

Recommendation of Electrical Safety Committee – November 2006

Working on Ungrounded Systems

Summary

The Committee recommends that the following requirements be incorporated into the BNL Electrical Standards located in SBMS.

Ground detection systems should be installed on all delta-delta ungrounded systems to indicate potential problem with one leg of the three phase system having an intermittent or solid ground. Installation of these systems then requires that when they indicate a ground condition that the condition be detected, appropriate personnel advised, investigation as the location be investigated and changes in operations and PPE be considered until such time the situation is rectified. Specifically the BNL program should require the following:

That responsible groups have written procedure documenting their requirements for :

- Detection of the ground condition by either automatic remote monitoring or periodic inspection rounds
- That specific response to the detection of a ground be contained in the procedure covering:
 - The specific individuals who should be notified
 - The Line of Authority for determining any actions
 - Description of any Limiting Condition of Operations that might need to be imposed
 - Notification process for impacted employees
 - Expectations for scheduling inspection and repairs

Discussion

The Committee feels that working on ungrounded systems does not pose any unusual hazard to workers. Qualitatively, the Committee feels that grounds on a leg of an ungrounded system may increase the probability of failure of components, including cables and electrical equipment, due to higher voltages that may occur. However, there is no reason to believe that the consequence of this type of failure is any greater than the normal hazard workers are exposed to and protected by under NFPA 70E and the specified PPE.

It is important that the off-normal state of having a ground on the system be identified and that specifically described methods for dealing with them in a timely manner be established and documented as the probability of a failure might increase.

What is not clear in the standards and requires further investigation is a ground fault in terms of proper relay settings. For this effort the LESC has established a task team to report its findings and recommendations to the full committee. This task has been assigned to a LESC task team of Jim Durnan, Tom Nehring, Jon Sanberg, and Swapna Mukherji of Plant Engineering (SME not an LESC member). The team will report to the full committee by 2/28/07.