



**United States Department of Energy  
National Nuclear Security Administration  
Nuclear Criticality Safety Program**

**Integral Experiment Request 206  
CED-3a Summary Report**

**Critical and Subcritical Experiment Design Team (C<sub>E</sub>dT)**

**Gary A. Harms (SNL), C<sub>E</sub>dT Lead, Experiment, and Publication Member  
A. C. (Skip) Kahler (LANL), C<sub>E</sub>dT NDAG Member  
Thomas M. Miller (ORNL), C<sub>E</sub>dT Methods Member  
David P. Heinrichs (LLNL), C<sub>E</sub>dT Member**

April 5, 2016

SAND2016-XXXX

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Mostly Blank Page

## **Integral Experiment Request 206 CED-3a Summary Report**

### **Critical and Subcritical Experiment Design Team (C<sub>Ed</sub>T)**

**Gary A. Harms (SNL), C<sub>Ed</sub>T Lead, Experiment, and Publication Member**

**A. C. (Skip) Kahler (LANL), C<sub>Ed</sub>T NDAG Member**

**Thomas M. Miller (ORNL), C<sub>Ed</sub>T Methods Member**

**David P. Heinrichs (LLNL), C<sub>Ed</sub>T Member**

**April 5, 2016**

During CED-3a, the following information is required, as specified in the April 1, 2016 revision 1 of the C<sub>Ed</sub>T process manual:

- A detailed cost estimate,
- A resource loaded (baseline) schedule for execution of the experiment, data analysis, and publication,

Under IER-206, the hardware for the Burnup Credit Critical Experiment will be removed from storage and placed in operation. This is the hardware we used in 2002 to perform the experiments that eventually documented in the International Handbook of Evaluated Criticality Safety Benchmark Experiments [1] as LEU-COMP-THERM-079.

Appendix I is a Gantt chart for the CED-3b, CED-4a, and CED-4b phases of the project. It includes both the resource-loaded schedule as well as the detailed cost estimate for the phases addressed. The overall costs of the three phases are summarized in the table below.

<b>CED Phase</b>	<b>Total Cost</b>	<b>Labor</b>	<b>Procurements</b>	<b>Travel</b>
3b	\$213,682	\$213,682	\$0	\$0
4a	\$113,038	\$113,038	\$0	\$0
4b	\$97,474	\$89,474	\$0	\$8,000

## References

1. International Handbook of Evaluated Criticality Safety Benchmark Experiments, NEA/NSC/DOC(95)3, December, 2015.

## **Appendix I**

### **Gantt Chart for Phases CED-3b through CED-4b for Integral Experiment Request 206**

Mostly Blank Page

ID	Task Name	Duration	Start	Finish	Q3 '16			Q4 '16			Q1 '17			Q2 '17			Q3 '17			Q4 '17		
					Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	Start	0 days	Mon 5/2/16	Mon 5/2/16	◆ 5/2																	
2	Perform and Document IER-206 Experiments	330 days	Mon 5/2/16	Fri 8/4/17	▶																	
3	Perform Experiments	115 days	Mon 5/2/16	Fri 10/7/16	▶																	
4	Execute CED-3b	115 days	Mon 5/2/16	Fri 10/7/16	▶																	
5	Prepare for Experiments	45 days	Mon 5/2/16	Fri 7/1/16	▶																	
6	Measure Fuel Rod OD	15 days	Mon 5/2/16	Fri 5/20/16	▶																	
9	Reformat Facility Procedures	25 days	Mon 5/2/16	Fri 6/3/16	▶																	
12	Perform Readiness Activity	20 days	Mon 6/6/16	Fri 7/1/16	▶																	
14	Perform Critical Experiments	70 days	Mon 7/4/16	Fri 10/7/16	▶																	
15	Perform First Critical	10 days	Mon 7/4/16	Fri 7/15/16	▶																	
18	Perform Second Critical	5 days	Mon 7/18/16	Fri 7/22/16	▶																	
21	Perform Third Critical	5 days	Mon 7/25/16	Fri 7/29/16	▶																	
24	Perform Criticals 4-10	35 days	Mon 8/1/16	Fri 9/16/16	▶																	
46	Gather Reproducibility Data	15 days	Mon 9/19/16	Fri 10/7/16	▶																	
49	Experimentation Complete	0 days	Fri 10/7/16	Fri 10/7/16	◆ 10/7																	
51	Prepare and Review CED-3b Report	15 days	Mon 9/19/16	Fri 10/7/16	▶																	
54	CED-3b Complete	0 days	Fri 10/7/16	Fri 10/7/16	◆ 10/7																	
56	Document Experiments	215 days	Mon 10/10/16	Fri 8/4/17	▶																	
57	Execute CED-4a	100 days	Mon 10/10/16	Fri 2/24/17	▶																	
58	Prepare Benchmark Evaluation	70 days	Mon 10/10/16	Fri 1/13/17	▶																	
62	Perform Internal Review of Evaluation	15 days	Mon 1/16/17	Fri 2/3/17	▶																	
65	CEDT Review Evaluation	30 days	Mon 1/16/17	Fri 2/24/17	▶																	
70	CED-4a Complete	0 days	Fri 2/24/17	Fri 2/24/17	◆ 2/24																	
72	Submit Evaluation to ICSBEP	0 days	Fri 2/24/17	Fri 2/24/17	◆ 2/24																	
74	Execute CED-4b	115 days	Mon 2/27/17	Fri 8/4/17	▶																	
75	Prepare for ICSBEP Review Meeting	35 days	Mon 2/27/17	Fri 4/14/17	▶																	
78	Attend ICSBEP Meeting	5 days	Mon 4/17/17	Fri 4/21/17	▶																	
81	Prepare Evaluation for Publication	60 days	Mon 4/24/17	Fri 7/14/17	▶																	
83	Evaluation Ready for Publication	0 days	Fri 7/14/17	Fri 7/14/17	◆ 7/14																	
85	Prepare and Review CED-4b Documentation	15 days	Mon 7/17/17	Fri 8/4/17	▶																	
88	CED-4b Complete	0 days	Fri 8/4/17	Fri 8/4/17	◆ 8/4																	

Project: IER-206 Plan  
Date: Wed 5/4/16

Task

Split

Milestone

Summary

Project Summary

External Tasks

◆

External Milestone

Inactive Task

Inactive Milestone

Inactive Summary

◆

Manual Task

Duration-only

◆

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

Deadline

Progress

↓

Page 1