UNIT

6

DANGERS OF ELECTRICITY

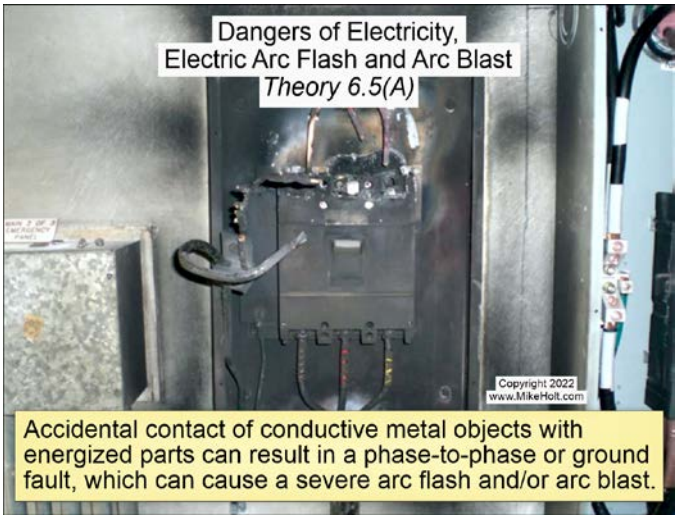
6.1 Introduction

People working in the electrical industry are responsible for ensuring that electrical installations are as safe as possible. In this unit you will learn:

- the purpose of the *National Electrical Code*
- how electrical fires are created
- what electric shock/electrocution are
- what arc flashes and arc blasts are

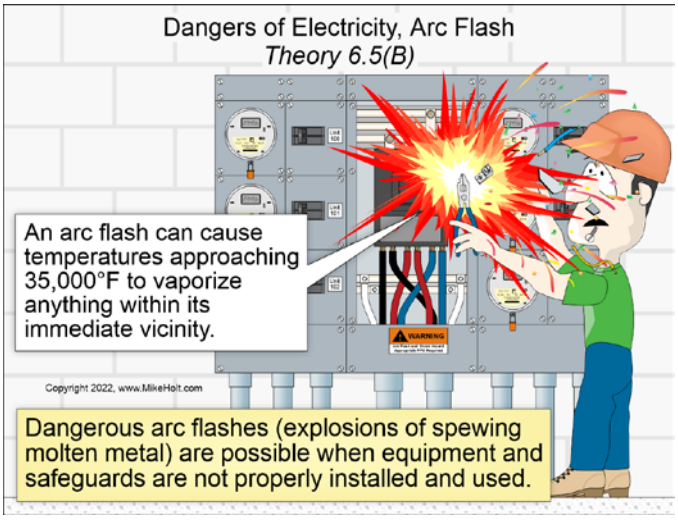
6.5 Electric Arc Flash and Arc Blast

(A) General. In addition to electric shock, accidental contact of conductive metal objects with energized parts can result in a phase-to-phase or ground fault. These faults can cause a severe arc flash and arc blast. ▸Figure 6–6



▸Figure 6–6

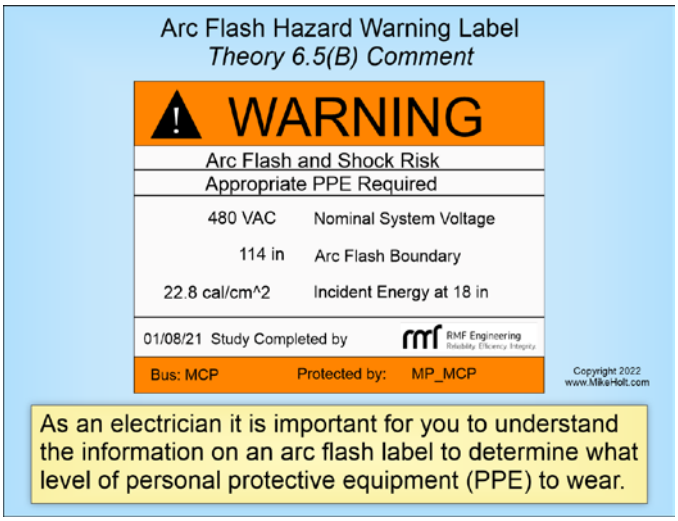
(B) Arc Flash. During an arcing fault, electrical energy is converted into various other forms of energy. Electrical energy can vaporize metal, which can change from a solid state to a vapor. When copper vaporizes, it expands in volume and creates a superheated plasma. Dangerous arc flashes (explosions of spewing molten metal) are possible when equipment and safeguards are not properly installed and used. An arc flash can cause temperatures approaching 35,000°F to vaporize anything within its immediate vicinity. ▸Figure 6–7



▸Figure 6–7

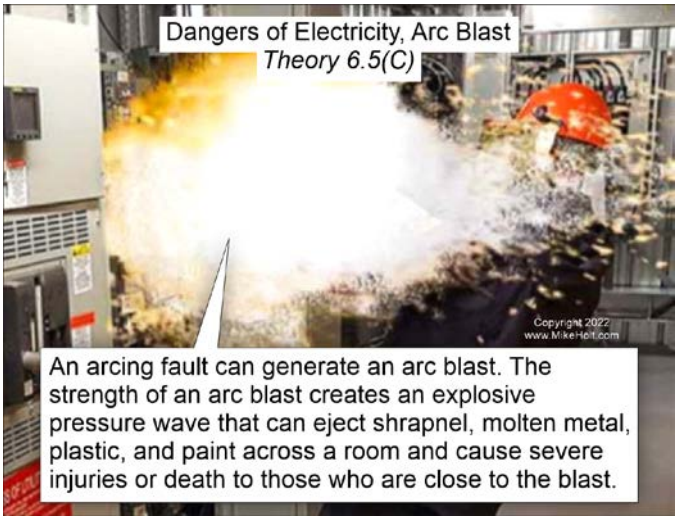
Author's Comment:

- As an electrician it, is important for you to understand the information on an arc flash label to determine what level of personal protective equipment (PPE) to wear. ▸Figure 6–8



▸Figure 6–8

(C) Arc Blast. In addition to an arc flash, an arcing fault can generate an arc blast. The strength of an arc blast creates an explosive pressure wave that can eject shrapnel, molten metal, plastic, and paint across a room. This arc blast can cause severe injuries or death to those who are close. There is no protection against an arc blast! ▸Figure 6–9



▸Figure 6–9