



Laboratory Safety Committee

Electrical Safety Subcommittee

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Battery Replacement and Maintenance Activities Not Subject to Division/Section Head or Directorate Approval

It is noted that some recent instances of automotive style battery replacement and/or maintenance activities have been performed with an attendant Electrical Hazard Analysis / Work Permit (EHAWP) when hazardous levels of energy were involved. The Permits properly classified the activities as Manipulative Energized Work in that energized circuit connections were being made or broken, a rather unavoidable consequence of working with batteries. With such a classification, the Permits required Division/Section Head and Directorate signature approvals. This level of required Permit approval strikes the Subcommittee as excessive for an often relatively low hazard activity.

The discharging of such generally high capacity batteries is often not practical or feasible. Actually, the discharging of these batteries is not a recommended practice and can lead to unexpected consequences, as evidenced by the event at CDF (Occurrence Report SC-FSO-FNAL-FERMILAB-2006-0006). While the individual short circuit current of a high capacity battery can instantaneously range up to several thousands of amperes, the shock and arc-flash hazards are not at all comparable or as sustained to those found in the AC Electrical Power Distribution System.

The Subcommittee, in drafting policies relating to Manipulative Energized Work, did not intend the stringent justification for such work or the high level of Permit approval to apply to battery replacement and maintenance activities. Article 320 of NFPA 70E outlines safety requirements related to batteries and battery rooms. Working with batteries can expose a worker to both shock and arc-flash hazards. Additionally the worker might be exposed to chemical or flammable gas hazards. The EHAWP can be an effective tool in mitigating and protecting the worker from such associated hazards.

After due consideration, the Electrical Safety Subcommittee has determined that battery replacement and maintenance activities that may be properly categorized as Manipulative Energized Work and any directly associated Electrical Hazard Analysis / Work Permit form or forms are not subject to Division/Section Head or Directorate approval. The Subcommittee has also determined that a written EHAWP must be generated for selected work activities involving batteries or battery installations that are uniquely hazardous or are otherwise required by the Division/Section Electrical Coordinator or other competent authority. Batteries or battery installations with a stored capacity exceeding 2.5 kWh or a connected terminal floating voltage that exceeds 50 volts are to be considered as uniquely hazardous.