

Safety Certification

MTA Safety Certification
Practice



Vern Hartsock

Overview



Safety and Security Certification –Definition

Authorization – FTA Mandate

Roles and Responsibilities

MTA System Safety Program Plan (SSPP)

MTA Safety & Security Certification Process

- Design Phase
- Construction / Commissioning Phase
- Fully Executed Safety and Security Verification Report
- System Modifications

Safety & Security Certification



The series of processes that collectively verifies the safety and security readiness of a project for public use

Addresses conditions that could result in harm whether unintentional (safety) or intentional (security)

Safety and security promotes an informed management decision making process in project design, construction, testing and into revenue service

FTA Mandate



The MTA is mandated by the Federal Transit Administration (FTA) for its Heavy Rail, Light Rail, Commuter Rail, Bus, and Paratransit operations to develop, implement, and administer a comprehensive and coordinated System Safety Program.

The MTA maintains a thorough and proactive system safety policy consistent with these mandates and industry best practices.

The program is defined in the MTA annual publication of the System Safety Program Plan (SSPP)

Roles and Responsibilities



State Safety Oversight

MDOT State Safety Oversight (SSO) - George Goode

- Oversees the system safety and security aspects of the MTA's light rail, commuter and heavy rail operations in accordance with 49 CFR Part 659, Rail Fixed Guideway Systems; State Safety Oversight.
- Participates in audits of MTAs transportation services work practices

Roles and Responsibilities



MTA Office of Safety Quality Assurance and Risk Management (OSQARM)

Chief Safety Officer - Bernadette Bridges

- Prepares and updates the System Safety Program Plan (SSPP)
- Participates in all Safety and Security Certification activities for Capital Projects and System Modifications
- Approves all Safety and Security Certification Plans (SSCP)

Roles and Responsibilities



MTA Engineering / MTA Construction

- Ensures projects are Safety and Security Certified per the SSPP
- Ensures program technical spec requirements are met by the contractor
- Participates as a member of Safety Committee and provides technical assistance
- Ensures completion of safety certifiable test program
- Coordinates contractor hazard resolution activities

Roles and Responsibilities



MTA Engineering QA / QC

- Monitors the development and execution of the Safety and Security Certification Plan for all capital projects

Contractor

- May provide information to support the Certification (i.e. for proprietary systems)
- Provide analysis of hazards/resolution for products /systems as required (i.e. furnishing locomotives or signaling system, etc.)

MTA Administrator

- Provides final approval of all Safety and Security Certification Plans

MTA System Safety Program Plan (SSPP)



The SSPP communicates MTA's specific system safety goals and objectives, and documents and defines the safety responsibilities, activities, and capabilities established by the MTA to promote and improve system safety throughout all operations and services.

The SSPP is written in accordance with the guidelines specified by:

- The American Public Transportation Association (APTA) Manual for the Development of Bus Transit System Safety Program Plans
- The APTA manual for development of System Safety Program Plans for Commuter Railroads
- FTA rule 49 CFR Part 659, Rail Fixed Guideway Systems: State Safety Oversight
- FTA's Resource Toolkit for State Oversight Agencies Implementing 49 CFR Part 659 and meets the requirements of the Handbook for Transit Safety and Security Certification (document number: **FTA-MA-90-5006-02-01**).

MTA System Safety Program Plan



The SSPP is reviewed annually and revised as necessary under the direct authority of the MTA Administrator, to:

- Ensure it remains accurate, effective, and consistent with MTA Management goals and objectives
- Ensure compliance with the most current State, Federal, and local regulations and industry guidelines

MTA System Safety Program Plan



The System Safety Program Plan establishes mechanisms for identifying and addressing hazards associated with MTA operations and services

Section 8 of the SSPP (Safety and Security Certification Program, SSCP) provides a means of ensuring that proposed system design, construction and modifications are implemented with thorough evaluation of their potential effect on safety and security

Safety & Security Certification Process (SSCP)



SSCP Process

- Evaluates safety and security-critical elements or equipment with vital functions affected by additions, deletions, substitutions, rebuilding, replacement, modification, or new design associated with the project to identify and resolve potential hazards and vulnerabilities through a hazard elimination/reduction process.
- Ensures each element of the system and each component of those elements conforms with safety and security design requirements, safety and security criteria, and specification requirements
- Implements a systematic review of testing, analyses, inspections,
- Documents tests, analyses, inspections, or reviews that clearly displays the successful completion of the project for presentation to the Administrator, MDOT, or other interested agencies or individuals.
- Documents all safety and security-critical items and potential hazards and vulnerabilities

SSCP Process Overview



The safety and security certification process must include hazard identification, analysis, and mitigation elements for the five safety and security functions

1. **System Safety** - Protection of property / system from damage
2. **Fire/Life Safety** - Protection from fire, explosion, or chemical exposure
3. **Occupational Safety** - Protection of employees / emergency response personnel
4. **Public Safety** - Protection of the general public and passengers
5. **System Security** - Control of potential threats

MTA Engineering Application of the SSPP



- Office of Engineering and Construction publishes SOP manuals for its divisions:
 - Systems Engineering
 - Resident Engineer / Construction
 - Facilities and ADA / Track and Structures / Fixed Guideways
- Each manual provides reference to the SSPP regarding the requirements for Safety and Security Certification plans.

SSCP Overview



A **Safety and Security Certification Plan** provides verification that:

- Safety and Security Certifiable Items list developed
- Safety and security design criteria developed
- Design checklist developed
- Construction checklist developed
- Integrated tests identified and developed
- Training classes developed and provided to MTA personnel
- O&M manuals developed and provided
- O&M personnel trained on rules and procedures
- Public Safety personnel are trained to respond to emergencies
- Emergency drills simulations, table-top exercises conducted
- Hazards and vulnerabilities identified, tracked, and resolved or accepted
- Safety and Security Certificate issued
- Safety Certification Verification Report generated and transmitted
- Project successfully complies with identified safety and security requirements

Developing a SSCP



Development of a project specific Safety & Security Certification Plan (SSCP) typically involves ten steps that are applied during a project's life-cycle.

Design Phase

1. Identify Certifiable Elements (Certifiable Items List – CIL)
2. Develop Safety and Security Criteria
3. Develop and Complete Design Criteria Conformance Checklist
4. Prepare Construction Specification Conformance
5. Identify Safety and Security Test Requirements

Construction Phase

6. Perform testing and validation to support SSC program
7. Manage Integrated tests for the SSC program
8. Manage “Open Item” in SCC Program
9. Verify Operational Readiness
10. Conduct final readiness review and issue Safety and Security Certificate

MTA Sample SSCPP



SAFETY AND SECURITY CERTIFICATION PROGRAM PLAN

MARYLAND TRANSIT ADMINISTRATION
METRO FIRE & SECURITY MANAGEMENT SYSTEMS
PROCUREMENT

Contract No. MTA-0457-0240

METRO

July 31, 2009

Revision 0.0

Sample Safety CIL



SAMPLE CERIFIABLE ELEMENTS AND SUB-ELEMENTS LIST

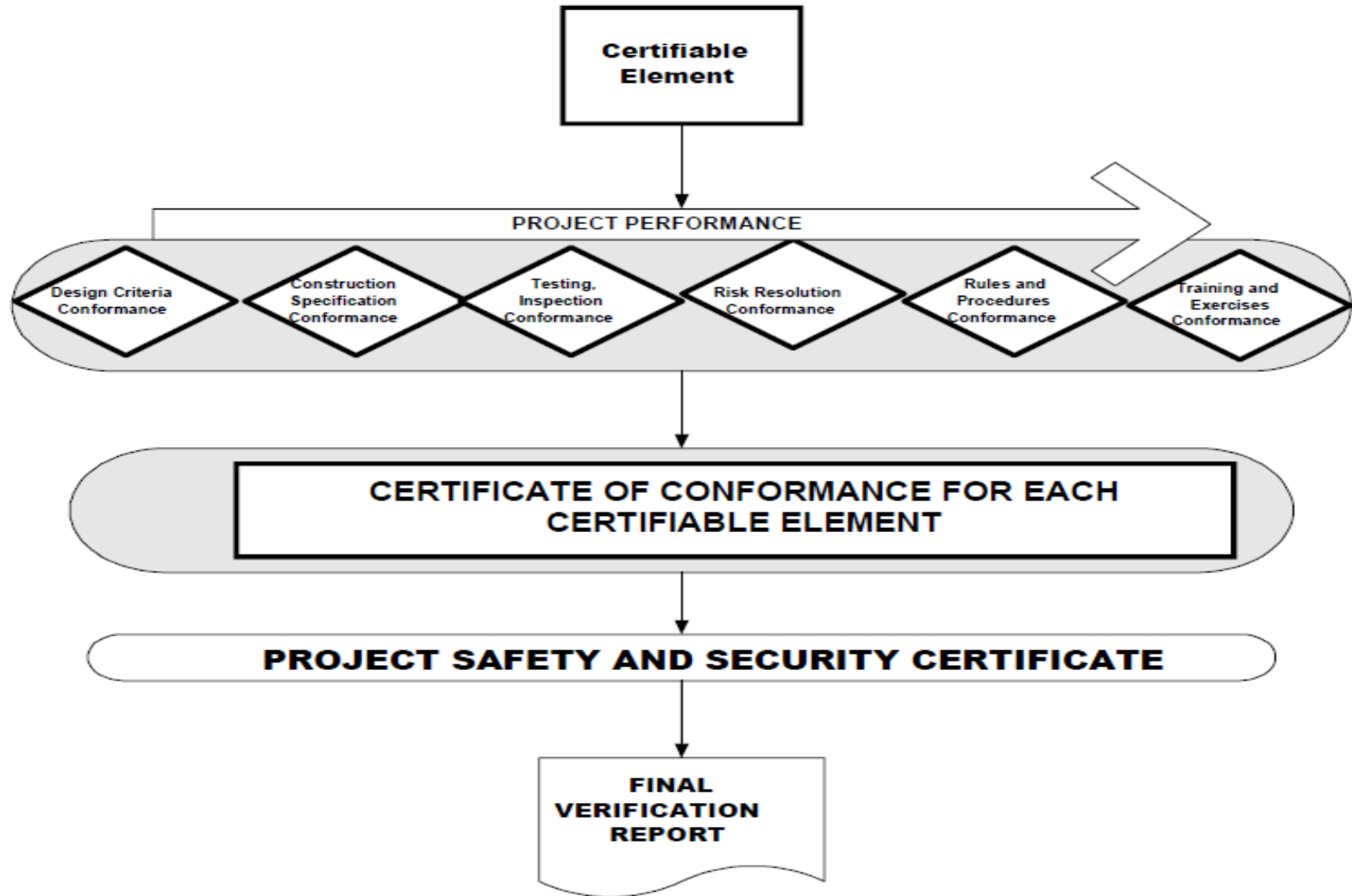
<u>SYSTEMS</u>	<u>CIVIL INSTALLATIONS</u>
<p>VEHICLE</p> <ul style="list-style-type: none"> • Carbody • Coupler • Doors, Door Operators and Controls • Trucks and Suspension • Propulsion • Braking • Operator's Cab and Controls • Communication Equipment • Mobility Lift • Lighting • HVAC • Fire/Flammability/Smoke Emissions 	<p>TRACK AND STRUCTURES</p> <ul style="list-style-type: none"> • Right of Way • Track • Aerial • At-grade • Underground • Barriers and Warnings
<p>SIGNALS</p> <ul style="list-style-type: none"> • Interlocking Circuits/Equipment • Mainline Controls and Indications • Grade Crossing Warning Devices • Yard/Mainline Interface • Track Signals • LRT Signals • Signal Indications • Train Protection 	<p>YARD AND SHOP</p> <ul style="list-style-type: none"> • Electrical Safety Provisions • Vehicle Movement Provisions • Track and Appliances • Building (Occupancy) • Fire System • Lifts/Elevator <p>STATIONS/PARKING LOTS</p> <ul style="list-style-type: none"> • Platforms • Handicapped Access Provisions • Elevators and Escalators • Illumination • Electrical Grounding

MTA Safety Certifiable Items List



Submittal No.	Date Received:	Description	Sent To:	Returned to RE:	Approval Status:	Return Date:	S - Safety Element or N - Non-Safety Item	STATUS Safety/Section	
02764	Section	LEAD FREE REFLECTIVE THERMOPLASTIC PAVEMENT MARKINGS				-	S Site Utilities & Parking	OPEN	OPEN
02820	Section	CHAIN LINK FENCE AND GATES				-	S Site Utilities & Parking	CLOS	CLOS
02820.001	1/23/2004	Fence / Gate	Tom Kulmjan	2/12/2004	Resubmission Required	2/13/2004	S Site Utilities & Parking	R	
02820.001.A	5/10/2004	Fence / Gate Resubmittal	Tom Kulmjan	5/20/2004	Approved, No Exceptions noted	5/20/2004	S Site Utilities & Parking	RA	
02833	Section	BOLLARDS				-	S Facility & Systems	CLOS	OPEN
02890	Section	SIGNS				-	S Site Utilities & Parking	CLOS	OPEN
02895.001	2/4/2005	Certificate of treatment for wood posts	Will Aasen	2/22/2005	Approved	2/22/2005	S Site Utilities & Parking	A	
02895	Section	FUEL STORAGE AND DISPENSING SYSTEMS				-	S Site Utilities & Parking	CLOS	CLOS
02895.001	5/10/2004	Fuel Tanks 5000 gal Product Data	Tom Kulmjan	6/3/2004	Exceptions noted, Resubmission required	6/3/2004	S Site Utilities & Parking	R	
02895.001.A	6/24/2004	Fuel Tanks 5000 gal Product Data resubmittal	Martin Sunwoo	7/16/2004	Approved, No Exceptions noted	7/19/2004	S Site Utilities & Parking	RA	
02895.002	5/10/2004	Manhole Covers	Tom Kulmjan	5/28/2004	Approved, No Exceptions noted	5/28/2004	S Site Utilities & Parking	A	
02895.003	5/10/2004	Tank Monitoring System	Tom Kulmjan	6/14/2004	Approved, Exceptions noted	6/14/2004	S Site Utilities & Parking	A	
02895.004	5/10/2004	Stage II Vapor Recovery Piping	Tom Kulmjan	6/10/2004	Exceptions noted, Resubmission required	6/10/2004	S Site Utilities & Parking	R	
02895.004.A	7/16/2004	Stage II Vapor Recovery Piping Resubmittal	Will Aasen	8/10/2004	Approved, No Exceptions noted	8/10/2004	S Site Utilities & Parking	RA	
02895.005	5/10/2004	Card Reader Product Data	Tom Kulmjan	6/14/2004	Approved, Exceptions noted	6/14/2004	S Site Utilities & Parking	A	
02895.005.A	11/10/2004	Fuel Management System controller for diesel and gasoline systems Resubmittal	Will Aasen	11/17/2004	Approved	11/18/2004	S Site Utilities & Parking	A	
02895.006	5/10/2004	Fuel Dispensing Accessories	Tom Kulmjan	6/3/2004	Approved, No Exceptions noted	6/3/2004	S Site Utilities & Parking	A	
02895.007	5/10/2004	Vapor Systems Product Data	Tom Kulmjan	6/3/2004	Exceptions noted, Resubmission required	6/3/2004	S Site Utilities & Parking	R	
02895.007.A	6/9/2004	Resubmittal of vapor recovery system	Tom Kulmjan	8/10/2004	Approved, No Exceptions noted	8/10/2004	S Site Utilities & Parking	RA	
02895.008	5/10/2004	Spill Containers for Fuel Systems	Tom Kulmjan	6/3/2004	Approved, No Exceptions noted	6/3/2004	S Site Utilities & Parking	A	

Certifiable Elements/Certification Process



Construction / Commissioning Phase



- MTA OSQRM Reviews and approves contractor Safety Plan
- Finalization and approvals of Project Specific Safety & Security Certification Plan by OSQRM
- Approval of program test plans & hazard analysis not available during the design phase
- Verification of all activities and deliverables by RE & OSQRM (tests, training, manuals, etc.)
- Review test reports, inspection reports
- Resolve all Safety Certifiable Open Items
- Train Emergency Responders on New Equipment and Operations
- Fully Executed Safety and Security Report
 - Signed off by the Administrator

Safety Certifiable Documents



Safety Certification Check List			
Charles Center			
	Initial	Date Received	Completed
1. FAT Procedure Provided by Vendor (17801-009 Rev A)	JG	2/16/10	✓
2. CSCS FIAT & Cut-Over Test Procedures / Report (17550-021 Rev. 0)	JG	7/30/10	✓
3. Cut-Over Test Procedure (17801-017 Rev. 0)	JG	1/19/10	✓
4. Software Change Control Form	JG	5/25/10	✓
5. AIM Load & Regression Test Report (17550-021 Rev. 0)	JG	7/30/10	✓
6. Fire Marshall Record of Completion	JG	6/8/10	✓
7. MTA Safety Open Items List	JG	11/4/10	✓
8. Fire Marshall Inspection Report			
9. Fire Marshall Supplement Report	JG	6/8/10	✓
10. 30 DOT	JG	5/18/11	✓
11. Safety Certification Certificate			

Safety Certifiable Artifacts



Gill-Simpson Inc
2034 Loch Raven Road
Baltimore, MD 21218-4211
Ph: 410.487.3335

Letter of Transmittal

To: Howard Gregson
AECOM
4200 Old Court Road
Baltimore, MD 21208
Ph: (410)637-1778

Transmittal #: GSA/SCM - 1827
Date: 8/5/2010
Job: 17200 MTA MFSMS

Subject: Submittal

WE ARE SENDING YOU Attached Under separate cover via None the following items:

Shop drawings Prints Plans Samples
 Copy of letter Change order Specifications Submittal

Document Type	Copies	Date	No.	Description
Submittal	8		13850-40 Rev A	Lexington Market FMS Testing Documentation
Submittal	8		13850-40 Rev A	Lexington Market FMS Testing Documentation

THESE ARE TRANSMITTED as checked below:

For approval Approved as submitted Resubmit ___ copies for approval
 For your use Approved as noted Submit ___ copies for distribution
 As requested Returned for corrections Return ___ corrected prints
 For review and comment Other
 FOR BIDS ONLY PRINTS RETURNED AFTER LOAN TO US

Remarks:
Copy To:

RECEIVED

AUG 11 2010

AECOM

From: Nick Nozar (Gill-Simpson Inc.) Signature: _____

If enclosures are not as noted, kindly notify us at once. Page 1 of 1

Safety Certifiable Artifacts



AECOM

SUBMITTAL REVIEW COMMENTS

MTA
Maryland

Reviewer: A. JAFIR		Reviewer's Organization: SCM	Submittal Status: Reviewed, Exceptions Noted, Resubmittal Required	Sheet 1 of 1	
Contract No.: T-0457-0240	Contract Title: Metro Fire and Security Management System		Submittal Name: Charles Center FMS Testing - Record of Completion Submittal No. 13850-041	Review Date: 7/15/2010	
SUBMITTAL REVIEWER			CONTRACTOR RESPONSE		
Comment #	Dwg # or Spec Section	Comment	Code No*	*Response By/Designer's Notes	**Verified/By
1	13850-41	Provide address/telephone number of the "Authority Having Jurisdiction".		Will comply	
2	13850-41	Fill all items left blank on "Record Of completion". Indicate "Not Applicable" (N/A) on lines for items those do not apply.		Will comply	
3	13850-41	Item 1. Type(s) of System Service- Under this item for Remote Station, in addition to the phone numbers, include name and address of the organization receiving alarm.		Will comply	
4	13850-41	Item 2. "Record of System Installation"- After "Inspected by" write name of the individual in addition to the company name GILL - SIMPSON.		Need signature from installer	
5	13850-41	Write individual's name and signature next to line noted as Signed.		Need signature from installer	
6	13850-41	Item 2." Record of System Installation"- Indicate the year of NFPA 70 & NFPA 72 that are referred with the chapters and article number. Also sign and date the line noted as "Signed".		NFPA 72 2007 Edition was added Need signature from installer	
7	13850-41	Item No. 8 c - Provide quantity and type of the horns installed.		No audible devices were installed.	

CODES - ADDED BY DESIGNER: * Response: 1 = Will Incorporate 2 = Discussion/Clarification Required 3 = Not Applicable 4 = Not in Scope of Work 5 = Not Due at This Submittal
6 = Input/Direction Required By Others (Codes 2 and 6 must be revised later to 1 or 3.)
**Verified: D = Done (Document Change Completed) - Used only if Response Code is 1.

Safety Certifiable Artifacts



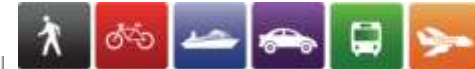
Software Change Control Form		
Section A		
Project	MTA Metro Fire	Change Number
Controlled Item	Phase V Updates	Item Version MetroFire Phase V Mar.18.2010
System to be Changed	For Document give section number / page number For Software give Module, Screen or Report name AIM – Host A and all Workstations	
Change Details	Change Requests: See attached CRs.	
Requested By: <small>Print Name</small>	Anna Taylor	Date: 03/18/2010
Section B		
Reason for Change	Address schedule issues.	
Impact <small>give details of other items affected</small>	See Change Details.	
Section C		
Pre Test		Date Scheduled
Post Test		Date Scheduled
Regression Test		Date Scheduled
Section D		
Change Approved	Signature	Date
GSA Project Manager	<i>[Signature]</i>	3/19/2010
SCM Construction Manager	<i>[Signature]</i>	3/24/10
MTA Operations Manager	<i>[Signature]</i>	3/22/10
MTA Safety Manager <small>OFFICER</small>	<i>[Signature]</i>	3/24/10
Section E		
Completed		Date
Open Items		


Safety Certifiable Artifacts



TEST RECORD	
Test Procedure Name: <i>FMS 24 Hour Battery Test</i>	
Test Results: Passed ___ Failed ___	Test Date: 6-9-10 - 6-10-10
Test Duration: 24 hrs + 15 minutes	Test Type: Demonstration
Start Time: <i>1:15</i> am 6-9-10	Test Location: Charles Center Station
End Time: <i>1:30</i> am 6-10-10	
Equipment Under Test:	
<ul style="list-style-type: none"> Fire Alarm Control Panel (1) Fire Management Panel (1) Notification Appliance Control Panels (7) Digital Alarm Communicator Transmitter (1) Digital Voice Controller (1) Intelligent Field Devices Visual Notification Appliances 	
Test Objectives:	
To insure fifteen minutes of audible / visual notification of an alarm, after all systems mains power has been removed and systems have been powered by batteries for a period of 24 hours.	
Test Setup	
<p>Notify OCC of the 24 hour test. OCC personnel will contact the Central Station Monitoring Co. and place the account on test for troubles only.</p> <p>Switch the FMS mains breakers to the off position, lock and tag out breakers.</p> <p>Verify all FMS panels have switched to battery power.</p> <p>Record the time that the breakers were switched off.</p> <p>At the end of the 24 hour period initiate Station EVAC for a period of 15 minutes.</p> <p>While in EVAC, verify proper operation of audible and visual notification devices.</p> <p>At the end of the 15 minutes of EVAC testing, return the FMS mains breakers to the on position.</p> <p>Verify all FMS panels are operating on normal mains power.</p> <p>Notify OCC that the test is completed and to place the account back on line.</p>	

Safety Certifiable Artifacts



FIRE SAFETY INSPECTION		
NAME	MTA - Subway Tunnel	MARYLAND STATE
ADDRESS	Charles Center Station	FIRE MARSHAL' S
	Baltimore ZIP	OFFICE
OCCUPANCY	Assembly Class C/Industrial Low	 Department of State Police
TELEPHONE		
SUPPLEMENTAL INSPECTION REPORT		
		DATE: 6/8/10
Fire Alarm System		
<p>On Tuesday, June 8, 2010 the Office of the State Fire Marshal conducted inspection on the fire alarm system for Charles Center Station location of the MTA-Subway. The following issues need to be corrected on the fire alarm system.</p>		
<ol style="list-style-type: none"> 1. Need to repair the voice evacuation speakers to the fire alarm system because the volume was to low and there was static. Barely could hear the instructions for the evacuation when the alarm system activated. 		
<p>Other issues found during the fire alarm inspection</p>		
<ol style="list-style-type: none"> 1. Need to remove trash throughout the mechanical areas of the station. 2. Need to have the Fire Extinguisher service/inspected in the following areas: Room 110 ancillary mechanical, Room 114 Elect/Battery, Stairway to 351 Vent Shaft transfer level, Cabinet FD stairway/ room 305 ancillary mechanical, Room 305, 301, 311, 309, 501, and 551. 3. Replace/Repair sprinkler piping in the hallway between the Fire alarm panel and Room 362. The sprinkler piping in rusted. 4. Electrical panel WE1 in Room 114 the cover plate is off. 5. Electrical panel EP1 Room 101 the cover plate is off. 		
Received by:	Inspector: Brian Quick #8542	Reply to: OFFICE OF THE STATE FIRE MARSHAL 15 East Main Street, Ste 220 Westminster, MD 21157 (410) 671-3050; FAX: (410) 671-2478
	print signature print signature	
SFMP 011 (REV 1/04)		

Safety Certifiable Artifacts



MFSMS SYSTEM COMPLETION OF 30DOT

Pursuant to Contract No. MTA-T-0457-0240 of ARINC Incorporated the undersigned hereby certifies that the MFSMS System has successfully completed Thirty Day Operational Test (30DOT) for Charles Center as of July 7, 2010. No failures were reported. Any anomalies have been identified and are being tracked with a punch list.


Test Engineer



Date


Program Manager


Date

Safety Certifiable Artifacts



 MTA SAFETY AND SECURITY CERTIFICATION FOR THE METRO FIRE & SECURITY MANAGEMENT SYSTEMS
CERTIFICATE OF CONFORMANCE ****Phase I Cutover****
Based on the documentation presented, Phase I Cut-Over is certified for Revenue Operations.
RESTRICTIONS –
APPROVED BY: METRO Construction Manager: <u>Howard W. Gagnon</u> Date: <u>11/24/09</u> MTA Executive Director, OSQARM: <u>Bernadette Bridges</u> Date: <u>11/24/2009</u>

Safety Certifiable Artifacts



MFSMS Safety Open Items List

Item #	Description	Location	Date-Entered	Status	Verified By	Date
CR 23284	Phase III - Damper breakers & main breakers are showing tripped when MCCs and Dampers are functional	WCS	12/22/2009	Closed	ARINC	12/22/2009
CR 23462	West Cold Spring TC&C temp: air pressure and Battery are hard to read.	WCS	12/28/2009	Closed	ARINC	1/8/2010
CR 23606	Zones are incorrect for ND1 L2 D001 and D002 @ WCS	WCS	1/15/2010	Closed	ARINC	1/15/2010
CR 23608	Fire Points ND1 L1 M041 and M042 need to be added for WCS	WCS	1/15/2010	Closed	ARINC	1/15/2010
	Regression Test need to be re-scheduled	WCS	1/13/2010	Open		
	Cutover SCADA Interface Verification (No indication of Pass or Fail, not all signatures or date)	WCS	1/19/2010	Open		
PL.E. 01	PLC02 - No B4 for Telefast Cables and power cables which are just hanging.	WCS	4/7/2010	Closed	MM	4/7/2010
PL.E. 03	PLC01- CAT5 cable labeled PLC01/FACP not connected to switch.	WCS	4/7/2010	Closed	MM	5/7/2010
PL.E. 04	PLC01- Power terminals for PLCs are not secured.	WCS	4/7/2010	Closed	MM	3/31/2010
PL.E. 05	PLC01- First duplex outlet does not have amps labeled.	WCS	4/7/2010	Closed	MM	3/29/2010
PL.E. 07	FDP01- Needs permanent tag.	WCS	4/7/2010	Closed	MM	4/29/2010
PL.E. 08	FDP01 - Jacket of fiber jumpers was cut short and is about to fall off connector grommet.	WCS	4/7/2010	Closed	MM	4/12/2010
PL.E. 09	PLC01 -Tape with EP1-6 and EP1-10 need permanent labels.	WCS	4/7/2010	Closed	MM	4/12/2010
PL.E. 10	TPSSF-1- Surgelogic has replace module for B phase.	WCS	4/7/2010	Open		

System Modifications



The System modification review and approval process applies to the following as referenced in Section 7 of the SSPP and in procedure **MTA-GP-04-02** :

- Changes in safety-critical processes or functions
- New construction projects or modifications to existing facilities limited in scope
- Equipment acquisitions or modifications/overhauls of existing equipment
- Proposed system expansions including new routes or operating territories
- Projects not requiring a formal Safety and Security Certification Program

System Modifications Approval Process



The safety risks are assessed and a Safety Risk Management Report (SRMR) is generated which contains the following:

- Description of system modification
- Identification of potential hazards
- Estimated level of safety risk based on MTA Hazard Risk Assessment Matrix
- Description of existing or initial hazard mitigation plan commensurate with level of safety risk
- The SRMR is reviewed and evaluated and approved

System Modifications Approval Process



- Hazard Risk Assessment is performed on the proposed systems and System Modification Authorization Request generated
- The Project Manager ensures that the impacts of proposed system modifications are thoroughly evaluated prior to implementation.
- Ensure that system modifications do not create new hazards by performing:
 - Preliminary Hazard Analysis (PHA)
 - Subsystem Hazard Analysis (SSHA)
 - Detailed System Hazard Analysis (DSHA)
 - Operating Hazard Analysis (OHA)
- Hazard Assessment Report generated and reviewed
- Safety and Security Certification Plan generated
- Train Emergency Responders on new equipment and operations

Certification Benefits



- Ensures hazards and vulnerabilities are identified , assessed and documented
- Ensures adherence to applicable codes, guidelines and conformance to design
- Ensures systems / facilities are designed, constructed, tested and operated safely
- Ensures safety plans, operating procedures and rules are developed for operations
- Ensures proper training is developed for operations and emergencies

Q&A



NOTES

