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PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Consumer Protection & Safety Division
Safety & Reliability Branch
Rail Transit Safety Section

RESOLUTION ST- 69
March 16, 2004

R E S O L U T I O N

RESOLUTION ST-69 GRANTING LOS ANGELES TO PASADENA METRO BLUE LINE CONSTRUCTION AUTHORITY'S REQUEST TO DEVIATE FROM THE GENERAL ORDER 143-B, SECTION 10.07 REQUIREMENTS OF DISCONNECT SWITCHES.

SUMMARY

This resolution grants Los Angeles to Pasadena Metro Blue Line Construction Authority's (PBLCA) request for authority, on behalf of Los Angeles County Metropolitan Transportation Authority (MTA), to deviate from the disconnect switch locking or interlocking requirements of General Order 143-B (GO 143-B), Safety Rules and Regulations Governing Light Rail Transit, Section 10.07, Disconnect Switches. It allows the use of eighteen mainline and thirteen yard manually operated unlocked or non-interlocked disconnect switches, located on top of catenary poles on the Pasadena Gold Line (PGL).

PROJECT DESCRIPTION

The PGL is a new 13.7-mile light rail system built from Union Station in Los Angeles to Sierra Madre Villa Blvd. in Pasadena. The PBLCA constructed the system and MTA has been operating the PGL trains as part of the MTA transit system since July 26, 2003. The design of the PGL Light Rail Project includes an overhead catenary system (OCS) consisting of a full catenary (messenger wire, hangers, and a trolley or contact wire) to supply traction power for the propulsion of light rail vehicles (LRV). The system operates at a nominal voltage of 750 VDC.

BACKGROUND

By letter dated December 17, 2003, PBLCA requested, on behalf of MTA, authority to deviate from the disconnect switched locking or interlocking requirements of General Order 143-B, Section 10.07, for PGL mainline and the Midway yard.

GO 143-B, Section 10.07 states, "Every LRT system disconnect switch intended for isolating an indoor or outdoor traction power circuit form sources of power using switches that have no rated capability for making or interrupting currents, shall be locked or interlocked to prevent opening or closing under energized conditions." The locking or interlocking disconnect switches provides safety for the system in case any individual may disconnect the current flow through one section of the light rail transit system. The disconnect switches at PGL are not locked or interlocked but they are located on top of poles. The locations and height of the disconnects switches are as follows:

- 2 at Union interlocking at 22 ft high
- 2 at Baker interlocking at 21 ft high
- 4 at Southwest Museum interlocking at 21 ft high
- 3 at Indiana interlocking at 21 ft high
- 2 at Delmar interlocking at 23 ft high
- 2 at Allen interlocking at 21 ft high
- 3 at Sierra Madre interlocking at 19 ft high
- 13 at Midway Yard at 23 ft high

PBLCA states that the PGL OCS is sectionalized primarily at the traction power substations along alignment by means of direct current (DC) circuit breakers inside the substations. However, at the seven main line interlockings and in the yard, additional sectionalization is provided by means of disconnect switches. These disconnect switches are located on top of catenary poles and comprise a copper knife-switch assembly which are operated from ground level by means of a special insulated rod. Such switches are also commonly known as "hook-operated" switches. The hook-operated disconnects have no rated capability for making or interrupting currents. By the nature of their operation (manual operation by means of a long insulated rod from ground level), they are not

interlocked. Due to their location (19-23 feet above rail level), locking them is impractical.

PBLCA justifies the request for waiver by stating that the "hook-operated" switches are widely used both by electrical utilities and by transit authorities on alternate current and DC lines. They are designed for use by qualified personnel who are trained and authorized to operate electrical equipment. The use of such devices is considered acceptable for the following reasons:

1. Frequency of operation – If a disconnect switch needs to be operated frequently, it may be motorized, interlocked, and controlled remotely from the Operations Center. Pole-mounted disconnects that would rarely be operated can be satisfactorily operated manually by procedure. The disconnect switches provided on the PGL will be used for failure management to allow trains to continue to operate on one track if the other track is blocked and requires de-energization to deal with an emergency or with failure of the OCS, both infrequent events. Therefore, manual operation is sufficient.

2. Accessibility – The disconnect switches on the PGL are entirely within the railroad right-of-way, away from grade crossings and therefore inaccessible to public. Operating handles at ground level are actually undesirable from a security and safety standpoint because an intruder could break the lock and operate the disconnect switch, whereas it would be highly unlikely that he/she would possess the hot-stick necessary to operate a hook-operated switch.

3. Procedurally, the "hook operated" disconnect provides the same level of safety protection as a padlocked manual disconnect. In order to operate "hook operated" type disconnect switches, all MTA qualified electrical Wayside Systems employees would have to:

    a) When Opening Switch
        i) Upon arriving at the location of the manually operated switch (MOS), ascertain condition of MOS either open or closed.
        ii) Utilizing appropriate voltage tester, verify that there is no voltage on either side of the switch. If there is presence of voltage, determine the source and isolate from the switch. Re-verify that voltage is removed.

iii) Utilizing appropriate tool to remove power. Appropriate tool means, tested and certified hot stick or original equipment manufacturer provided handle.
iv) Notify Rail Operations Control on status of MOS.
v) Place log entry at source(s) of power of switch status i.e., substation log book, shop log.

b) Closing Switch
i) Go to location(s) where power feed generated and review log entry to determine status of switch. Remove and isolate power feed to the switch.
ii) Upon arrival at the switch location, verify de-energized status utilizing appropriate voltage tester on each side of the switch.
iii) Once verified, close switch utilizing the proper tool to actuate switch.
iv) Return to source of power and re-energize if warranted.
v) Notify Rail Control on the status of the MOS.
vi) Place log entry at source(s) of power of switch status i.e., substation log book, shop log.

Operation of these disconnect switches by qualified personnel while under load is unlikely considering MTA's safety rules and procedures. In case of inadvertent opening under load, the arcing that could occur would result in the damage to the switch but it is unlikely to cause injury to the operator.

4. Hook-operated disconnect switches are safer to operate than a disconnect switches fitted with an operating handle at the ground level. If the operating procedure at (3) above is violated and the switch is operated under load, then the operator is standing some distance away from the switch when using a hot stick, as opposed to directly under the switch when using an operating handle.

The MTA Operation Safety personnel and PBLCA agree that the disconnect switches proposed in the variance request on the PGL right-of-way and the Midway Yard do not impair safety.

NOTICE

PBLCA states that a copy of the variance request letter was mailed and distributed to the potentially affected parties. A notice of the variance request was also published in the Commission Daily Calendar on December 30, 2003.

PROTEST

No protest of the variance request has been filed with the Commission.

DISCUSSION

The Safety and Reliability Branch (SRB) evaluated this variance request from the vantage point of its impact on the safety of MTA employees and the public. Staff met with MTA safety representatives to inspect the disconnect switches and discuss the safety of the switches at Southwest Museum Station. Factors influencing the SRB's evaluation included the frequency of operation of these disconnect switches; location of these switches away from general public and installed on catenary poles at minimum 19 feet high; and the MTA Wayside Systems Standard Operating Procedure for Manually Operated Disconnect Switches makes sure that untrained employees will not handle the operation of these switches. The SRB believes that the additional risk to public and MTA maintenance or emergency crews posed by granting of this variance is acceptable.

COMMENTS

This is an uncontested matter in which the decision grants the requested relief. Therefore, pursuant to Public Utilities Code § 311(g)(2), the otherwise applicable 30-day period for public review and comment is being waived.

FINDINGS

1. By letter dated December 17, 2003, PBLCA requested authority, on behalf of MTA, to deviate from the requirements of GO 143-B Section 10.07, Disconnect Switches.

2. PBLCA identified manually operated disconnect switches at Union, Baker, Southwest Museum, Indiana, Delmar, Allen, Sierra Madre, and Midway Yard interlockings.
3. General Order 143-B, Section 10.07 requires disconnect switches to be locked or interlocked to prevent opening or closing under energized condition.
4. The disconnect switches are located away from general public and installed on top of catenary poles at minimum 19 feet high.
5. MTA, the PGL operator, has confirmed that it agrees the disconnect switches located on top of catenary poles are safe.
6. PBLCA, MTA, and staff are in agreement that the manually operated disconnect switches, located on top of catenary poles, will not significantly impact public safety.

THEREFORE, IT IS ORDERED THAT:

1. PBLCA's request, on behalf of MTA, for authority to deviate from the requirements of GO 143-B, Section 10.07, Disconnect Switches, for the Pasadena Gold Line and the Midway yard is granted.
2. This resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted by the Commission at its regularly scheduled meeting on March 16, 2004. The following Commissioners voted favorably thereon:

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William Ahern
Executive Director

MICHAEL R. PEEVEY
President
CARL W. WOOD
LORETTA M. LYNCH
GEOFFREY F. BROWN
SUSAN P. KENNEDY
Commissioners