



OSAC RESEARCH NEEDS ASSESSMENT FORM

Title of research need:

Keyword(s):

Submitting subcommittee(s): **Date Approved:**

(If SAC review identifies additional subcommittees, add them to the box above.)

Background Information:

1. Description of research need:

Locating and interpreting electric arc damage on components of building electrical systems has been recognized as an origin determination tool for over twenty years. It has been included in NFPA 921 since 2001. The theory and technique of this method is based upon the wiring methods and components that were used in the past. As new techniques and components are used in building electrical systems, the creation of arc damage from a fire and the implications of that damage to origin determination need to be reevaluated. Ongoing research is needed to keep up with developments in electrical system technology such as new types of circuit protection. The proposal for research is to develop a coordinated research program to analyze the effects that electrical equipment such as ground-fault circuit interrupters (GFCI) and arc-fault circuit (AFCI) interrupters have on the process of arc-mapping.

2. Key bibliographic references relating to this research need:

Babrauskas, V. (2018). Arc Mapping: A Critical Review. *Fire Technology*, **54**, p.749-780

ATF Technical Bulletin 001 – Visual Characteristics of Fire Melting on Copper Conductors. ATF FRL.

3a. In what ways would the research results improve current laboratory capabilities?

This research will help laboratories to better determine which scenarios are most prevalent in modern construction and therefore what tests should be conducted.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

3c. In what ways would the research results improve services to the criminal justice system?

This research will help the fire investigation community to apply a more systematic approach to the results of fire pattern analysis.

4. Status assessment (I, II, III, or IV):

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.

Approvals:

Subcommittee

Approval date:

(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)

SAC

1. Does the SAC agree with the research need? Yes No

2. Does the SAC agree with the status assessment? Yes No

If no, what is the status assessment of the SAC:

Approval date:

(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)