due to stepping of occupants or falling object on to it.





Source of Findings:	Photograph: HT cable is not properly supported (kept on the floor).	
Suggested Plan of Action:	Provide adequate supports for electrical wiring and conduit. Provide a metallic cable tray (with cover) installed on the floor for arranging the HT cable. Excess part of the cable may be trimmed or kept underground outside the room.	
Suggested Deadline Date:	22 May 2016	
Standard:	Alliance Standard Part 10 Section 10.3.2, 10.3.4.3, and 10.3.5	
Question:	Is all electrical wiring/cable properly terminated at its point of termination (No un-terminated wires, lugs are provided at terminals, etc)?	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	Un-terminated cable was observed in Humidity panel.	
Source of Findings:	Photograph: Cable was found un-terminated.	
Suggested Plan of Action:	Terminate the cable in its destination point or remove the cable from the panel (If it is not necessary).	
Suggested Deadline Date:	05 Jun 2016	
Standard:	Alliance Standards Part 10 Section 10.3.9.2 Wiring of Sub-distribution Boards	
Question:	Are there additional areas of non-compliance to report?	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	MCCB terminal nut-bolts of compressor panel were observed rusty during the assessment.	
Source of Findings:	Photograph: MCCB terminal nut-bolts were found rusty.	
Suggested Plan of Action:	Replace the rusty nut-bolts with new ones to ensure sound electrical conductivity between components.	
Suggested Deadline Date:	08 May 2016	
Standard:	Not Applicable	



Question:	Are electrical insulation mats provided in front of substation, switchboards and/or distribution boards?
Priority Level:	Low
Non-Compliance Level:	2
Description:	Electrical insulation mats were not provided in front of substation panels such as PFI panel, Synchronization panel.
Source of Findings:	Photograph: 1. No mat in front of PFI 2. No mat in front of Synchronization panel
Suggested Plan of Action:	Provide electrical graded insulation mats in front of substation, switchboards and/or distribution boards. Mats should be rated for 1000 V protection and provided with required area & thickness (accommodating at least two people & 3.0 mm thickness).
Suggested Deadline Date:	08 May 2016
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:	2
Description:	Required safety signage was not posted on several panels such as the HT panel, PFI panel.
Source of Findings:	Photograph: Safety signage was not posted on HT panel.
Suggested Plan of Action:	Provide required safety signage in switchgear, unit substations, transformers, pull boxes, connection boxes, and other similar associated equipment. Signage shall be marked with appropriate caution signs. Entrance to room and other guarded locations that contain exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.
Suggested Deadline Date:	08 May 2016
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:	2
Description:	MCCBs in LT Panel were not provided with phase separators.
Source of Findings:	Photograph: No phase separators in MCCBs of LT Panel.





Suggested Plan of Action:	Install phase separators between terminal connections. Verify phase separators are installed at all remaining locations.
Suggested Deadline Date:	22 May 2016
Standard:	Alliance Standard Part 10 Section 10.3.1 Electrical Connections
Question:	Are meters and other electrical devices (Ammeter, Voltmeter, PFI Auto Controller, etc) installed on the main electrical equipment operational?
Priority Level:	Low
Non-Compliance Level:	1
Description:	Several indication lamps were not found operational on main electrical equipment such as LT panel.
Source of Findings:	Photograph: Indication lamps were not found operational.
Suggested Plan of Action:	Ensure meters and other electrical devices are installed on the main electrical equipment and are operational.
Suggested Deadline Date:	08 May 2016
Standard:	Alliance Standard 10.13.7 Inspection of the Installation



Emergency Power System

Question:	Is an uninterruptable power supply (UPS) provided?
Priority Level:	High
Non-Compliance Level:	3
Description:	Uninterrupted power supply (UPS) is not provided for the emergency power of the life safety loads.
Source of Findings:	Visual Assessment: Visually inspected during assessment.
Suggested Plan of Action:	Provide an uninterrupted power supply (UPS) for powering the emergency loads (i.e. fire alarm, emergency lighting, exit signage etc) of the facility.
Suggested Deadline Date:	05 Jun 2016
Standard:	Not Applicable
Question:	Are life safety loads (fire alarm, fire pump, elevators, emergency lighting, exit signage, etc) connecting to the emergency power system?
Priority Level:	High
Non-Compliance Level:	3



Description:	Emergency lighting is self charged type. No UPS system has been provided for powering the life safety loads.	
Source of Findings:	Visual Assessment: Visually inspected during assessment.	
Suggested Plan of Action:	Provide an uninterrupted power supply (UPS) for powering the emergency loads (i.e. fire alarm, emergency lighting, exit signage etc.) of the facility.	
Suggested Deadline Date:	05 Jun 2016	
Standard:	Alliance Standard Part 10 Section 10.8 Standby Power	
Question:	Are cable trenches properly covered?	
Priority Level:	High	
Non-Compliance Level:	2	
Description:	Generator outgoing cables are not properly laid and cable trench are not fully covered. Concrete slab is kept on cables. The insulation of the cables may get damaged due to sharp edges of the slab.	
Source of Findings:	Photograph: Concrete slab is kept on cables.	
Suggested Plan of Action:	Provide proper support and protection for the cables in generator floor using metallic cable tray (with cover) from generator to bottom of the trench. A hole shall be kept in the slab to put the cable-tray through it.	
Suggested Deadline Date:	08 May 2016	
Standard:	Alliance Standard Part 10 Section 10.13.7 Inspection of the Installation	
Lightning Protection System		
Question:	Is a lightning protection system installed on the building?	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Lightning protection system has not been installed. The calculated risk index for this facility is 45, where for the requirement of lightning protection system, marginal risk index is 40.	
Source of Findings:	Photograph: Lightning protection system has not been installed.	
Suggested Plan of Action:	Have an electrical engineer design a lightning protection system in accordance with NFPA-780. Have a licensed electrician install the designed system.	
Suggested Deadline Date:	03 Jul 2016	
Standard:	Alliance Standards Part 10 Section 10.11 Lightning Protection. Calculate Risk Index to determine if required.	

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