

ELECTRICAL SAFETY

1.0 Objective

The objective of this surveillance is to verify that laboratory personnel are using safe work practices in completing electrical maintenance and modification work. Separate surveillances focus on the use of personal protective equipment and lockout/tagouts. Therefore, the activities included in this surveillance are directed toward other aspects of the electrical safety program.

2.0 References

- 2.1 *DOE Electrical Safety Guidelines, May 1993*
- 2.2 29 CFR 1910
- 2.3 National Electric Code NFPA-70
- 2.4 National Electric Safety Code ANSI C2

3.0 Surveillance Activities

The following activities are performed to evaluate the effectiveness of the laboratory's electrical safety program:

- Activity 1 - Review a maintenance or modification package involving electrical work.
- Activity 2 - Observe completion of maintenance activities on electrical systems as described in the work package that was reviewed.

**Surveillance Guideline
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Surveillance No.: _____

Facility: _____

Date Completed: _____

	<u>YES</u>	<u>NO</u>	<u>N/A</u>
Activity 1 - Review of Work Package			
1. Has the work package been reviewed by a safety specialist?	_____	_____	_____
2. Does the work package include adequate provision for de-energizing circuits and provisions for a lockout/tagout or is there a clear explanation of why circuits cannot be de-energized?	_____	_____	_____
3. If work will be performed in the energized condition, has it been demonstrated that de-energization is infeasible because of equipment design or operational limitations?	_____	_____	_____
4. Does the work package specify required personal protective equipment?	_____	_____	_____
5. Does the work package include sufficiently detailed procedures so that skilled craftsmen can perform the work?	_____	_____	_____
6. Do work procedures address the following:			
• Testing to ensure circuits are de-energized before beginning work?	_____	_____	_____
• Grounding conductors and all possible conducting parts?	_____	_____	_____
• Testing of equipment to ensure safe conditions?	_____	_____	_____
• Use of rubber-insulated protective equipment rated for the highest voltage present?	_____	_____	_____
• Hold points?	_____	_____	_____

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
<ul style="list-style-type: none"> • Qualified and properly equipped standby personnel? • Testing of equipment before the equipment is returned to service? 	_____	_____	_____
7. Is the work package approved by the supervisor responsible for the work?	_____	_____	_____
Activity 2 - Observe Completion of Maintenance			
8. Are workers wearing appropriate personal protective equipment including safety glasses, protective head gear, safety shoes, all cotton clothing, and electrical protective gloves as appropriate?	_____	_____	_____
9. Do personnel remove any conducting articles of clothing including watches, jewelry and metallic frame glasses before performing any work on energized circuits or equipment?	_____	_____	_____
10. Do workers verify that circuits or equipment is de-energized before performing any work?	_____	_____	_____
11. Do workers use a device that has been determined to be capable of detecting the absence of electrical energy in verifying that circuits or equipment are de-energized?	_____	_____	_____
12. Is a mechanism other than control circuit devices such as push buttons, selector switches and interlocks used to ensure that circuits or equipment remain de-energized during maintenance or modification?	_____	_____	_____
13. Do personnel ensure that stored electrical energy in capacitors or high capacitance elements is released through short circuit or grounding before beginning work?	_____	_____	_____
14. Is work performed in accordance with the procedures included in the work package?	_____	_____	_____

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YES NO N/A

- | | | | | |
|-----|--|-------|-------|-------|
| 15. | Are personal protective grounds applied on circuits 600V and above and on lower voltage systems and components when residual charges may accumulate? | _____ | _____ | _____ |
| 16. | For workers performing tasks on energized electrical circuits or equipment, do training records substantiate that the worker is a Qualified Worker? (As defined in 29 CFR 1910.332, Table S-4) | _____ | _____ | _____ |
| 17. | Are adequate barricades installed to prevent or limit employee access to work areas that may contain uninsulated or exposed energized conductors or circuit parts? | _____ | _____ | _____ |
| 18. | Is the supervisor present during the work or does he or she routinely visit the work area? | _____ | _____ | _____ |
| 19. | Does the supervisor enforce safe electrical work practices? | _____ | _____ | _____ |
| 20. | Are illumination levels adequate to perform the work? | _____ | _____ | _____ |

OTHER:

	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

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NOTES/COMMENTS:

PERSONNEL CONTACTED: _____

**IF MORE SPACE IS NEEDED FOR FINDINGS, OBSERVATIONS, AND FOLLOWUP
ITEMS - USE ADDITIONAL SHEETS**

FINDINGS:

Finding No.: _____

Description: _____

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Finding No.: _____

Description: _____

Finding No.: _____

Description: _____

OBSERVATIONS:

Observation No.: _____

Description: _____

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Observation No.: _____

Description: _____

Observation No.: _____

Description: _____

FOLLOWUP ITEMS:

Followup Item No.: _____

Description: _____

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Followup Item No.: _____

Description: _____

Followup Item No.: _____

Description: _____

LABORATORY MANAGEMENT DEBRIEFED AND RESULTS: _____

Signature: _____ Date: _____

Facility Representative or
Environmental, Safety, and Health Support Specialist