



## Department of Energy

Washington, DC 20585

April 19, 2016

The Honorable Joyce Connery  
Chairman  
Defense Nuclear Facilities Safety Board  
625 Indiana Avenue NW, Suite 700  
Washington, D.C. 20004

Dear Madam Chair:

Consistent with your letter, dated February 26, 2016, attached please find the fiscal year 2015 annual metrics table on the nuclear criticality safety criteria. This is the first annual report under the new reporting criteria established in your letter.

If you have any specific questions regarding the report, please contact Kevin Hahn, National Nuclear Security Administration (NNSA), who has overall responsibility for the consolidated report at 505-845-4106. Jerry McKamy, NNSA, (301) 903-7980, is responsible for the NNSA information; Robert Wilson, Environmental Management (EM), (303) 236-3666, is responsible for the EM information; and Andrew DeLaPaz, Office of Science (SC), (301) 903-8225, is responsible for the SC information.

Sincerely,

James McConnell  
Associate Administrator  
for Safety, Infrastructure and Operations

Matthew B. Moury  
Associate Under Secretary for  
Environment, Health, Safety and Security

C. A. Murray  
Director, Office of Science

James A. Hutton  
Deputy Assistant Secretary for  
Safety, Security, and Quality Programs  
Environmental Management

cc:

Kevin Hahn, NNSA  
Jerry McKamy, NNSA  
Robert Wilson, EM  
Joseph A. McBrearty, SC  
Joe Olencz, AU-1.1

DNF SAFETY BOARD

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**2015**  
**ANNUAL METRICS**  
**REPORT**

**To**  
**THE DEFENSE NUCLEAR**  
**FACILITIES SAFETY BOARD**

**April 14, 2016**

**NUCLEAR CRITICALITY**  
**SAFETY PROGRAMS**



National Nuclear Security Administration  
United States Department of Energy  
United States Department of Energy  
Washington, DC 20585

## Purpose

A Defense Nuclear Facilities Safety Board (DNFSB) letter dated February 26, 2016, requested that the Department of Energy (DOE) provide an annual metrics table on the nuclear criticality safety criteria listed below in its Annual Report on Nuclear Criticality Safety (NCS) Programs. The Board's letter modified the annual reporting requirement established for closure of DNFSB Recommendation 97-2, *Continuation of Criticality Safety at Defense Nuclear Facilities in the Department of Energy*, which requires the Department of Energy to provide a report and briefing on the requested subject areas for its various nuclear criticality safety programs.

The points-of-contact for this report are Kevin Hahn, NNSA, 505-845-4106, Jerry McKamy, NNSA, 301-903-7980, Dr. Robert Wilson, EM, 303-236-3666, and Andrew DeLaPaz, SC, 301-903-8225.

The requested metrics include:

- The number of criticality safety infractions in each severity level, per site specific criteria;
- The number of identified non-compliances with DOE Order 420.1, *Facility Safety*, and the American National Standards Institute/American Nuclear Society-8 series of criticality safety standards. Include the number of contractor-identified non-compliances and the number identified by external parties;
- The number of contractor and federal criticality safety assessments completed including the total number of findings and opportunities for improvement from these assessments;
- Current contractor and federal criticality safety staffing levels, including the average years of experience in criticality safety, number of qualified staff, number in training, number of staff lost, number of staff hired in the previous year;
- DOE's overall evaluation of the contractors' performance in the functional area of criticality safety, consistent with DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*.

The following tables represent the requested data for DOE sites for the fiscal year 2015.



Annual report on DOE Nuclear Criticality Safety Programs

Table 1. Criticality Safety Infractions and Program Non-Compliances

Site/Major Project	Overall Grade <sup>1</sup>	Criticality Safety Infractions <sup>2</sup>					Program Non-Compliances <sup>3</sup>	
		Level 1	Level 2	Level 3	Level 4	Level 5	Contractor-identified	Externally identified
Livermore	Green	0	0	0	0	0	0	0
Nevada	Green	0	0	0	1	2	0	0
Los Alamos	Yellow	0	0	0	5	20	16	5
Sandia	Green	0	0	0	1	0	0	0
Pantex	Yellow	0	0	0	0	0	0	0
Y-12		0	0	0	0	70*	0	7
Uranium Processing Facility	Yellow	N/A	N/A	N/A	N/A	N/A	0	0
<b>PNNL (Office of Science)</b>								
PNNL (Office of Science)	Green	0	0	0	0	0	0	1
<b>Richland</b>								
Richland CHPRC	Green	0	0	0	0	0	0	0
Richland WCH	Green	0	0	0	0	0	0	0
River Protection WTP	Yellow	N/A	N/A	N/A	N/A	N/A	N/A	N/A
River Protection Tank Farms	Yellow	0	0	0	0	0	0	0
PPPO Paducah-LATAKY	Green	0	0	0	0	0	0	0
PPPO Paducah-FPDP	Yellow	0	0	2	2	N/A	N/A	N/A
PPPO Portsmouth-Fluor/B&W	Green	0	0	0	6	0	0	0
PPPO BWCS	Green	0	0	0	0	0	0	2
Idaho CH2M WG	Green	0	0	0	0	0	0	0
Idaho BWXT/AMWTP	Green	0	0	0	3	4	0	0
Oak Ridge UCOR	Green	0	0	0	8	4	0	0
Oak Ridge Isotek	Green	0	0	0	0	2	0	0
Oak Ridge TWPC	Green	0	0	0	0	0	0	0
Savannah River SRNS	Yellow	0	0	0	2	3	0	2
Savannah River Parsons	Green	0	0	0	0	0	N/A	N/A
Savannah River SRR	Green	0	0	0	0	0	0	0

Footnotes:

- 1 

Green	Meets or exceeds expectations
Yellow	Adequate but needs improvement
Red	Does not meet expectations
- 2 Levels 1 through 5 consistent with site specific criteria
- 3 "N/A" for program non-compliances indicates no assessments were performed during FY15
- \* 44 Minor Non-compliances, 18 Deficiencies, 8 Occurrences

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Table 2. Contractor and Federal Assessments

Site/Major Project	Contractor Assessments			Federal Assessments		
	Total Assessments <sup>1</sup>	Total Findings <sup>2</sup>	Total OFIs <sup>3</sup>	Total Assessments <sup>1</sup>	Total Findings <sup>2</sup>	Total OFIs <sup>3</sup>
Livermore	3	0	9	5	1	4
Nevada	2	1	4	2	3	4
Los Alamos	4	16	24	3	5	0
Sandia	7	0	8	4	0	4
Pantex	3	1	4	1	0	0
Y-12	5	7	0	7	2	0
Uranium Processing Facility	5	1	4	1	0	1
<b>PNNL (Office of Science)</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>
Richland CHPRC	3	1	8	2	0	4
Richland WCH	3	1	0			
River Protection WTP	0	0	0	0	0	0
River Protection Tank Farms	1	1	0	0	0	0
PPPO Paducah-LATAKY	1	0	0	0	0	0
PPPO Paducah-FPDP	0	0	0	0	0	0
PPPO Portsmouth-Fluor/B&W	4	0	0	0	0	0
PPPO BWCS	0	0	0	1	2	0
Idaho CH2M WG	28	0	19	4	0	0
Idaho BWXT/AMWTP	13	0	0	4	0	0
Oak Ridge UCOR	21	0	0	1	0	0
Oak Ridge Isotek	2	1	3	1	0	0
Oak Ridge TWPC	1	0	2	1	0	0
Savannah River SRNS	30	16	52	22	4	36
Savannah River Parsons	0	0	0	0	0	0
Savannah River SRR	0	0	0	5	0	0

Footnotes:

1. Total assessments focused on criticality safety including:  
For Contractors: management self-assessments, criticality safety committee reviews, operational readiness assessments, and biennial/triennial external reviews  
 \*does not include regularly scheduled operational reviews  
  
For Federal: DOE headquarters, site office, field office, and Office of Enterprise assessments; CSSG reviews, federal readiness assessments, and "For-cause" assessments  
 \*does not include day-to-day oversight conducted by facility representatives
2. Findings: Total number of assessment observations that generate a corrective action plan
3. OFIs (opportunities for improvement): Total number of all other assessment observations that were not findings

Annual report on DOE Nuclear Criticality Safety Programs

Table 3. Contractor Staffing

Site/Major Project	Contractor Staffing					
	Qualified <sup>1</sup>	Target <sup>2</sup>	Training	Staff Lost	Staff Hired	Experience <sup>3</sup>
Livermore	8	Yes	2	2	2	25
Nevada	2	Yes	1	1	0	10
Los Alamos	8	No	9	4	3	10
Sandia	6	Yes	3	1	0	15
Pantex	1	No	0	1	0	4
Y-12	20	No	8	4	7	20
Uranium Processing Facility	30	No	1	3	7	22
<b>PNNL (Office of Science)</b>	<b>4</b>	<b>Yes</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>15</b>
Richland CHPRC	4	Yes	0	0	1	19
Richland WCH	2	Yes	0	0	0	22
River Protection WTP	3	Yes	2	1	0	17
River Protection Tank Farms	4	Yes	0	0	0	15
PPPO Paducah-LATAKY	1	Yes	0	0	0	25
PPPO Paducah-FPDP	6	Yes	0	1	2	15
PPPO Portsmouth-Fluor/B&W	12	Yes	1	1	5	15
PPPO BWCS	2	Yes	0	0	0	20
Idaho CH2M WG	3	Yes	0	0	0	10
Idaho BWXT/AMWTP	3	Yes	1	0	0	18
Oak Ridge UCOR	5	Yes	0	0	0	23
Oak Ridge Isotek	5	Yes	0	0	0	20
Oak Ridge TWPC	4	Yes	0	0	0	27
Savannah River SRNS	20	No	6	0	2	21
Savannah River Parsons	2	Yes	0	0	0	10
Savannah River SRR	3	Yes	0	1	0	30

Footnotes:

- 1 Qualified to independently perform criticality safety work consistent with site specific criteria
- 2 Does the number of qualified staff meet the programmatic need?
- 3 Average years of experience for all qualified staff

Annual report on DOE Nuclear Criticality Safety Programs

Table 4. Federal Staffing

Site/Major Project	Federal Staffing					
	Qualified <sup>1</sup>	Target <sup>2</sup>	Training	Staff Lost	Staff Hired	Experience <sup>3</sup>
Livermore	1	Yes	0	0	0	16
Nevada	1	Yes	1	0	0	6
Los Alamos	1	Yes	0	0	0	10
Sandia	1	Yes	0	0	0	10
Pantex	2	Yes	0	0	0	8.8
Y-12	2	Yes	0	0	0	8.8
Uranium Processing Facility	2	Yes	0	0	0	8.8
<b>PNNL (Office of Science)</b>	<b>1</b>	<b>Yes</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>
Richland CHPRC	1	Yes	1	1	1	3
Richland WCH						
River Protection WTP	5	Yes	5	0	1	7
River Protection Tank Farms						
PPPO Paducah-LATAKY	4	Yes	0	0	2	25
PPPO Paducah-FPDP						
PPPO Portsmouth-Fluor/B&W	3	Yes	0	0	0	17
PPPO BWCS	**	Yes	N/A	N/A	N/A	N/A
Idaho CH2M WG	3	Yes	0	2	0	7
Idaho BWXT/AMWTP						
Oak Ridge UCOR	2	Yes	0	0	0	21
Oak Ridge Isotek						
Oak Ridge TWPC						
Savannah River SRNS	4	Yes	0	0	0	15
Savannah River Parsons						
Savannah River SRR						

Footnotes:

- 1 Qualified to independently perform criticality safety work consistent with site specific criteria
- 2 Does the number of qualified staff meet the programmatic need?
- 3 Average years of experience for all qualified staff
- \*\* No additional federal staff; those dedicated to FPDP and Flour/B&W also support BWCS as needed.