



**FESHCom**  
**Electrical Safety Subcommittee**

ESS Determination D2015-01 14-Jan-2015

**Use of Non-NEMA standard 5-wire plugs and receptacles**

Two types of 5-wire plug and receptacle configurations has been used in multiple facilities at the Laboratory for 208 volt, 3 phase circuits. For identification, one type of these plugs, connectors, and receptacles are available from Hubbell as catalog numbers HBL3521C, HBL3523C, and HBL3520, respectively. The other type, known by the trade name "Variload," has Hubbell catalog numbers HBL45[]15, HBL45[]35, and HBL 45[]05, where "[]" represents a code number of 1, 2, or 3 for special center pin cross sections. These wiring devices are no longer included in the National Electrical Manufacturers Association (NEMA) standard receptacle configurations and are listed "for replacement only" in the manufacturer's literature. The Electrical Safety Subcommittee (ESS) has determined that Laboratory should transition from the use of this wiring device configuration to ones that are presently included in the NEMA standard and correct for the voltage phasing, and ampacity of the circuits and loads to which they are connected.

It is infeasible to perform this transition all at once, both from laboratory operations and fiscal impact perspectives. Rather, only wiring devices included in the present NEMA standard shall be permitted to be installed in facility wiring or on laboratory equipment.

To this end, new facilities shall be constructed with only the receptacles that are presently included in the NEMA standard. Similarly, new utilization equipment shall be supplied only with the plugs that are presently included in the NEMA standard. Existing receptacles that are relocated or replaced, and utilization equipment plugs that are replaced, shall be replaced with the correct NEMA standard wiring device as well.

To ease the transition between receptacle types, "pigtail" adapter cords shall be permitted. These pigtails shall be constructed with a single plug at one end and a single receptacle at the other. The cord between the plug and receptacle shall be hard service or junior hard service type (Type letters beginning with SE, SJ or SO) with a rated current not less than that of the plug to which it is attached. The cord shall not be over 3 feet (1 meter) long.

There may be situations in which power at non-standard voltages, phasing, or frequencies is used and a non-interchangeable plug-receptacle connection as required by NEC Article 406.4(F) is desired. Such situations may make the use of non-NEMA standard devices desirable. Such exceptions shall be submitted to the ESS for review and approval on a case-by-case basis.