



The Tri-M Group, LLC

Bringing You the Power to Achieve!

Our Mission ...

To be the preferred employer of a highly skilled and trained workforce. We strive to exceed all expectations by professionally designing, installing and maintaining electrical technology and network service in partnership with our customers.

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An ABC Member Company

The Tri-M Group, LLC is a full service electrical contractor providing quality service for 40 years in the Mid Atlantic Region, and now expanding to serve its customers nationally.

We focus on your Facility Life-Cycle costs by providing quality up front to minimize your long term maintenance issues.



Tri-M Electrical Construction

Design and construction of state-of-the-art electrical installations - from sophisticated manufacturing and process control systems to high voltage power lines and substations, all in close cooperation with the design and construction teams of industrial and commercial clients.

- ◆ Commercial Electric
- ◆ Industrial Electric
- ◆ High Voltage
- ◆ Critical Power

Tri-M Network Services

A full range of vendor-neutral network and system services to help customers build, secure, and manage premium performance IT infrastructures.

- ◆ Structured Cabling
- ◆ Computer/Communications
- ◆ Business Telephone Systems
- ◆ Paging Systems
- ◆ Design/Consulting Services
- ◆ Engineering Services
- ◆ Maintenance Services
- ◆ Help Desk

Tri-M Building Automation Systems

Quality engineering and installation of integrated facility management systems to ensure long term, low maintenance building operation and maximize occupant comfort, security, and productivity.

- ◆ Andover Controls
- ◆ System Integration
- ◆ Engineering Services
- ◆ Maintenance Services

Tri-M Security Systems

Comprehensive planning and implementation of scalable security management systems to control video recording, door access, and alarm monitoring for all types of clients.

- ◆ Access Control
- ◆ Electronically Controlled Barriers
- ◆ Electronic Article Tagging & Tracking
- ◆ Intrusion Detection Systems
- ◆ Command & Control Consoles
- ◆ CCTV Systems



Bringing You
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Tri-M Critical Power Services

Sprint

Relay, Maryland
EF&I 300kVA UPS System



CS-CPS-002 (10/03)

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Sprint is a global communications company ñ at the forefront in integrating long distance, local and wireless communications services and one of the worldís largest carriers of Internet traffic. Sprint built and operates the United Statesí only nationwide all digital, fiber optic network and is the leader in advanced data communications services. The company is headquartered in Overland Park, Kansas with revenues of nearly \$27 billion and serves more than 26 million business and residential customers.

Sprint uses a range of sizes of uninterruptible power supply (UPS) and PDU equipment to meet the operational demands of its business. In October 2001 Tri-M Electrical Construction Critical Power Services division was selected by Sprint to EF&I a complete new 300kVA UPS Power Plant. In addition the project required uninterrupted transition of two load centers from an existing UPS to one of the new PDU and then proper removal and disposal of the abandoned UPS. The new UPS Power Plant was installed in Sprintís switch facility in Elkridge (Relay), Maryland.

The UPS selected for this project was a Liebert three-phase, 240kW system. It featured an input isolation transformer, input filter, oversized input bussing, RS-232 alarm



status contacts, and remote interface for BMC monitoring. Distribution and maintenance capabilities were handled through an 800 amp Maintenance Bypass Switchgear (MBSG). For AC distribution the MBSG was equipped with eight 125-amp distribution breakers. For maintenance purposes the MBSG was equipped with a wrap-around bypass with dual Kirk Key locks and cylinders that enable easy isolation of the UPS based on the direct connection of the input and output of the UPS. The battery backup component of the system consisted of a 600 amp battery disconnect unit and one 480V battery string. C&D HD900 battery cells were selected to provide one hour of reserve under full load.

The power distribution consisted of four new 75kVA Power Distribution Units (PDU). Three of the new PDU were configured with three 42-circuit panel boards and were installed throughout the newly constructed switch expansion area. The fourth was configured with one 42-circuit panel board and two individual circuit breakers that now serve the two load centers that were fed by the abandoned UPS.

Migrating the two AC service panels to the new UPS without shutting off their circuits was the significant challenge of this project. The basic procedure was to localize the transition tasks to the panel by tying together within the panel the existing UPS and the new PDU.

By installing a temporary 100-amp, 3-pole circuit breaker in the load center and temporarily connecting the new PDU to the load side of the breaker, we essentially reduced all transition tasks to the flipping a few breakers. Phase rotation, polarity and potential difference between the existing and new service were measured across open temporary circuit breaker. After correcting the voltage difference between



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the two systems to within 5% the temporary breaker was closed. With the panel now fed by both systems, the panelís main breaker was opened and the system isolated from its old source. New permanent feeders from the new system replaced the old feeders on the main lugs and the temporary connections were removed.

Several preliminary tasks were required before the night of transition. Being the oldest section of the switch facility, the existing breaker panels were filled to capacity with 20-amp, single pole breakers. Both panels had a 3-pole main breaker but without feed-through lugs. To identify three adjacent single pole breakers within both panels that could be removed and replaced with a single 100-amp 3-pole breaker was the challenge. Tri-M technicians had to work closely with Sprint personnel to designate three adjacent breakers in the panels that could be made available for the transition work. Circuits were traced and verified and, where necessary, plans were devised to move active equipment off one circuit and onto another in order to free-up three adjacent breaker positions.

Teamwork - both internal to Tri-M and external with the customer - resulted in smooth migration of the existing panels to the new UPS and in the overall success of the project.

