



# **SUMMARY OF FITNESS FOR DUTY PROGRAM PERFORMANCE REPORTS FOR CALENDAR YEAR 2015**

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Office of Nuclear Security and Incident Response  
Division of Physical and Cyber Security Policy

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## SECTION 1 SUMMARY INFORMATION

### Section 1a. Purpose

The U.S. Nuclear Regulatory Commission (NRC) provides a summary of the annual fitness-for-duty (FFD) program performance data on drug and alcohol (D&A) testing performed by regulated entities subject to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 26, “Fitness for Duty Programs” (Part 26). Licensees and other entities provide the information summarized in this report under 10 CFR 26.417(b)(2), 26.717, and 26.719.

This report presents information on calendar year 2015 D&A test results, associated site- and event-specific descriptions, and data presentations in both graphical and tabular formats. To continue to improve the characterization of substance-using individuals, this report includes new data on D&A test results for a particular type of work activity at operating power reactor sites, workers who support outages (e.g., refueling and maintenance). (Chart 20 and Chart 21)

### Section 1b. Background

The NRC published Part 26 in the Federal Register (FR) on June 7, 1989 (54 FR 24468) to “significantly increase assurance of public health and safety.” At that time, Part 26 applied to licensees authorized to construct or operate nuclear power reactors, and required each to establish an FFD program. On June 3, 1993, the NRC amended Part 26 (58 FR 31467) to expand rule applicability to licensees authorized to possess, use, or transport formula quantities of strategic special nuclear materials (SSNM).

The general objective of each FFD program is to provide reasonable assurance that individuals subject to Part 26 are reliable, trustworthy, and not under the influence of any substance (legal or illegal), or mentally or physically impaired from any cause that could affect their ability to safely and competently perform assigned duties. The 1989 final rule stated that an FFD program developed under Part 26 “is intended to create an environment which is free of drugs and the effects of such substances.” A central element of an FFD program is D&A testing personnel subject to the rule.

The March 31, 2008, amendments (73 FR 16996) marked the most substantial revision to Part 26 since its inception in 1989. In part, the 2008 final rule strengthened the D&A specimen collection and testing requirements (e.g., lowered the testing cutoff levels for a number of substances), established minimum sanctions for FFD policy violations (e.g., a permanent denial of authorization for a subversion attempt), and included a new subpart for power reactors under construction (“Subpart K–FFD Programs for Construction”).

**Disclaimer:**

*The information in this report is provided as a public service, is solely for informational purposes, and is not, nor should be deemed as, an official NRC position, opinion, guidance, or “a written interpretation by the General Counsel” under 10 CFR 26.7, “Interpretations,” on any matter to which the information may relate. The opinions, representations, positions, interpretations, best practices, or recommendations that may be expressed by the NRC technical staff in this document are solely their own and do not necessarily represent those of the NRC. Accordingly, the fact that the information was obtained through the NRC technical staff will not have a precedential effect in any legal or regulatory proceeding. Stakeholders should take care in reaching conclusions based on individual interpretations of the illustrated or tabulated data, because the report may not provide site- or event-specific information to help inform a conclusion.*

## Section 1c. Availability

Each FFD program performance report submitted by a licensee or other entity is available to the public in the NRC's Agencywide Documents Access and Management System (ADAMS) by going to the NRC Web site: <http://www.nrc.gov/reading-rm.html>.

NRC summary reports on annual FFD program performance from 1998 through 2015 can be viewed on the NRC Web site: <http://www.nrc.gov/reactors/operating/ops-experience/fitness-for-duty-programs/performance-reports.html>.

## Section 1d. Use

The information presented in this report serves to inform the public on the performance of FFD programs in detecting and deterring illegal<sup>1</sup> drug use and alcohol misuse at NRC-licensed facilities.

Licensees and other entities may use D&A testing information presented in this report to enhance FFD program performance to evaluate site-specific performance, incorporate process improvements and lessons learned, and take corrective actions, as appropriate. Any NRC staff suggestions contained in this report do not reflect NRC requirements and no specific action or written response is required.

The NRC uses this report to evaluate the effectiveness of Part 26, to monitor trends in substance use, and to inform NRC inspections.<sup>2</sup>

## Section 1e. Public Comment

The NRC welcomes public comment on this report. Please submit comments through the NRC Web site: <http://www.nrc.gov/reactors/operating/ops-experience/fitness-for-duty-programs/contact-us.html>, or by U.S. mail to the following address:

U.S. Nuclear Regulatory Commission  
ATTN: Brian Zaleski, NSIR/DPCP/FCTSB  
Mail Stop: 3WFN-8A12  
Washington, DC 20555-0001

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<sup>1</sup> Section 26.5 defines "illegal drug" as any drug that is included in Schedules I through V of section 202 of the Controlled Substances Act [21 U.S.C. 812], but not when used pursuant to a valid prescription or when used as otherwise authorized by law. Section 26.31(d) requires that, at a minimum, licensees and other entities test the urine specimen provided by each individual for marijuana metabolite (delta-9-tetrahydrocannabinol-9-carboxylic acid), cocaine metabolite (benzoylecgonine), opiates (codeine, morphine, 6-acetylmorphine), amphetamines (amphetamine, methamphetamine), and phencyclidine (PCP).

<sup>2</sup> NRC conducts Part 26 inspections under three Inspection Manual Chapters (IMCs):

- IMC 2201 - Security Inspection Program for Commercial Nuclear Power Reactors,
- IMC 2504 - Construction Inspection Program – Inspection of Construction and Operational Programs, and
- IMC 2681 - Physical Protection and Transport of SNM and Irradiated Fuel Inspection of Fuel Facilities.

Only IMC 2504 is publicly available (ADAMS Accession No. ML12298A106).

## Section 1f. Discussion

### 1. Reporting Entities (Licensees and Other Entities)

In 2015, 73 licensees and other entities<sup>3</sup> (also referred to in this report as “facilities” or “sites”) submitted annual FFD program performance reports to the NRC. These sites consisted of the following:

- 60 operating power reactor sites
- 2 power reactor construction sites (V.C. Summer Units 2 and 3, Vogtle Units 3 and 4)
- 3 formerly operating power reactor sites (Crystal River, Kewaunee, San Onofre)<sup>4</sup>
- 5 corporate FFD program offices (i.e., a utility with multiple operating power reactor sites administers the FFD program at a centralized location and reports testing data for these administrative FFD personnel separately from the operating sites)
- 2 fuel cycle facilities (Babcock & Wilcox, Nuclear Operations Group, Lynchburg; Nuclear Fuel Services, Inc., Erwin)<sup>5</sup>
- 1 contractor/vendor (C/V), Institute of Nuclear Power Operations (INPO)<sup>6</sup>

### 2. Reporting of FFD Program Performance Information

Prior to 2009, each licensee and other entity submitted one hard copy FFD program performance report per site every 6 months to meet 10 CFR 26.71(d). The 2008 Part 26 final rule relaxed the reporting frequency to once per year, and moved the FFD program performance reporting requirements to 10 CFR 26.417(b)(2) and 26.717.

At the same time that the NRC published the 2008 Part 26 final rule, it rolled out electronic reporting forms (e-forms)<sup>7</sup> that sites voluntarily could use to report FFD program performance information. The NRC staff developed these e-forms, in coordination with licensee and other entity representatives, to utilize technology to simplify and improve the uniformity and accuracy of FFD data collected, as well as to enable the voluntary collection of additional information.

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<sup>3</sup> Information on each licensee and other entity site referenced in this report can be obtained in the NRC Information Digest (NUREG 1350, Volume 27, August 2015), ADAMS Accession No. ML15254A321.

<sup>4</sup> These three power reactor sites permanently ceased operating as follows: Crystal River (02/20/2013), Kewaunee (05/07/2013), and San Onofre (06/12/2013). A fourth power reactor site, Vermont Yankee, permanently ceased operating on 12/29/2014, but did not submit an FFD program performance report for 2015. After 2014, Zion is not included in the list of formerly operating power reactor sites because it is no longer subject to Part 26 under a security order issued in response to the terrorist attacks on September 11, 2001.

<sup>5</sup> These facilities possess Category IA material. Section 26.5 defines “Category IA material,” in part, as SSNM that is directly usable in the manufacture of a nuclear explosive device.

<sup>6</sup> INPO is the only C/V that maintains an independent D&A testing program under Part 26. Subject personnel from all other C/Vs fall under the licensee or other entity’s D&A testing program at each site.

<sup>7</sup> E-forms can be obtained at the following NRC Web site: <http://www.nrc.gov/reactors/operating/ops-experience/fitness-for-duty-programs/submit-ffd-reports.html>. NRC periodically updates these forms to address user feedback, lessons learned, and to improve form functionality and data collection uniformity.

A site using the e-reporting system will submit the following each calendar year:

- *NRC Form 890 - Annual Reporting Form for Drug and Alcohol Tests (ARF)*. One ARF that includes high-level summary data comparable to that historically provided in hard copy paper reports.
- *NRC Form 891 - Single Positive Test Form (SPTF)*. One SPTF for each D&A testing violation (i.e., positive test for alcohol and/or drug(s), adulterated or substituted validity test result, or refusal to test).

Calendar Year 2015 marks the second year that all sites e-reported FFD D&A testing data. E-form use has enhanced regulatory effectiveness by providing the NRC staff with uniform data to conduct sophisticated analyses of FFD policy violations, to provide generic and site-specific performance information, and to provide additional year-over-year trending evaluation.

Medical Review Officers (MROs) confirmed all D&A test results summarized in this report by following the procedures specified in 10 CFR 26.185, "Determining a fitness-for-duty policy violation."

### **3. Executive Summary of 2015 Results**

Based on the NRC staff analysis of FFD performance data presented in this report and comparison of 2015 results to previous years, the FFD programs implemented under by licensees and other entities under Part 26 directly contributed to public health and safety and the common defense and security. Persons using illegal drugs, misusing alcohol, or both, were identified through testing (and through the behavioral observation program), as were persons attempting to subvert the drug testing process (i.e., cheating on a test). However, as with all previous years of D&A testing, the workplaces subject to Part 26 are not free from alcohol and illegal drugs and the effects of these substances.

Industry identification and communication of programmatic weaknesses, lessons learned, and corrective actions implemented demonstrate continued focus on FFD program improvement. These outcomes helped to provide reasonable assurance that persons who performed safety- or security-significant activities, or who had unescorted access to certain NRC-licensed facilities, information, or material, were fit for duty and trustworthy and reliable.

The NRC staff continues to monitor three multi-year FFD program performance trends:

- Subversion attempts have been prevalent and increasing over the past 5 years (18.6 to 24.4 percent of drug testing violations per year from 2011 through 2015, or 130 to 232 events per year), with 53.7 to 65.6 percent of sites each year reporting at least one subversion attempt (36 to 47 sites per year).
- Amphetamines positive results have been increasing over the past 7 years (from 3.8 percent of total D&A positives in 2008 to 9.9 percent of total D&A positives in 2015).
- Power reactor construction sites continue to report higher positive test rates than operating power reactor sites, primarily on pre-access and random testing. Power reactor construction sites also reported a higher incidence of subversion attempts than operating power reactor sites. These trends appeared beginning in 2012.

In February 2017, the NRC staff submitted a proposed rule to the Commission for consideration (ADAMS Accession No. ML16123A004). The proposed rule, in part, would address these three multi-year trends by lowering the testing cutoff levels for amphetamine and methamphetamine, and expanding testing measures to improve subversion attempt detection.

The remainder of this executive summary presents key insights on FFD program performance in 2015, with references to additional information in Section 2, “Detailed Data Analysis.”

### Summary of Drug and Alcohol Test Results, 2015

Test Category	Tested	Positive*	Percent Positive
Pre-Access	88,611	804	0.91%
Random	64,760	232	0.36%
For Cause	629	87	13.83%
Post-Event	1,016	17	1.67%
Follow-up	8,380	60	0.72%
<b>Total</b>	<b>163,396</b>	<b>1,200</b>	<b>0.73%</b>

\* The total number of individuals testing positive includes drug and alcohol test positives, adulterated and substituted validity test results, and refusals to test. This note applies to all tables and charts in this report, unless otherwise noted.

- **The total number of tests conducted (163,396) remained consistent with the prior year (166,590), only decreasing by approximately 2 percent.** The decrease primarily was due to fewer pre-access tests performed on C/Vs. (Table 8 and Table A-5)
- **The positive rate for all tests performed increased to 0.73 percent.** The positive rate was 0.68 percent in 2014, and was 0.62 percent in 2012 and 2013. While the positive rate has trended higher in 2014 and 2015, it is still low by historical standards. The highest positive rate was 1.03 percent in 1996 and the lowest positive rate was 0.59 percent in 2010. (Table 8 and Table A-2)
- **Pre-access testing continued to be the most effective method of identifying substance-using individuals, identifying 67.0 percent of individuals testing positive in 2015.** Pre-access testing is the first and most effective defense-in-depth testing measure, which markedly contributes to public health and safety by identifying individuals prior to granting authorization to access NRC-licensed facilities (e.g., operating and construction reactor sites). Under 10 CFR 26.75, “Sanctions,” a licensee or other entity must deny an individual’s authorization to NRC-licensed facilities for a minimum of 14-days for a first positive result, 5-years for a second positive result, and a permanent denial for a third positive result or subversion attempt. Many licensees and other entities implement longer denial periods, especially for first positive results (e.g., 1 year or longer). (Table 8)
- **Random testing continued to be the second most effective method of identifying substance-using individuals, identifying 19.3 percent of individuals testing positive in 2015.** Random testing is the second defense-in-depth testing measure that provides assurance that individuals not deterred from illegal drug use or alcohol misuse will be identified. The annual positive random testing rate has been at or above 0.30 percent for the past 5 years. Random testing identifies more licensee employees using substances than does pre-access testing. (Table 8)



- **For-cause testing had the highest positive testing rate in 2015 at 13.83 percent.** For-cause testing is the third defense-in-depth testing measure. For-cause testing positive rates from 2012 through 2014 were 11.88, 13.40, and 11.96 percent, respectively. (Table 8) This high positive rate is anticipated by the NRC staff because for-cause testing is conducted only when signs of impairment are observed by trained personnel (i.e., through the behavioral observation program), or credible information is received by the licensee or other entity about illegal drug use or alcohol misuse.
- **An individual's employment category (i.e., licensee employee, C/V) is highly predictive of substance use.** For all tests conducted in 2015, C/Vs tested positive at a rate of 0.95 percent as compared to 0.26 percent for licensee employees. Since testing began in 1990, the C/V positive rate for all tests conducted has ranged from 2.4 times (in 1990) to 4.5 times (in 2002) higher than that for licensee employees. This observation demonstrates two distinct substance-using populations (Table A-4), which is most notable in pre-access (Chart 7) and random (Chart 8) testing.
- **Subversion attempts (i.e., attempting to cheat on a test) continued to rise in 2015, accounting for 19.3 percent of D&A testing violations (232 of 1,200).** (Figure 1 and Table 13) Any individual identified as attempting to subvert a Part 26 test is permanently denied authorization to NRC-licensed facilities under 10 CFR 26.75(b). This sanction is the most stringent denial of authorization imposed on an individual under NRC regulations and was implemented in the 2008 Part 26 rule. In 2015:

  - Pre-access testing identified approximately 78 percent of subversion attempts (180 of 232). (Chart 18)
  - Attempts to subvert tests were prevalent amongst sites, with approximately 64 percent of sites reporting at least one subversion attempt (47 of 73 sites).
  - Approximately 96 percent of identified subversion attempts (222 of 232) were made by C/Vs. (Chart 18)
  - Approximately 96 percent of identified subversion attempts (222 of 232) were made by individuals in five labor categories associated with maintenance activities. (Chart 19)
  - A specimen was not tested in 63 percent of subversion attempts (146 of 232) because a specimen was not provided or the collection was stopped. (Figure 1) Due to the high number of subversions without specimen testing (i.e., 146 of 954 individuals with a drug testing violation), the charts and tables in this report on substance detection results and trends (e.g., Chart 6, Table 7) do not fully account for all substances used in the tested population.
  - Power reactor construction sites accounted for approximately 31 percent of subversion attempts (71 of 232). Similarly, power reactor construction sites accounted for 34 percent of subversion attempts (64 of 187) in 2014, 31 percent of attempts (46 of 148) in 2013, and 26 percent of attempts (46 of 177) in 2012.

- **Three substances (marijuana, alcohol, and cocaine) accounted for approximately 87 percent of positive test results in 2015.**

**Abuse Substances of Choice\***

<b>Substance</b>	<b>1990</b>	<b>2008**</b>	<b>2009**</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>Change (1990–2015)</b>
Marijuana	47.4%	55.1%	51.7%	51.0%	53.2%	51.1%	+ 3.7%
Alcohol	18.6%	19.3%	27.9%	25.3%	24.1%	22.3%	+ 3.8%
Cocaine	29.0%	20.0%	16.2%	13.2%	10.0%	13.8%	- 15.2%
Amphetamines	2.8%	3.81%	3.9%	8.9%	10.6%	9.9%	+ 7.0%
<b>Total</b>	<b>97.8%</b>	<b>98.2%</b>	<b>98.9%</b>	<b>98.4%</b>	<b>97.9%</b>	<b>97.1%</b>	

\* The percentage value for each substance is calculated by dividing the number of positive results for that substance by the total number of positive results for all substances. (Table A 3) The total number of positive results does not include refusal to test results (i.e., adulterated and substituted validity test results, and subversion attempts where no specimen was collected or tested).

\*\* The 2008 Part 26 final rule lowered the testing cutoff levels for marijuana and alcohol (licensees and other entities were required to implement the updated cutoff levels by March 2009).

- Marijuana has always been the most detected substance since testing under Part 26 began in 1990, and accounted for 51.1 percent of total positives in 2015. (Chart 6) Marijuana is the most identified substance in C/Vs (Chart 2) and the second most identified substance in licensee employees. (Chart 1) The 2008 Part 26 final rule implemented lower cutoff levels for marijuana testing.
- Alcohol has been the second most detected substance since 2009, and was the third most detected substance from 1990 through 2008. (Chart 6) Alcohol is the most identified substance in licensee employees. (Chart 1) The 2008 Part 26 final rule enhanced alcohol detection by implementing lower testing cutoff levels based on the time an individual was in work status. These lower cutoff levels accounted for 33 percent of alcohol positives in 2015. (Chart 4)
- Cocaine positives steadily declined from 2006 through 2014, with an increase in 2015. It was the second most detected substance from 1990 through 2008, and the third most detected substance from 2009 through 2013, and 2015. Prevalence of use has declined from 29.0 percent of substances detected in 1990 to 13.8 percent in 2015. (Chart 6)
- Amphetamines<sup>8</sup> accounted for 9.9 percent of total substances identified in 2015. Amphetamines positives have trended upward since 2009. (Chart 6) The staff notes similar increases in amphetamines positive rates in other Federal testing programs over the same time period.

<sup>8</sup> Part 26 requires initial drug testing for amphetamines and confirmatory drug testing for amphetamine and methamphetamine.

- **Two power reactor construction sites conducted 8.6 percent of the industry tests and accounted for 23.9 percent of the positive test results and refusals to test in 2015.** V.C. Summer (Units 2 and 3) and Vogtle (Units 3 and 4) performed 14,088 tests, with 243 individuals testing positive on D&A testing and 44 refused to test. Testing at these sites remained comparable to 2014 levels (14,539 tests, with 245 positive D&A tests and 50 refusals to test). In 2015, pre-access testing identified approximately 48 percent of testing violations (139 of 287), with random (90), for-cause (36), post-event (13) and follow-up (9) testing identifying the rest.
- **Approximately 95 percent of facilities (69 of 73) have implemented the optional policy to conduct limit of detection (LOD)<sup>9</sup> drug testing on dilute<sup>10</sup> urine specimens.** A donor may attempt to avoid detection of drug use by consuming a large quantity of fluid just prior to providing a urine specimen for testing, with the intention of reducing the concentration of any drug or drug metabolite in their specimen below detectable testing limits. Validity testing identifies if an individual has been consuming large quantities of fluid and will report the specimen as dilute. LOD testing enhances the ability to identify drugs in dilute specimens by using much lower testing cutoff levels for detected drugs. LOD testing identified three substance-using individuals in 2015, as compared to 10 individuals in 2014.
- **Approximately 14 percent of facilities (10 of 73) used more stringent drug testing cutoff levels than specified in Part 26.** This action is permitted under 10 CFR 26.31(d)(3)(iii). Four facilities, under one corporate FFD program, used lower cutoff levels to test for marijuana. Five facilities, under another corporate FFD program, used lower cutoff levels for all drugs in the NRC-testing panel when performing follow-up, for-cause, and post-event tests. One facility used lower cutoff levels for all drugs in the NRC-testing panel when performing return-to-work tests.
- **Approximately 12 percent of facilities (9 of 73) tested for additional substances (i.e., those not included in the NRC-minimum testing panel).** This action is permitted under 10 CFR 26.31(d). These facilities tested for one or more of the following 12 substances: barbiturates, benzodiazepines, buprenorphine, fentanyl, hydrocodone, hydromorphone, methadone, oxycodone, oxymorphone, propoxyphene, suboxone, and tramadol. In 2015, six individuals tested positive for a total of eight additional substance. (Table 7) Testing for additional substances varied by licensee and could be specific to an individual (as ordered by the MRO), applied to one or more test categories, or more broadly applied to all specimens collected for testing.
- **Twenty-four hour reportable events under 10 CFR 26.719(b) – 34 reports received in 2015.** Licensees and other entities report to the NRC within 24 hours of a significant violation of FFD policy involving personnel in designated positions (e.g., supervisors, NRC-licensed reactor operators), as well as when a programmatic failure or vulnerability is discovered. The number of reports decreased by 24 percent from the 45 reports received in 2014. (Table A-1)

<sup>9</sup> The “limit of detection” is the lowest concentration of a drug or drug metabolite that a laboratory’s testing procedure can reliably detect in a donor’s specimen and is dependent on specimen preparation, test equipment, procedures, and technician expertise.

<sup>10</sup> A “dilute” validity test result is a laboratory determination per 10 CFR 26.161(e) that the creatinine and specific gravity concentrations in a donor’s specimen are lower than expected in human urine. Creatinine is a substance that is created in human beings as a result of muscle metabolism and is excreted in urine.

- The NRC received 24 event reports on individuals in designated positions: 17 supervisors (11 licensee employees, 6 C/Vs), and seven NRC-licensed reactor operators. (Table 1)
  - Seventy-one percent of individuals in a designated position with a 24-hour event report tested positive for alcohol (17). A smaller number of individuals in designated positions tested positive for amphetamines, cocaine, marijuana, or were identified attempting to subvert a test.
  - The number of 24-hour reportable events for individuals in designated positions declined by 38 percent from 2014 (39 events), and was primarily due to a decrease in the number of C/V supervisors with positive random test results (6 in 2015, 16 in 2014). (Table A-1)
- The NRC received ten 24-hour reportable events on programmatic failures or vulnerabilities in 2015. By comparison, the NRC received six 24-hour event reports on programmatic failures and vulnerabilities in 2014. (Table 2 and Table A-1). The 2015 events consisted of the following:
  - Discovery of prohibited substances in the protected area (PA)<sup>11</sup> of a power reactor site or a fuel cycle facility (8).
  - Consumption of alcohol in the PA of a power reactor site (1).
  - Discovered vulnerability, subversion paraphernalia identified on an individual during a security check performed at an entry point to the PA (1).
- **Thirty day reportable events under 10 CFR 26.719(c) – four reports received in 2015.** (Table 3) Licensees and other entities submit a written report to the NRC within 30 days of completing an investigation of a testing error or unsatisfactory performance identified at a collection site regarding alcohol testing, or at a licensee testing facility (LTF) or U.S. Department of Health and Human Services (HHS)-certified laboratory performing drug and validity testing. In 2015, the reportable events involved testing assay inconsistencies, human performance errors, and process or procedural problems identified in the laboratory testing of blind performance test samples (BPTs). By comparison, the NRC received five 30-day event reports in 2014, and 15 reports in 2013.

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<sup>11</sup> An area encompassed by physical barriers and to which access is controlled (10 CFR 26.5 definition).

## SECTION 2 DETAILED DATA ANALYSIS

### Section 2a. Detailed Data Analysis Summary

This section summarizes key observations on the FFD program performance data reported on D&A testing in 2015. Consult the referenced tables and charts associated with each observation for additional information.

- **The total number of tests performed (163,396) decreased by approximately 2 percent from 2014 (166,590).** (Table 5 and Table 8) The decrease primarily was due to fewer pre-access tests performed on C/Vs. (Table A-5)
- **Pre-access testing continued to be the most effective method of identifying substance-using individuals, identifying 67.0 percent of individuals testing positive in 2015.** By comparison, the highest percentages of annual test results identified by pre-access testing were seen from 1994 through 2008 (ranging from 71.2 to 76.5 percent per year), with 2005 as the only year below 70 percent (at 69.5 percent). Since 2009, pre-access testing has accounted for less than 70 percent of annual test results. (Table 8 and Table A-2)

Pre-access testing is most effective in detecting substance-using individuals in the C/V worker population. An NRC staff analysis of site-specific positive rates for pre-access tests performed from 2011 through 2015, indicates that 65 to 77 percent of sites reported no positive test results for licensee employee applicants; whereas only 9 to 17 percent of sites reported no positive test results for C/V applicants. (Table 10)

- **Random testing continued to be the second most effective method of identifying substance-using individuals, identifying 19.3 percent of individuals testing positive in 2015.** The random testing positive rate has remained low since required testing began in 1990, and has fluctuated minimally over the past 6 years (between 0.30 and 0.36 percent). The only other years with positive random testing rates of 0.30 percent or higher were 1990, 1991, 1996, 2000, and 2001. The highest positive rates were seen in 1990 (0.37 percent) and 2000 (0.39 percent). (Table 8 and Table A-2)

Random testing detected substance use in both the licensee and C/V worker populations. An NRC staff analysis of site-specific positive rates for random tests performed from 2011 through 2015, indicates that 47 to 56 percent of sites per year reported detection of substance use in the licensee employee population, and 56 to 69 percent of sites reported detection of use in the C/V population. (Table 11)

- **The positive rate for all tests conducted increased to 0.73 percent.** The positive rate was 0.68 percent in 2014, and was 0.62 percent in 2012 and 2013. While the positive rate has trended higher in 2014 and 2015, the rate is still low by historical standards. The highest positive rate was 1.03 percent in 1996 and the lowest positive rate was 0.59 percent in 2010. (Table 8 and Table A-2)
- **The positive rate by employment category for all tests conducted in 2015 remained low.** (Table 6 and Table A-4)
  - Licensee employees: 0.26 percent (increased from 0.23 percent in 2014)
  - C/Vs: 0.95 percent (increased from 0.88 percent in 2014)
- **An individual's employment category (i.e., licensee employee, C/V) is highly predictive of substance use.** For all tests conducted in 2015, C/Vs tested positive at a rate of 0.95 percent as compared to 0.26 percent for licensee employees. Since testing began in 1990, the C/V positive rate for all tests conducted has ranged from 2.4 times (in 1990) to 4.5 times (in 2002) higher than that for licensee employees. This observation demonstrates two distinct substance-using populations (Table A-4), which is most notable in pre-access (Chart 7) and random (Chart 8) testing.
- **Industry positive rates remained below 1 percent for pre-access and random testing,** but site-specific positive rates by test and employment categories varied considerably. (Table 9, Table 10, and Table 11)
  - Pre-access testing positive rates
    - Licensee employees: 0.39 percent (site-specific range<sup>12</sup> is 0 to 4.00 percent)
    - C/Vs: 0.97 percent (site-specific range is 0 to 2.33 percent)
  - Random testing positive rates
    - Licensee employees: 0.15 percent (site-specific range is 0 to 0.58 percent)
    - C/Vs: 0.65 percent (site-specific range is 0 to 1.64 percent)
- **For-cause testing accounted for the highest industry positive rate in 2015 at 13.83 percent.** For-cause testing positive rates from 2012 through 2014 were 11.88, 13.40, and 11.96 percent, respectively. (Table 8) This high positive rate is anticipated by the NRC staff because for-cause testing is conducted only when signs of impairment are observed by trained personnel (i.e., through the behavioral observation program), or credible information is received by the licensee or other entity about illegal drug use or alcohol misuse.
- **Three substances (marijuana, alcohol, and cocaine) accounted for 87.3 percent of positive test results in 2015.** In comparison to the first year of NRC-required testing in 1990, substance use preferences appear to have changed, with increases in marijuana, alcohol, and amphetamines, and a decrease in cocaine. (Chart 6 and Table A-3)
  - Marijuana, 47.4 percent of substances in 1990, 51.1 percent in 2015
  - Alcohol, 18.6 percent of substances in 1990, 22.3 percent in 2015
  - Cocaine, 29.0 percent of substances in 1990, 13.8 percent in 2015
  - Amphetamines, 2.8 percent of substances in 1990, 9.9 percent in 2015

<sup>12</sup> The positive-rate range reflects the lowest and the highest site-specific positive rate reported amongst all sites that conducted a test in the current reporting year.

- **Substance-using preferences in 2015, as in all prior years, differed by employment category.** (Table 7) The top three test results for each labor category are as follows:
  - Licensee employees: alcohol (44.3%), marijuana (27.1%), and cocaine (11.4%)
  - C/Vs: marijuana (46.9%), alcohol (16.5%), and refusal to test (12.7%)
- **Three labor categories accounted for 85 percent of the substances identified (including refusals to test) in 2015:** maintenance (general facility) (725), other (270), and facility support (89). (Chart 16)
- **Thirty-three percent of alcohol positives in 2015 were associated with blood alcohol concentration (BAC) levels below 0.04 percent.** The 2008 Part 26 final rule implemented time-dependent BAC levels that lowered the confirmatory alcohol testing cutoff level to 0.03 percent BAC or 0.02 percent BAC based on the time an individual is in work status. This rule change continued to greatly strengthen the alcohol detection capabilities of licensees and other entities. (Chart 4)
- **Amphetamines positives continued trending upward, although lower than in 2014.** In 2015, amphetamines accounted for 9.9 percent of total substances identified. Amphetamines positives accounted for 3.93, 5.68, 8.29, 6.15, 8.93, and 10.6 percent of substances identified per year from 2009 through 2014, respectively. (Chart 6 and Table 3)
- **Subversion attempts continued to rise in 2015, accounting for 19.3 percent of the D&A testing violations (232 of 1,200).** (Figure 1 and Table 13) By comparison, subversion attempts accounted for 15.9, 14.9, and 16.5 percent of D&A testing violations in 2012 through 2014, respectively. In 2015:
  - Pre-access testing identified approximately 78 percent of subversion attempts (180 of 232). (Chart 18) Individuals subject to pre-access testing have prior knowledge of the testing event, unlike all other testing events, which are unannounced. Therefore the opportunity to subvert is greater than under other testing conditions.
  - Attempts to subvert tests were prevalent amongst sites, with approximately 64 percent reporting at least one subversion attempt (47 of 73 sites).
  - Approximately 96 percent of identified subversion attempts (222 of 232) were made by C/Vs. (Chart 18)
  - Approximately 96 percent of identified subversion attempts (222 of 232) were made by individuals in five labor categories associated with maintenance activities. (Chart 19)
  - A specimen was not tested in 63 percent of subversion attempts (146 of 232) because a specimen was not provided or the collection was stopped. (Figure 1) Due to the high number of subversions without specimen testing (i.e., 146 of 954 individuals with a drug testing violation), the charts and tables in this report on substance detection results and trends (e.g., Chart 6, Table 7) do not fully account for all substances used in the tested population.
  - Power reactor construction sites accounted for 31 percent of subversion attempts (71 of 232). Similarly, power reactor construction sites accounted for 34 percent of subversion attempts (64 of 187) in 2014, 31 percent of attempts (46 of 148) in 2013, and 26 percent of attempts (46 of 177) in 2012.

- Diligent and well-trained specimen collectors, verified in many cases by laboratory testing, proved instrumental in identifying the majority of individuals attempting to subvert the testing process.
- **LOD testing was conducted by 32 facilities on 755 dilute specimens, with three positive results.** By comparison, in 2014, 41 facilities conducted LOD testing on 834 dilute specimens, with 10 positive results. In 2015:
  - Three facilities reported LOD testing positive results, two on pre-access tests, and one on a random test.
  - Three individuals tested positive, two for marijuana, and one for cocaine.
- **Approximately 12 percent of facilities (9 of 73) tested for additional substances** (i.e., those not included in the NRC-minimum testing panel). This action is permitted under 10 CFR 26.31(d). These facilities tested for one or more of the following 12 substances: barbiturates, benzodiazepines, buprenorphine, fentanyl, hydrocodone, hydromorphone, methadone, oxycodone, oxymorphone, propoxyphene, suboxone, and tramadol.
  - Six individuals tested positive for eight additional substances in 2015. (Table 7) Similarly, six individuals tested positive for a total of 10 additional substances in 2014.
  - “Other” substances were identified in both employment categories. One licensee employee tested positive on a for-cause test (Chart 14), and five C/Vs tested positive (one on pre-access and four on for-cause tests). (Chart 15)
  - “Other” substances were detected in three labor categories (maintenance (craft), maintenance (general facility), and security). (Chart 17 and Table A-10)
- **Approximately 14 percent of facilities (10 of 73) used more stringent drug testing cutoff levels than specified in Part 26.** This action is permitted under 10 CFR 26.31(d)(3)(iii). Four facilities, under one corporate FFD program, used lower cutoff levels to test for marijuana. Five facilities, under another corporate FFD program, used lower cutoff levels for all drugs in the NRC-testing panel when performing follow-up, for-cause, and post-event testing. One facility used lower cutoff levels for all drugs in the NRC-testing panel when performing return to work testing.
- **Power reactor construction sites** (V.C. Summer Units 2 and 3, Vogtle Units 3 and 4)<sup>13</sup> performed 14,088 tests (8.6 percent of industry tests performed), and accounted for 23.9 percent of the D&A testing violations in the industry. In 2015, 243 individuals tested positive on D&A testing and 44 refused to test. The number of tests performed at the construction sites remained comparable to 2014 levels (14,539 tests, with 245 individuals testing positive on D&A testing and 50 refusals to test). In 2015:
  - Pre-access testing identified approximately 48 percent of the D&A testing violations (139 of 287) at power reactor construction sites, with random (90), for-cause (36), post-event (13) and follow-up (9) testing identifying the rest.

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<sup>13</sup> The construction site data do not include results for Watts Bar Unit 2, which restarted construction in 2008. The licensee included the construction site personnel in the operating power reactor’s D&A testing program. As a result, the licensee did not segregate test results for construction site personnel in the 10 CFR 26.717 performance report for the site. Unit 2 was substantially complete in August 2015, the NRC approved a 40-year operating license on October 22, 2015, and commercial power generation began on October 19, 2016.



- Power reactor construction site test results increased four industry positive testing rates in 2015. These impacts become apparent when construction site test results are removed from the industry results:
  - All tests – positive rate dropped from 0.73 to 0.61 percent
  - Pre-access – positive rate dropped from 0.91 to 0.81 percent
  - Random – positive rate dropped from 0.36 to 0.24 percent
  - Post-event – positive rate dropped from 1.67 to 0.83 percent.
- Power reactor construction sites accounted for a significant percentage of the industry positive results for C/Vs on random (49 percent, 86 of 177 results), for-cause (49 percent, 32 of 65 results), and post-event tests (71 percent, 10 of 14 results). (Chart 21)
- **Twenty-four hour reportable events under 10 CFR Part 26.719(b) – 34 reports received in 2015.** By comparison, the NRC received 45 reports in 2014, and 40 reports in 2013. (Table A-1) The NRC receives an event report when an individual in a designated position (e.g., supervisor, licensed reactor operator, FFD program personnel) violates the FFD program policy of a licensee or other entity. A report also is received when a licensee or other entity identifies a programmatic failure or vulnerability, or when alcohol or another prohibited substance is identified in the PA of an NRC-licensed facility. The NRC staff review 24-hour event reports and may take inspection, enforcement, or other agency action if necessary to improve performance and preclude recurrence.
  - In 2015, the NRC received 24 event reports on individuals in designated positions: 17 supervisors (11 licensee employees, 6 C/Vs), and seven NRC-licensed reactor operators. (Table 1)
    - Reportable events for individuals in designated positions declined by 38 percent from 2014 (39 events), and was primarily due to a decrease in the number of C/V supervisors with positive random test results (6 in 2015 and 16 in 2014).
    - Seventy-one percent of individuals in a designated position with a reportable event tested positive for alcohol (17).
  - In 2015, the NRC received 10 event reports on programmatic failures or vulnerabilities: discovery of prohibited substances in the PA of a power reactor site or fuel cycle facility (8); consumption of alcohol in the PA of a power reactor site (1); and a discovered vulnerability (1). (Table 2 and Table A-1)
- **Thirty day reportable events under 10 CFR 26.719(c) – four reports received in 2015.** (Table 3) By comparison, the NRC received five reports in 2014, and 15 reports in 2013. The NRC receives an event report in response to a testing error or unsatisfactory performance identified at a collection site regarding alcohol testing, or at an LTF or HHS-certified laboratory performing drug and validity testing. In 2015, the reportable events involved testing assay inconsistencies, human performance errors, and process or procedural problems identified in the laboratory testing of BPTSs.

## Section 2b. Licensee and Other Entity Reportable Events under 10 CFR 26.719

Table 1 (Individuals with Significant FFD Policy Violations) and Table 2 (Programmatic Failures or Vulnerabilities) summarize information reported to the NRC Operations Center by telephone under 10 CFR 26.719 within 24 hours of an event, as well as information contained in 10 CFR 26.419(b)(2) and 26.717 annual FFD program performance reports (SPTFs and ARFs).

**Table 1. Twenty-Four Hour Reportable Events – Individuals with Significant Fitness-for-Duty Policy Violations**

Event Type	Facility	Employment Category	Labor Category	Substance/ FFD violation	NRC Event Number <sup>14</sup>
Pre-Access Test	Pilgrim	Supervisor	Employee	Alcohol	51279
Random Test	Corporate - Xcel Energy	Supervisor	Employee	Alcohol	51379
	Indian Point	Supervisor	Employee	Alcohol	50879
	Joseph M. Farley	Licensed Operator*	Employee	Cocaine	51148
	LaSalle	Licensed Operator	Employee	Alcohol	51318
	McGuire	Supervisor	C/V	Alcohol	51385
		Supervisor	Employee	Marijuana	51602
	Pilgrim	Licensed Operator	Employee	Marijuana	51267
	River Bend	Licensed Operator	Employee	Alcohol	50883
	Salem/Hope Creek	Supervisor	Employee	Alcohol	50889
	Seabrook	Supervisor	Employee	Subversion Attempt	50817
	Shearon Harris	Licensed Operator	Employee	Alcohol	51462
	St. Lucie	Supervisor	Employee	Alcohol	50782
	Surry	Supervisor	C/V	Alcohol	51561
	V.C. Summer 1	Supervisor	Employee	Alcohol	51485
	V.C. Summer 2 & 3	Supervisor	C/V	Subversion Attempt	51005
Watts Bar	Supervisor	C/V	Alcohol	51022	
For-Cause Test	Byron	Supervisor	Employee	Alcohol	51119
	McGuire	Licensed Operator	Employee	Alcohol	51163
	Oyster Creek	Supervisor	Employee	Alcohol	51445
	Salem/Hope Creek	Supervisor	Employee	Alcohol	51063
	Vogtle 3 & 4	Supervisor	C/V	Alcohol	50857
Follow-up Test	Surry	Licensed Operator	Employee	Marijuana, Cocaine	50809
	V.C. Summer 2 & 3	Supervisor	C/V	Amphetamine	51010

\* Employee Labor category reported as licensed operator and supervisor  
Licensee employee

<sup>14</sup> Each 24-hour event report can be viewed by visiting the NRC's Event Notification Report Web site, <http://www.nrc.gov/reading-rm/doc-collections/event-status/event/>, and searching by the NRC Event Number. This footnote also applies to the NRC Event Numbers referenced in Table 2.

*Observations on Table 1*

- The number of individuals with a significant FFD policy violation (24 events) decreased by 38 percent from 2014 (39 events). This change primarily was due to a decrease in the number of C/V supervisors testing positive (6 in 2015, 16 in 2014).
- Supervisors accounted for 17 events (11 licensee employees, 6 C/Vs) and seven events involved NRC-licensed reactor operators.
- Alcohol was identified in 71 percent (17 of 24) of individuals in designated positions with a 24-hour event report.
- Random testing identified approximately 67 percent (16 of 24) of individuals in designated positions with a D&A testing violation.
- The five for-cause testing violations (i.e., impairment-based testing) remained consistent with 2013 and 2014 levels (seven reports in each year).

**Table 2. Twenty-Four Hour Reportable Events – Programmatic Failures or Vulnerabilities**

Event Type	Facility	Description	NRC Event Number
Consumption of alcohol in the PA	Brunswick	A cafeteria worker “brought and used alcohol” in the PA. Consumption was discovered in conjunction with a positive random alcohol test.	50890
Prohibited Substance Discovered in the PA	Braidwood	An empty beer can was discovered inside the PA by a maintenance worker. Site Security took possession of the can and removed it from the PA. The can appeared to be extremely old (20 plus years) with dust and debris on it.	51089
	Babcock & Wilcox	A sales representative sent a six-pack of bottled beer in a box of promotional items to a licensee employee. The employee became aware of the package and contacted shipping and receiving to intercept the package before delivery, but this action was unsuccessful. The unopened package was removed from the PA.	51089
		Security management identified an unopened bottle of beer in the personal items on display in a contracted employee’s office. The FFD coordinator removed the bottle from the PA.	51057
	Diablo Canyon	Discovered two bottles of unopened wine in the PA. The bottles were removed from the PA.	51620
	Grand Gulf	An unopened 8-ounce can of alcohol (8 percent alcohol by volume) was discovered in the PA. Site security removed the can from the PA.	51549
	McGuire	A miniature alcohol bottle, containing trace amounts of liquid, was discovered in the PA. Site security removed the bottle from the PA.	51406
	Palo Verde	Discovered evidence of a prohibited material in the PA. The material was removed. The licensee’s report did not identify the material.	50997
	Sequoyah	A security officer found a partially empty can of beer. Site Security removed the can from the PA.	50717
Vulnerability	Wolf Creek	An individual attempted to bring subversion paraphernalia (synthetic urine) into the PA. Security identified the container during a search of the individual performed because of an explosive detector alarm at the main security access point. For-cause testing was performed and the individual tested positive for marijuana.	50863

### *Observations on Table 2*

- NRC received 10 reportable events in 2015 on programmatic failures or vulnerabilities: discovery of prohibited substances in the PA of a power reactor site or fuel cycle facility (8); consumption of alcohol in the PA of a power reactor site (1); and a discovered vulnerability (1).
- The number of 24-hour reportable events on programmatic failures or vulnerabilities increased by 66 percent from 2014. The NRC staff is monitoring this change in reportable events.

## **Section 2c. Laboratory Testing Performance**

This section summarizes licensee and other entity reports on the performance of LTFs and HHS-certified laboratories. Performance issues may involve errors in technique, methodologies, quality control, or urine specimen processing. Inconsistent test results also may be the result of incorrectly formulated BPTs and not due to laboratory testing errors.

To meet the reporting requirement of 10 CFR 26.719(c), a licensee or other entity submits a report to the NRC within 30 days of completing an investigation of a testing error or unsatisfactory performance at a collection site, LTF, or HHS-certified laboratory.

For reference, the "Description of Issue" column in Table 3 includes the ADAMS Accession Number for each 30-day event report.

### *Observations on Table 3*

- The four 30-day event reports in 2015, is comparable to the five reports in 2014. In 2013, fifteen 30-day event reports were received by the NRC, 13 of which pertained to the preparation or laboratory testing of BPTs.
- Each 30-day event report received in 2015 pertained to specimen testing errors at HHS-certified laboratories identified when testing BPTs (i.e., quality assurance checks on the accuracy of laboratory tests).

**Table 3. Laboratory Testing Performance Issues<sup>15</sup>**

Issue	Facility	Description of Issue	Cause(s) of Issue	Corrective Action(s)
BPTS: Incorrect Result	Joseph M. Farley	<p>A BPTS formulated as “dilute and negative” was reported as “negative” by the HHS-certified laboratory, Alere Toxicology.</p> <p>ADAMS Accession No.: ML16014A214</p>	<p>Upon notice of the inconsistent test result, Alere repeated testing on the BPTS, with the refractometer used for the original testing (ATAGO) and a second refractometer (Rudolph). Both instruments recorded the same result. Therefore, a corrected result of "dilute and negative" was reported to the licensee for the specimen.</p> <p>Alere determined that the screening technician failed to follow the standard operating procedure when utilizing the refractometer, which resulted in the reporting of the specific gravity reading from the previous specimen tested. This occurred because the technician did not depress the read button on the refractometer and instead recorded the reading from the previous specimen tested, which was still displayed on the instrument.</p>	<p>Alere:</p> <ol style="list-style-type: none"> <li>1) Changed the standard operating procedure for specific gravity testing to include a water blank control in between each actual specimen to prevent a back-to-back reading from occurring again.</li> <li>2) Retrained all screening technicians and certifying scientists on the new procedure and the error.</li> </ol> <p>Joseph M. Farley:</p> <ol style="list-style-type: none"> <li>1) Planned to submit double the number of BPTSs (or 2 percent of specimens submitted) for no less than 60 days to verify the effectiveness of the laboratory's corrective actions.</li> </ol>
BPTS: Incorrect Result	Palo Verde	<p>A BPTS formulated as positive for a drug was reported by the HHS-certified laboratory as "negative."</p> <p>The licensee report did not identify the HHS-certified laboratory test results, nor the drug that was included in the BPTS.</p> <p>ADAMS Accession No.: ML15203B078</p>	<p>Upon notice of the inconsistent test result, the laboratory promptly reviewed the test result information for the specimen and confirmed that the actual test result was drug positive.</p> <p>The laboratory determined that the inconsistent test result was due to:</p> <ol style="list-style-type: none"> <li>1) the laboratory analyst incorrectly entering the result into the laboratory's data reporting program; and</li> <li>2) the certifying scientist failed to identify the clerical error when reviewing the test results report.</li> </ol>	<p>HHS-certified laboratory:</p> <ol style="list-style-type: none"> <li>1) Corrected the clerical error and issued an updated test result report.</li> <li>2) Reviewed the entire batch in which the BPTS was included and verified that no additional clerical errors were made.</li> <li>3) Retrained the laboratory technician and certifying scientist who entered and reviewed the BPTS test results.</li> </ol> <p>Palo Verde:</p> <ol style="list-style-type: none"> <li>1) Additional 10 BPTSs were submitted to the laboratory during the second quarter of 2015. Consistent test results received for all tests completed.</li> <li>2) The event was entered into the corrective action program.</li> </ol>

<sup>15</sup> The licensee or other entity reported the “Cause(s) of Issue” and “Corrective Actions” presented in this table. This report does not evaluate the effectiveness or accuracy of these determinations.

**Table 3. Laboratory Testing Performance Issues<sup>15</sup>**

Issue	Facility	Description of Issue	Cause(s) of Issue	Corrective Action(s)
BPTS: Incorrect Result	Palo Verde	<p>A BPTS formulated as "adulterated" was reported by the HHS-certified laboratory as "negative/normal."</p> <p>The licensee report did not identify the HHS-certified laboratory, nor the BPTS supplier.</p> <p>ADAMS Accession No.: ML15309A708</p>	<p>The laboratory performed a confirmatory test on the original BPTS using an alternate analysis technique, which successfully produced an "adulterated" test result due to low pH. An amended report was provided with correct results.</p> <p>The laboratory investigation reviewed the pH screening assay, calibrators and controls, instrument function, and evaluated the potential for operator error. The investigation concluded that the testing had been performed in accordance with the laboratory's standard operating procedures. The investigation did not identify a definitive cause for the unanticipated result, but attributed the probable cause of the error to the specific assay used to measure pH, because the assay did not read the low pH.</p> <p>The laboratory reported the pH assay was validated in the laboratory, verified by the National Laboratory Certification Program (NLCP), and was in use for the past 15 years with no errors encountered. In addition, in May 2014, the NLCP issued a memo indicating that there could be an issue with some screening assays with low pH specimens, and directed all laboratories to conduct validation experiments. The laboratory conducted validation studies using low pH specimens and the results were found to be acceptable.</p> <p>The laboratory investigation also reported that:</p> <ul style="list-style-type: none"> <li>• The specimen was significantly darker in color than normal specimens.</li> <li>• An alternative commercial pH assay based on different reagents did not show the same degree of interference with the BPTS tested.</li> <li>• No additional unanticipated results in the reporting of BPTSs were identified in reports from the laboratory.</li> </ul>	<p>HHS-certified laboratory:</p> <ol style="list-style-type: none"> <li>1) To prevent potential pH testing issues for Part 26 specimens in the future, the HHS-certified laboratory implemented an alternative commercial pH assay (Siemens Syva pH Test) as a corrective measure on October 1, 2015.</li> </ol> <p>Palo Verde:</p> <ol style="list-style-type: none"> <li>1) Utilized an independent toxicologist to review and validate the implemented corrective actions taken by the laboratory.</li> <li>2) The event was entered into the corrective action program.</li> </ol>

**Table 3. Laboratory Testing Performance Issues<sup>15</sup>**

Issue	Facility	Description of Issue	Cause(s) of Issue	Corrective Action(s)
BPTS: Incorrect Result	Susquehanna	<p>A BPTS formulated by EISohly Laboratories as positive for cocaine metabolite (benzoyl-ecgonine spiked at 550 ng/mL) was reported as negative by the HHS-certified laboratory (MedTox).</p> <p>The test result was received from MedTox on January 10, 2015.</p> <p>On February 2, 2015, the licensee discovered the inconsistent results when it compiled the BPTS test results for the month of January.</p> <p>ADAMS Accession No.: ML15113A345</p>	<p>The laboratory investigation concluded that testing was performed in accordance with the standard operating procedure and that the analytical batch met acceptance criteria without error or bias.</p> <p>The laboratory indicated that a plausible explanation for the different results could be that the benzoyl-ecgonine molecule is relatively unstable and that it degraded over time. The initial test result for the BPTS was 225 ng/mL, which is below the 300 ng/mL cutoff level for the test -- the value is also half the target concentration reported by the BPTS supplier.</p> <p>The laboratory could not conduct additional testing on the BPTS in question because of the late notice by the licensee on the test result discrepancy (i.e., the laboratory discarded the specimen on January 15, 2015, in accordance with the standard operating procedure for specimens with negative results).</p> <p>The BPTS supplier reported that it had screened an aliquot of the specimen provided prior to shipment to the licensee and that the test results confirmed that the specimen met the formulation criteria.</p>	<p>Susquehanna:</p> <ol style="list-style-type: none"> <li>1) Another BPTS formulated to test positive for cocaine (with the same target concentration as the original BPTS) was submitted to the laboratory for testing. A correct cocaine positive test result was returned by the laboratory.</li> <li>2) Instituted a compensatory action that after the 30 mL BPTS is shipped to the HHS-certified laboratory for testing, the remaining specimen would be retained at the collection site until the verified test results have been received from the laboratory.</li> <li>3) Revised the FFD work instruction procedure for BPTS testing to include guidance on retaining an aliquot of each BPTS at the collection site until the BPTS supplier results are confirmed as correct with the HHS-certified laboratory results.</li> </ol>

## Section 2d. Cutoff Levels Used and Expanded Panel Testing

This section describes three initiatives, enabled by Part 26, that permit licensees and other entities to strengthen the detection of drugs by lowering testing cutoff levels, testing for additional substances, or both. This section concludes with a discussion on alcohol testing.

Initiative 1: Use of lower drug testing cutoff levels. Section 26.31(d) permits licensees and other entities to use lower drug testing cutoff levels than specified in sections 26.133 and 26.163, both titled, “Cutoff Levels for Drugs and Drug Metabolites.” Using lower testing cutoff levels increases the timeframe that a drug or drug metabolite is detectable in a donor’s urine specimen. In 2015:

- Four facilities, under one corporate FFD program, used lower cutoff levels for the testing of marijuana metabolite in specimens with a dilute validity test result. This testing practice is similar to that described in the next paragraph on LOD testing, but does not utilize the LOD of the testing assays. No change in testing policy from 2014.
- Five facilities, under one corporate FFD program, used lower cutoff levels for all substances in the NRC testing panel when performing follow-up, for-cause, post-event, and tests. This was a new testing policy for this FFD program implemented in 2015.
- One facility used lower cutoff levels for all substances in the NRC-minimum testing panel when performing return-to-work testing. No change in testing policy from 2014.

Initiative 2: LOD testing. Section 26.163(a)(2) permits licensees and other entities to test for drugs in dilute specimens using the lowest cutoff level that can reliably detect an analyte (i.e., the limit of detection or “LOD”). Although legitimate reasons may explain why a donor’s specimen is dilute (e.g., consumed a lot of water on a hot day), specimen dilution also is a method that some individuals may use to attempt to avoid detection of drug use. Consuming large quantities of fluid shortly before providing a urine specimen may decrease the concentration of drug(s)/drug metabolite(s) in a specimen below the testing cutoff level and result in a negative drug test result. Validity testing performed on each specimen measures if an individual has consumed a large quantity of fluid (i.e., a dilute specimen). LOD testing is an additional defense-in-depth measure to evaluate for substance use in individuals with dilute validity test results. In 2015:

- Ninety-five percent of facilities (69 of 73) implemented the voluntary LOD testing policy. Thirty-two facilities reported performing LOD testing on 755 dilute specimens. Three individuals tested positive, two for marijuana, and one for cocaine. In 2014, eight individuals tested positive for a total of 10 substances (amphetamine (2), cocaine (1), marijuana (8), and methamphetamine (1)).
- Three facilities reported LOD testing positive results, two on pre-access tests, and one on a random test. In 2014, seven facilities reported LOD testing positives results on pre-access (8), random (1), and for-cause (1) tests.

Initiative 3: Expanded panel testing. Section 26.31(d)(1)(i) permits a licensee or other entity to account for local drug use trends that may affect the workforce in a specific region or locality by expanding the drug testing panel. In addition, 10 CFR 26.31(d)(1)(ii) permits a licensee or other entity to test for any substances that an individual is suspected of having abused, when performing follow-up, for-cause, and post-event tests. In order to test for any additional



substance, a forensic toxicologist first must review and validate the testing assays and cutoff levels the HHS-certified laboratory will use to perform the tests. In 2015:

- Nine facilities tested for one or more of the following 12 substances: barbiturates, benzodiazepines, buprenorphine, fentanyl, hydrocodone, hydromorphone, methadone, oxycodone, oxymorphone, propoxyphene, suboxone, and tramadol.
  - Six individuals tested positive for a total of eight substances: benzodiazepines (1), buprenorphine (1), fentanyl (1), hydrocodone (1), oxycodone (1), oxymorphone (1), and tramadol (2).
  - The eight additional substances were identified in one pre-access and five for-cause tests.
- The nine facilities conducted expanded panel testing in three ways:
  - Tested all specimens collected for barbiturates, benzodiazepines, methadone, and propoxyphene (four facilities under one corporate FFD program). No change in testing policy from 2014.
  - Tested follow-up, for-cause, and post-event testing specimens for benzodiazepines, specifically alprazolam, clonazepam, and lorazepam (four facilities under one corporate FFD program). New testing policy implemented in 2015.
  - Tested for specific additional substances only when ordered by the MRO (e.g., on a for-cause test or as part of a follow-up testing program). Applies to buprenorphine, fentanyl, hydrocodone, hydromorphone, oxycodone, oxymorphone, suboxone, and tramadol. (Three facilities). Note, the same corporate FFD program that tested all specimens for barbiturates, benzodiazepines, methadone, and propoxyphene also covered two of these three facilities.

Alcohol Testing. Part 26 does not permit licensees or other entities to lower the alcohol testing cutoff levels specified in 10 CFR 26.103, “Determining a Confirmed Positive Test Result for Alcohol.”

- Some licensees and other entities may implement lower BAC cutoffs to confirm abstinence<sup>16</sup> pursuant to Substance Abuse Expert-administered alcohol treatment testing programs (implemented under 10 CFR 26.3, 26.69 and 26.189, and as assigned to individuals determined to be in violation of an FFD policy). In this case, the licensees can implement licensee-administered sanctions and are required to adjudicate authorization pursuant to 10 CFR 26.69(d), “Maintaining authorization with other potentially disqualifying FFD information.”
- One facility used a lower alcohol testing cutoff level than permitted by rule for pre-access and follow-up testing (i.e., a BAC of 0.02 percent). The facility imposes a sanction under its own authority if an individual tests positive at a BAC below the NRC cutoff level. No change in testing policy from 2014.

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<sup>16</sup> As described in 10 CFR 26.31(c)(4), follow-up testing is performed to verify that an individual continues to abstain from substance abuse. This testing is required by 10 CFR 26.69, “Authorization with Potentially Disqualifying Fitness-for-Duty Information,” and is one of several criteria that licensees and other entities must use when determining whether to grant or maintain authorization. A licensee may define what constitutes abstinence in its FFD policy or procedures.

## Section 2e. Program and System Management Issues

Table 4 presents a variety of program and system management issues described by licensees and other entities in the annual FFD program performance reports (i.e., ARFs) submitted for 2015 under 10 CFR 26.417(b)(2) or 26.717. The NRC staff only made minor editorial changes to improve the clarity and organization of information provided. Any assessments on performance included in the descriptions were provided by the licensee or other entity.

**Table 4. Program and System Management Issues**

Issue Topic	Description of Issue	Licensee/ Facility
<b>Alternate Specimen Testing</b>	The Dominion fleet (Kewaunee, Millstone, North Anna, and Surry) plans in 2016 to add oral fluid testing as an alternate drug testing specimen when a urine specimen cannot be collected for medical reasons. The current policy is to test blood.	Dominion (fleet)
<b>Blind Performance Test Samples (BPTSs)</b>	A quality verification audit identified that the adulterated BPTSs required under 10 CFR 26.168(e) had not be submitted in the fourth quarter of 2015. To address this issue, the licensee developed and implemented a detailed instruction manual on processing blinds.	Diablo Canyon
	<ul style="list-style-type: none"> <li>• Unexpected test result of “negative/normal” was received from the two HHS-certified laboratories used to test a BPTS that was formulated to test as “dilute and negative.” The BPTS supplier reported that samples from the lot fell outside the testing parameters and should not have been used. The BPTS supplier had sent replacement BPTSs to all customers that had received samples from the lot in question; however, Palo Verde was overlooked.</li> <li>• The BPTS supplier provided a new specimen from a different lot that formulated to test “dilute and negative.”</li> <li>• The licensee determined this event was not reportable under 10 CFR 26.719 and did not consider the event adverse to quality.</li> <li>• The licensee switched to a new BPTS supplier.</li> </ul>	Palo Verde
<b>Collection Sites</b>	Completed facility modifications in 2015 to contain the breath alcohol testing equipment in a separate room within the testing facility. The change reduced distractions from instrument noise and improved the ability of specimen collectors to monitor for unexpected activities during the urine collection process.	Callaway
	Remodeled the collection facility to enhance donor privacy and the timeliness of drug screening completion activities. Prior to the renovations, collections for more than two donors at the same time were difficult. Remodeling enabled the completion of four simultaneous drug screens, each conducted in a separate collection room. This also enhanced the privacy of the donors such that alcohol testing results only are visible to the donor and collector.	Fermi 2
	Performed a Yellow Belt project on the collection area to streamline sample collection and improve process flow to minimize error risk and ensure continued compliance.	Nuclear Fuel Services
	Added a timer outside of the collection area to ensure that the time from urination to temperature measurement does not exceed 4 minutes. Also added warnings about sanctions for subverting the FFD program.	V.C. Summer 1

**Table 4. Program and System Management Issues**

Issue Topic	Description of Issue	Licensee/ Facility
<b>Collection Sites</b> (continued)	Installed a timer on each restroom, programmed to countdown 4 minutes from when the donor enters the restroom facility and the collector closes the door.	V.C. Summer 2 & 3
	Implemented an additional search step prior to the collection of urine specimens. The collector instructs the donor to lift each pant leg above the top of the boot to ensure that no subversion devices were concealed inside the boot pocket. Site safety requirements mandate that all workers in the construction area wear boots that reach above the ankle.	
<b>Expanded Drug Testing Panel</b>	One licensee employee in a follow-up testing program is being tested for additional drugs under the corporate policy. This worker self-disclosed abuse of synthetic opiates after testing positive for cocaine during a random test.	Salem/ Hope Creek
<b>FFD Program Oversight</b>	<ul style="list-style-type: none"> <li>• Southern Nuclear Operating Company (SNC) Corporate Office provides management oversight, direction, and technical guidance on the FFD program to each plant site.</li> <li>• The plant has a Site FFD Supervisor</li> <li>• A Corporate FFD Coordinator assists the Site FFD Supervisors with the routine daily site functions of the FFD Program, and also assists all site FFD personnel by serving as the subject matter expert for the FFD and Access information database, and technical areas and processes.</li> <li>• The direct responsibility for the SNC fleet Medical Services and FFD Programs is assigned to and fulfilled by the Medical Services Manager at the SNC corporate office.</li> </ul>	Southern Nuclear
<b>FFD Program Performance Reporting</b>	The results for licensee employees in the 10 CFR 26.717 annual program performance report reflect regular status employees. Some temporary licensee employees hired to support refueling outages are reported as C/Vs in the annual report.	Diablo Canyon
<b>FFD Program Policies</b>	Incorporated "Fatigue/Inattentiveness" into the for-cause and post-event testing evaluation.	Babcock & Wilcox
	Reviewed policies and procedures against Part 26 to ensure compliance.	D.C. Cook
	The construction C/V FFD policy mandated a permanent denial of access authorization for FFD violations. This policy was revised in August 2015 to relax the denial period to one year.	Vogtle 3 & 4
<b>FFD Program Procedures</b>	Created a corrective action program entry to document a "Negative Trend in Fitness for Duty/Behavioral Observation Program Reporting and Response" to evaluate information from individual work group performance that did not meet established procedures. Examples included response to reports of potential inattentiveness, completion of post-event fatigue assessments, and evaluations to determine whether post-event FFD testing is appropriate. Separate corrective action program documents were generated for individual work groups to evaluate responses to these individual FFD/Behavioral Observation Program events. At the time of the licensee's report, the investigation on this corrective action program document was ongoing.	Fermi 2
	The FFD/Behavior Observation Program procedure was revised (effective date 10/27/15). One element updated was the procedure for addressing sanctions for individuals involved in the use and/or possession of illegal drugs or alcohol in the PA.	Susquehanna

**Table 4. Program and System Management Issues**

Issue Topic	Description of Issue	Licensee/ Facility
<b>FFD Program Procedures</b> (continued)	Enhanced and revised FFD procedures.	V.C. Summer 1
	Updated the FFD procedure for the Xcel Energy fleet (Monticello, Prairie Island, and Corporate Office) to include, but not limited to, the following changes: <ul style="list-style-type: none"> <li>• Clarified roles and responsibilities.</li> <li>• Provided clearer direction on the responsibilities of Site Medical Technicians and Collectors.</li> <li>• Included a method and requirements to ensure Security Officers maintain breath alcohol testing proficiency.</li> </ul>	Xcel Energy (fleet)
<b>FFD Policy Violations</b> (non-testing)	<ul style="list-style-type: none"> <li>• Two individuals violated the FFD policy by refusing to participate in a required face-to-face Substance Abuse Expert (SAE) interview.</li> <li>• One individual violated the FFD policy by misusing prescription medication.</li> </ul>	Brunswick
	Four individuals were denied unescorted access authorization as follows: <ul style="list-style-type: none"> <li>• On 07/16/15, an individual failed to disclose treatment during a time period of unescorted access</li> <li>• On 10/06/15, an individual refused to comply with an SAE referral</li> <li>• On 12/10/15, two individuals were identified as having provided or received another individual's pain medication</li> </ul>	H.B. Robinson
	<ul style="list-style-type: none"> <li>• A C/V worker, applying for unescorted access authorization, disclosed on the personnel history questionnaire that a previous employer had terminated the individual for a positive drug test result for marijuana. The individual presented a medical marijuana card issued in the State of California. When interviewed, the individual admitted to continued marijuana use for medical purposes. The individual's request for unescorted access authorization was denied for violating the FFD program policy.</li> <li>• A C/V worker holding unescorted access authorization was arrested and charged with being under the influence of a controlled substance. The individual reported the arrest as required, and when interviewed, admitted to taking illegal drugs. Unescorted access authorization was revoked for violating the FFD program policy.</li> </ul>	San Onofre
	One individual violated the FFD Policy by misusing a prescription medication. This determination was not based on a positive drug test result.	Shearon Harris
	One individual was denied access authorization based on an unfavorable recommendation from the MRO for the use of another individual's prescription medication. The individual had previously been placed in the follow-up testing program for a similar issue.	St. Lucie
	<b>Follow-up Testing</b>	<ul style="list-style-type: none"> <li>• An individual that had been granted unescorted access on 02/16/15 was determined on 04/13/15 by Access Authorization/FFD personnel to not be included in a follow-up testing program, as required under 10 CFR 26.31(c)(4).</li> <li>• The individual was placed in the follow-up program, tested, and the individual's badge was placed on hold pending the test results. Access was reinstated when results were received.</li> </ul>

**Table 4. Program and System Management Issues**

Issue Topic	Description of Issue	Licensee/ Facility
HHS-Certified Laboratory Testing	Visited the laboratory (LabCorp, Durham, NC) to gain knowledge and familiarization with laboratory management personnel and the testing process.	Nuclear Fuel Services
	Laboratory failed to report the test results for a specimen within 5-business days of receipt of the specimen, as required by 10 CFR 26.169. The licensee contacted the laboratory regarding the delay; the result was received on day 6. The specimen tested was a BPTS.	South Texas Project
Internal Audit Results	Conducted a focused self-assessment of the FFD Program in June 2015. The assessment identified three deficiencies and made a number of recommendations. No deficiencies were considered "conditions adverse to quality" and all were entered into and remediated through the corrective action program.	Fermi 2
	The FFD program underwent a Nuclear Oversight Audit of the fleet MRO's. No findings were issued from audit. The Southern Nuclear Fleet consists of the Corporate Office, E.I. Hatch, Joseph M. Farley, Vogtle Units 1 and 2, and licensee personnel and C/Vs working at Vogtle Units 3 and 4.	Southern Nuclear (fleet)
	Two quality surveillances were performed in 2015: <ul style="list-style-type: none"> <li>• One on "FFD Sample Collections," with no findings or condition reports generated.</li> <li>• One on "Automatic notifications to the Access Screening Mailbox on FFD Pre-access collections on R1Y/R30 collections to ensure Unescorted Access is withdrawn if FFD results are not received within four days of collection." A recommendation was made that the system notify security on the 5<sup>th</sup> day if a results is not received. The recommended action was not needed because Access Screening monitors the receipt of test results and takes action on the 4<sup>th</sup> day if a result is not received.</li> </ul>	Wolf Creek
Invalid Test Results	An invalid test result was received for a specimen provided by a C/V and the individual was released by their employer before an observed recollection could be conducted. Information on the individual was placed in the PADS database.	Joseph M. Farley
	An invalid test result was received for a specimen collected from a C/V for a random test. The MRO requested a retest, but the individual already had completed the assignment and had left the site.	Turkey Point 3 & 4
Licensee Testing Facility (LTF)	<ul style="list-style-type: none"> <li>• Ceased using LTFs on 04/03/15, with all specimens now tested only at an HHS-certified laboratory (MedTox Laboratories).</li> <li>• Urine specimen machines were removed from the following sites: Braidwood, Byron, Clinton, Corporate-Exelon, Dresden, LaSalle, Limerick, Oyster Creek, Peach Bottom, Quad Cities, and Three Mile Island.</li> </ul>	Exelon
Post-Event Testing	<ul style="list-style-type: none"> <li>• During 2015, the licensee determined that it was performing post-event testing beyond the requirements in 10 CFR 26.31(c)(3).</li> <li>• The For-Cause/Post-Event testing procedure was re-written to remove testing requirements beyond the scope of Part 26 and to clarify the criteria for required testing.</li> </ul>	Salem/ Hope Creek

**Table 4. Program and System Management Issues**

Issue Topic	Description of Issue	Licensee/ Facility
Random Testing	<ul style="list-style-type: none"> <li>Identified three instances in 2015 where an individual did not report for random drug testing immediately upon notification. All instances were evaluated and determined to be isolated occurrences without any intent to subvert the testing process.</li> <li>Added rigor to the notification process by advising each responsible individual of responsibilities and the requirement to immediately report.</li> <li>A condition report was written for each instance.</li> </ul>	Arkansas Nuclear One
	<ul style="list-style-type: none"> <li>Both the construction C/V and Southern Nuclear maintain separate FFD/ Access Program databases with the associated random pool modules, plus random generator.</li> <li>Of the 7,381 C/Vs tested in 2015, the construction C/V accounted for 95 percent (7001), and the Southern Nuclear C/Vs accounted for 5 percent (380).</li> <li>The construction C/V's random pool is generated on a weekly basis.</li> <li>Random testing rates were increased in 2015 due to positive test result increases and illegal substances found at the site. In addition to the increase in testing rate, random K-9 searches were instituted at the site.</li> </ul>	Vogtle 3 & 4
	<ul style="list-style-type: none"> <li>Issued a condition report for FFD collections not performed as required by procedures.</li> <li>A tracking notebook was prepared to log random and follow-up FFD collections. The notebook is used to record the dates that a person selected for a random or follow-up FFD screen was not available for collection after being contacted by the FFD supervisor. Use of the notebook was reviewed with the FFD collectors.</li> </ul>	Wolf Creek
Training	Developed and completed the Systematic Approach to Training (SAT) process for all FFD collection site personnel to ensure consistent performance of FFD collectors. The SAT process includes identifying program requirements, determining if the performance of FFD collectors meets program requirements, and identifying training and development approaches to improve performance. The SAT process evaluates approaches before, during, and after training to ensure that desired results are obtained.	Cooper
	<p>Conducted a meeting with site leadership to educate the team on the behavioral observation program, random selection and notification, medication reporting, arrest reporting, workplace violence and other Access Authorization/FFD topics.</p> <ul style="list-style-type: none"> <li>Updated Breath Alcohol Collector training program to reflect manufacturer recommendations.</li> <li>Updated re-qualification requirements for Breath Alcohol and Urine Collector qualifications to ensure and document collector proficiency.</li> </ul>	D.C. Cook
	Updated site-specific FFD training to enhance changes made in 2015 because of the integration with Exelon Nuclear.	Fort Calhoun
	Separated the Annual FFD Refresher training for all employees and contractors from the overall Annual Safety Refresher training, to be completed as a standalone training and testing. The change was made to strengthen plant access control for individuals who may not satisfy the training requirement and ensure to continued compliance with Part 26.	Nuclear Fuel Services

**Table 4. Program and System Management Issues**

Issue Topic	Description of Issue	Licensee/ Facility
<p><b>Subpart K Construction Site C/V Program Oversight</b></p>	<ul style="list-style-type: none"> <li>• The construction site has two FFD programs in operation. Southern Nuclear (SNC) maintains an FFD program for its employees and C/Vs that work at the site. The consortium construction C/V operates a Part 26 FFD program for the construction site as an SNC licensee-approved contractor. The construction C/V's FFD program includes workers covered under Subpart K of Part 26, as well as workers covered under Subparts A through H, N, and O of Part 26 (i.e., non-manual workers such as management and oversight personnel, security, quality control/quality assurance, and FFD personnel).</li> <li>• SNC provides oversight of the construction C/V's FFD program to ensure compliance with Part 26. SNC and the construction C/V have approved and implemented FFD policies and procedures that meet Part 26. The FFD policy is provided to individuals during pre-access in-processing and is available on-line and in printed copy.</li> <li>• The SNC FFD program performs initial drug and validity testing at the on-site LTF operated by SNC FFD staff. Specimens that yield an initial positive test result and/or abnormal validity test result are forwarded to an HHS-certified laboratory for confirmation testing.</li> <li>• The construction C/V's FFD program sends all specimens collected for drug and validity testing to an HHS-certified laboratory for testing.</li> </ul>	<p>Vogle 3 &amp; 4</p>

## Section 2f. Summary of Test Results and Trending

This section provides summary information on current year D&A test results by test category, employment category, and substances detected. This section also presents multi-year trending of data on substances detected, and positive rates for a variety of test categories.

**Table 5. Test Results by Test Category**

Test Category*	Tested	Positive	Percent Positive
Pre-Access	88,611	804	0.91%
Random	64,760	232	0.36%
For Cause	629	87	13.83%
Post-Event	1,016	17	1.67%
Follow-up	8,380	60	0.72%
<b>Total</b>	<b>163,396</b>	<b>1,200</b>	<b>0.73%</b>

\* "Test Category" corresponds to the required testing conditions specified in 10 CFR 26.31(c).

**Table 6. Test Results by Test and Employment Categories**

Test Category	Licensee Employees			C/Vs		
	Tested	Positive	Percent Positive	Tested	Positive	Percent Positive
Pre-Access	9,709	38	0.39%	78,902	766	0.97%
Random	37,504	55	0.15%	27,256	177	0.65%
For Cause	180	22	12.22%	449	65	14.48%
Post-Event	236	3	1.27%	780	14	1.79%
Follow-up	3,481	14	0.40%	4,899	46	0.94%
<b>Total</b>	<b>51,110</b>	<b>132</b>	<b>0.26%</b>	<b>112,286</b>	<b>1,068</b>	<b>0.95%</b>

### Observations on Table 5 and Table 6

- The total number of tests conducted (163,396) remained consistent with 2014 (166,590), only decreasing by approximately 2 percent. (Table 5 and Table 8) The decrease was primarily due to fewer pre-access tests performed on C/Vs. (Table A-5)
- The total number of individuals with a D&A testing violation (i.e., positive D&A test, adulterated or substituted validity test result, refusal to test) increased by approximately 6 percent, from 1,133 in 2014 to 1,200 in 2015. (Table 5 and Table 8) Sixty-three percent of the increase (42 of 67) was associated with pre-access testing (i.e., licensee employees (11) and C/Vs (31)).
- The positive rates for pre-access testing increased from the previous year for both licensee employees (from 0.28 to 0.39 percent) and C/Vs (from 0.89 to 0.97 percent). (Table 6 and Table A-5)



**Table 7. Substances Identified by Employment Category for All Test Categories**

Substances	Licensee Employees		C/Vs		Total†	
	Positive	Percent of Substances	Positive	Percent of Substances	Positive	Percent of Substances
Marijuana	38	27.1%	532	46.9%	570	44.7%
Alcohol	62	44.3%	187	16.5%	249	19.5%
Cocaine	16	11.4%	138	12.2%	154	12.1%
Refusal to Test*	7	5.0%	144	12.7%	151	11.9%
Amphetamines	11	7.9%	99	8.7%	110	8.6%
Opiates	3	2.1%	27	2.4%	30	2.4%
Other‡	3	2.1%	5	0.4%	8	0.6%
PCP	0	0.0%	2	0.2%	2	0.2%
<b>Total†</b>	<b>140</b>	<b>100.0%</b>	<b>1,134</b>	<b>100.0%</b>	<b>1,274</b>	<b>100.0%</b>

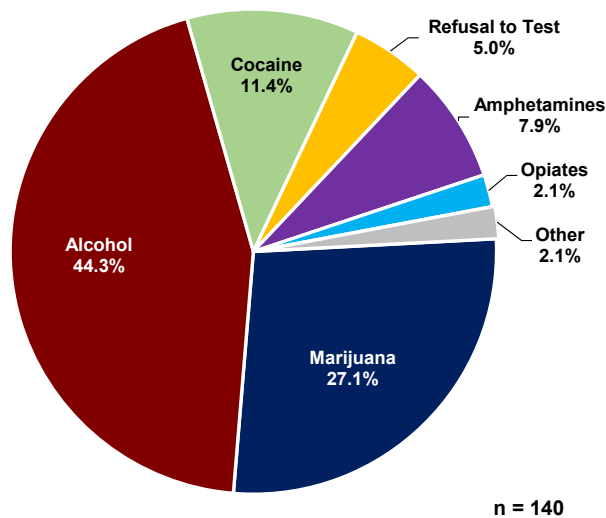
\* Includes adulterated and substituted validity test results and subversion attempts where no specimen was collected or tested. Subversion attempts associated with positive test results appear in this table under the associated substance(s) identified in those individuals. Section 2i, “Subversion Attempts” presents detailed information on all 232 subversion attempts identified in 2015.

‡ Six individuals tested positive for a total of eight substances not included in the NRC-minimum testing panel: benzodiazepines (1), buprenorphine (1), fentanyl (1), hydrocodone (1), oxycodone (1), oxymorphone (1), and tramadol (2).

† Totals in this table are higher than those reported in Table 5 and Table 6 because 61 individuals tested positive for more than one substance (i.e., 49 tested positive for 2 substances, 11 tested positive for 3 substances, and 1 tested positive for 4 substances).

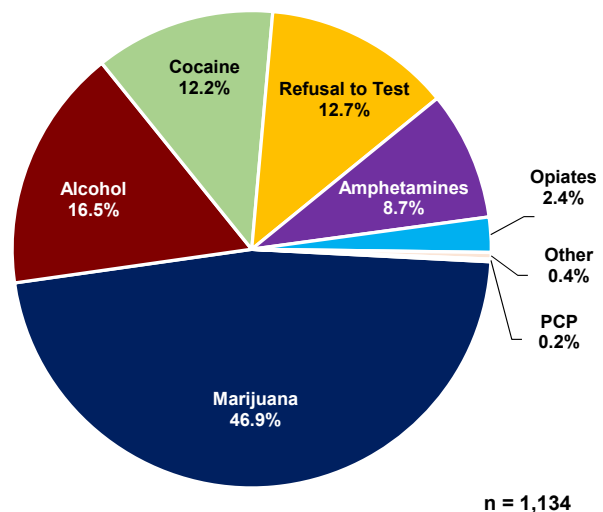
**Chart 1. Positive Test Results by Substance, Licensee Employees**

(51,110 individuals tested)

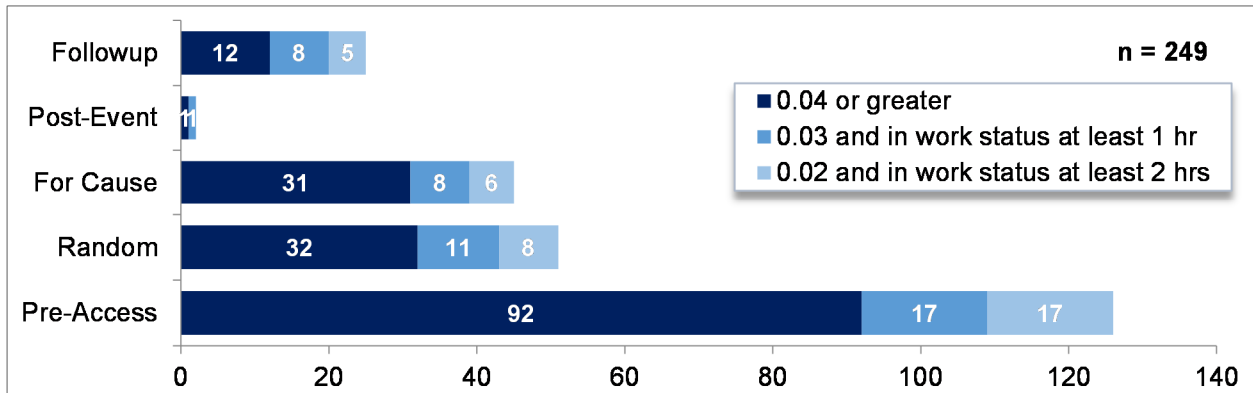


**Chart 2. Positive Test Results by Substance, Contractor/Vendors**

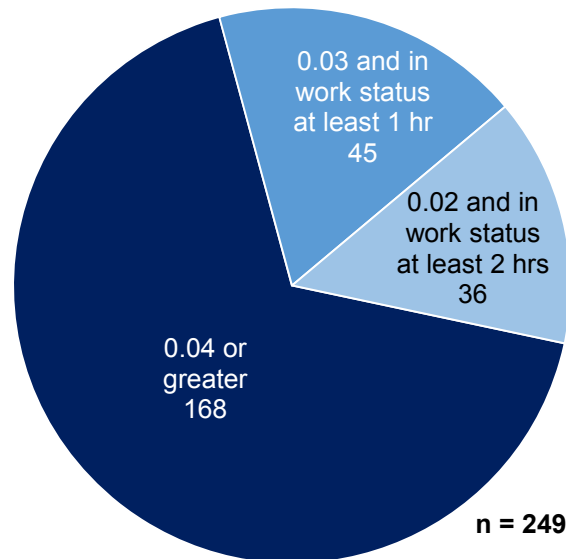
(112,286 individuals tested)



**Chart 3. Alcohol Positives by Blood Alcohol Concentration Level and Test Category**



**Chart 4. Alcohol Positives by Blood Alcohol Concentration Level**



*Observations on Chart 3 and Chart 4*

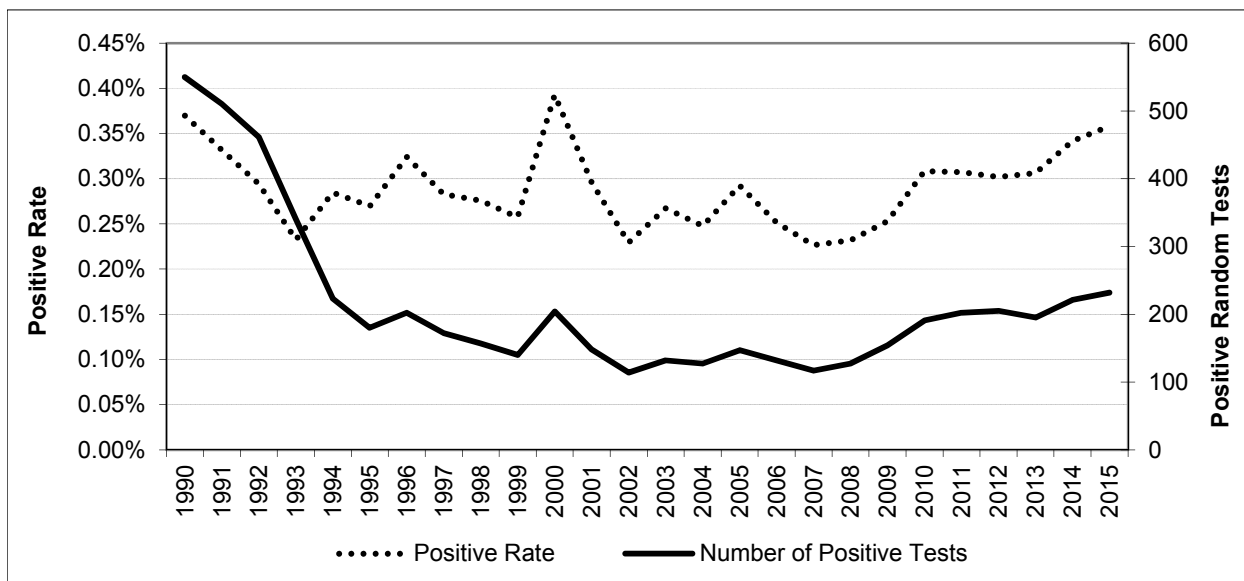
- Chart 3 displays that pre-access testing identified 51 percent of all alcohol positives (126 of 249), while random testing identified 20 percent (51 of 249), for-cause testing identified 18 percent (45 of 249), follow-up testing identified 10 percent (25 of 249), and post-event testing identified less than 1 percent (2 of 249).
- Chart 4 highlights that 33 percent of alcohol positives (81 of the 249) involved BAC levels below 0.04 percent (i.e., time-dependent BAC levels based on time in work status). These data demonstrate the effectiveness of the 2008 Part 26 final rule, which incorporated these lower testing cutoff levels. Chart 3 demonstrates that the time-dependent alcohol levels accounted for a:
  - 52 percent increase in detection on follow-up testing (13 of 25 positives)
  - 37 percent increase in detection on random testing (19 of 51 positives)
  - 27 percent increase in detection on pre-access testing (34 of 126 positives)

**Table 8. Trends in Testing by Test Category, 2004-2015**

<b>Test Category</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009*</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Pre-Access</b>												
Tested	76,119	79,005	79,980	81,932	87,468	95,878	96,543	103,848	101,438	89,187	92,368	88,611
Positive	737	648	747	668	664	677	677	741	766	653	762	804
Percent Positive	0.97%	0.82%	0.93%	0.82%	0.76%	0.71%	0.70%	0.71%	0.76%	0.73%	0.82%	0.91%
<b>Random</b>												
Tested	51,239	50,286	52,557	51,665	54,759	60,877	62,008	65,778	67,943	63,678	64,689	64,760
Positive	127	147	132	117	127	154	191	202	205	195	221	232
Percent Positive	0.25%	0.29%	0.25%	0.23%	0.23%	0.25%	0.31%	0.31%	0.30%	0.31%	0.34%	0.36%
<b>For-Cause</b>												
Tested	701	671	716	720	797	547	549	856	724	627	694	629
Positive	134	105	104	81	94	108	47	73	86	84	83	87
Percent Positive	19.12%	15.65%	14.53%	11.25%	11.79%	19.74%	8.56%	8.53%	11.88%	13.40%	11.96%	13.83%
<b>Post-Event</b>												
Tested	458	490	905	895	986	893	884	802	883	718	897	1,016
Positive	5	1	5	10	7	1	6	7	7	5	13	17
Percent Positive	1.09%	0.20%	0.55%	1.12%	0.71%	0.11%	0.68%	0.87%	0.79%	0.70%	1.45%	1.67%
<b>Follow-up</b>												
Tested	3,752	4,057	4,766	4,991	5,756	6,252	6,657	7,302	8,147	7,487	7,942	8,380
Positive	31	31	37	31	44	53	60	57	50	70	54	60
Percent Positive	0.83%	0.76%	0.78%	0.62%	0.76%	0.85%	0.90%	0.78%	0.61%	0.93%	0.68%	0.72%
<b>TOTAL</b>												
<b>Tested</b>	<b>132,269</b>	<b>134,509</b>	<b>138,924</b>	<b>140,203</b>	<b>149,766</b>	<b>164,447</b>	<b>166,641</b>	<b>178,586</b>	<b>179,135</b>	<b>161,697</b>	<b>166,590</b>	<b>163,396</b>
<b>Positive</b>	<b>1,034</b>	<b>932</b>	<b>1,025</b>	<b>907</b>	<b>936</b>	<b>993</b>	<b>981</b>	<b>1,080</b>	<b>1,114</b>	<b>1,007</b>	<b>1,133</b>	<b>1,200</b>
<b>Percent Positive</b>	<b>0.78%</b>	<b>0.69%</b>	<b>0.74%</b>	<b>0.65%</b>	<b>0.62%</b>	<b>0.60%</b>	<b>0.59%</b>	<b>0.60%</b>	<b>0.62%</b>	<b>0.62%</b>	<b>0.68%</b>	<b>0.73%</b>

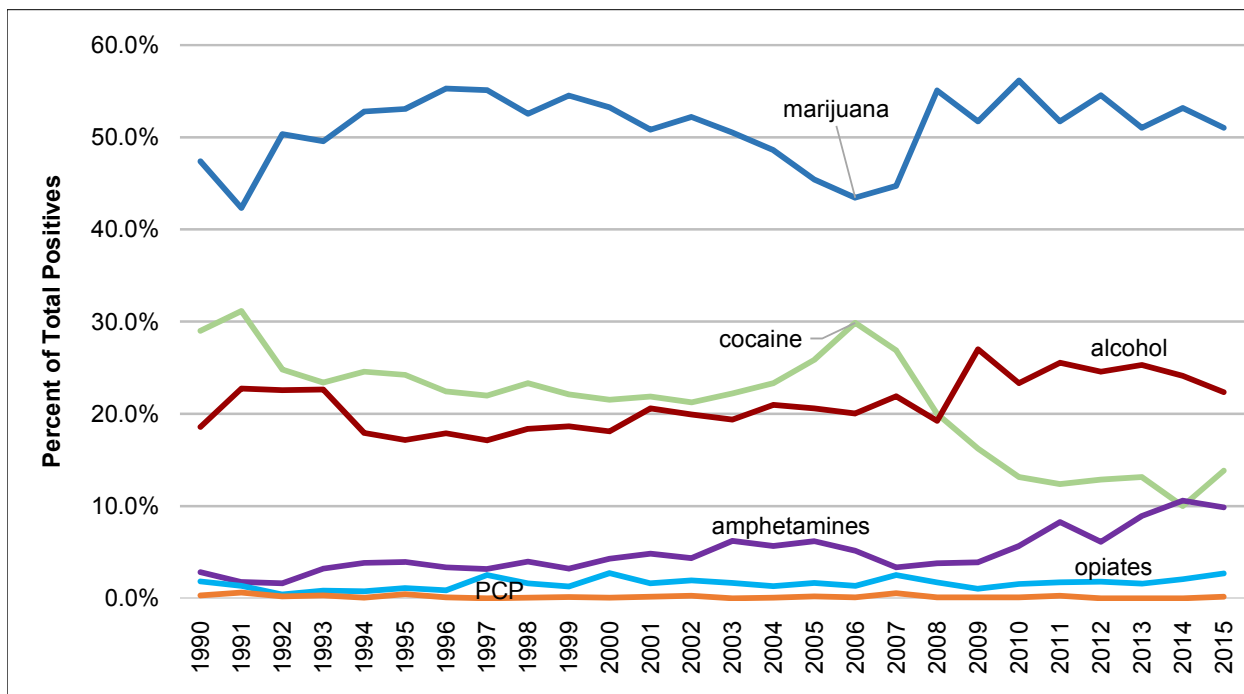
\* By March 31, 2009, all sites were required to implement the changes in the 2008 Part 26 final rule. Refer to Table A-2 for data from 1990–2003.

**Chart 5. Trends in Positive Random Testing Rates**



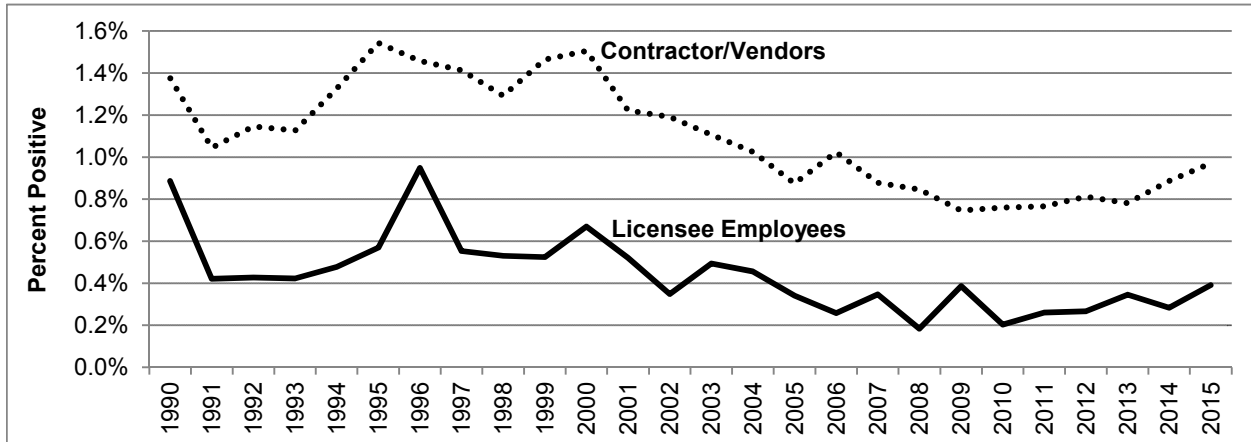
\* Beginning in 1994, the NRC reduced the minimum annual random testing rate from 100 percent to 50 percent of the subject population.

**Chart 6. Trends in Substances\* Identified, Percentage of Total Positives by Substance Tested**

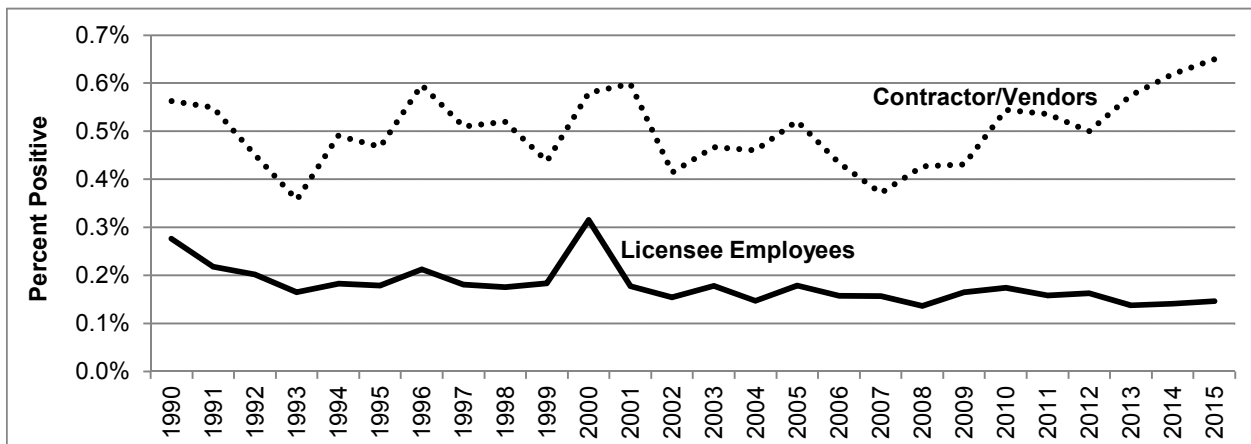


\* Chart 6 displays the percentage of positive test results by substances that licensees and other entities must test for in each urine specimen per 10 CFR 26.31(d). This chart does not include “other” substances or refusal to test results (i.e., adulterated and substituted validity test results, and subversion attempts where no specimen was collected or tested). Refer to Table A-3 in the report appendix for the data used to create this chart.

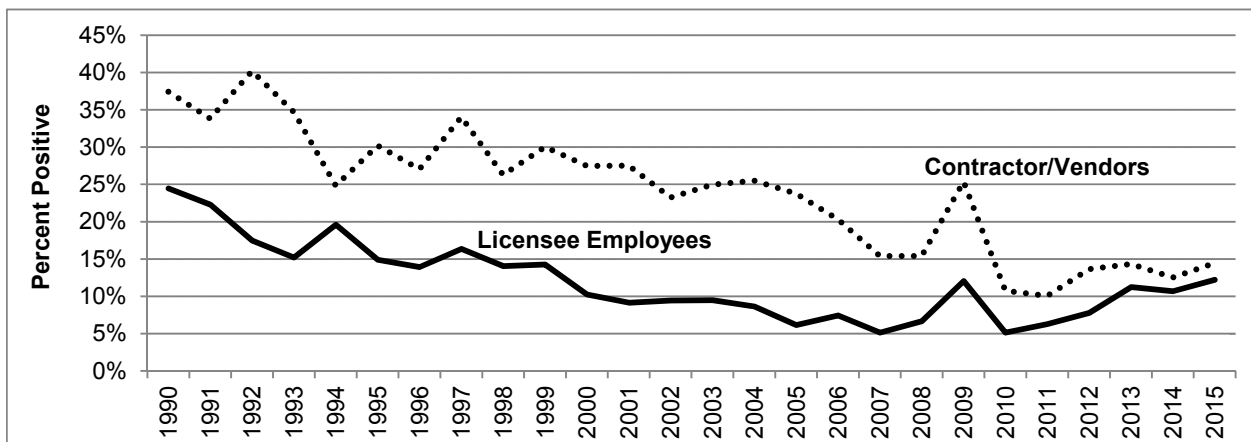
**Chart 7. Pre-Access Testing, Trends in Positive Rates by Employment Category**



**Chart 8. Random Testing, Trends in Positive Rates by Employment Category**



**Chart 9. For-Cause Testing, Trends in Positive Rates by Employment Category**



\* Refer to the report appendix for the data used to create these charts (Table A-5 for Chart 7, Table A-6 for Chart 8, and Table A-7 for Chart 9). The peak in Chart 9 in 2009 may have been due to the initial use of the e-reporting system.

### *Observations on Chart 7, Chart 8, and Chart 9*

- The pre-access testing positive rate for licensee employees increased from 0.28 percent in 2014 to 0.39 percent in 2015, and the positive rate for C/Vs increased from 0.89 to 0.97 percent. Both rates remain low by historical standards. (Chart 7 and Table A-5)
- The random testing positive rate for C/Vs increased in 2015 to its highest level since 2001, at 0.65 percent. By comparison, the 0.15 percent positive rate for licensee employees was almost unchanged from the 0.14 percent positive rates in 2013 and 2014. Historically, random testing rates for licensee employees have been tightly bound between 0.14 and 0.21 percent, with one outlier year in 2000 at 0.32 percent. (Chart 8 and Table A-6) The random testing positive rate for C/Vs appears to be increasing based on reactor construction site positives, which accounted for 49 percent of random testing positives in 2015. (Chart 21)
- Since 2010, for-cause testing positive rates for licensee employees and C/Vs have converged. The NRC staff believes this trend is associated with improved information collection from the e-reporting system. (Chart 9 and Table A-7)

The behavioral observation program is a cornerstone of the defense-in-depth protections in an FFD program, and impairment-based testing is a critical component of providing assurance that individuals can safely and competently perform assigned duties. The NRC staff acknowledges that human performance assessments are intrinsically difficult and recognizes the uncertainty in assessing human behavior in relation to impairment from substance use and abuse.

#### The NRC staff assesses that low for-cause positive testing rates could mean that:

- 1) Observed impairment or aberrant behavior warranting testing was not due to the use of substances included in the testing panel (i.e., impairment based on use of a substance not included in the testing panel), or was from physical or emotional distress unrelated to substance use or abuse (e.g., fatigue, illness). If D&A test results are negative, a determination of fitness by a qualified professional would be conducted under 10 CFR 26.189 to assess an individual's ability to safely and competently perform job duties.
- 2) A licensee or other entity is for-cause testing individuals involved in accidents that do not meet the post-event testing criteria in 10 CFR 26.31(c)(3) – that is, conducting testing based on degraded human performance, but lacking signs of impairment.
- 3) A licensee or other entity is for-cause testing individuals that do not exhibit signs of impairment (e.g., vague criteria in FFD policy to conduct testing; training of individuals in making for-cause testing determinations may be inadequate).
- 4) A licensee or other entity is not conducting for-cause testing when an individual exhibits signs of impairment, and instead is relying on random testing to identify substance abuse.

#### The NRC staff assesses that high for-cause positive testing rates could mean that:

- 1) A licensee or other entity's behavioral observation program is effective and is identifying impairment related to substance abuse; or
- 2) The threshold in the licensee or other entity's FFD policy for conducting for-cause testing is too high (i.e., overly conservative).

In 2014, the NRC issued NUREG/CR-7183, “Best Practices for Behavioral Observations Programs at Operating Reactors and Power Reactor Construction Sites,” which can be viewed at the following NRC Web site: <http://www.nrc.gov/reading-rm/doc-collections/nureqs/contract/>.

## Section 2g. Site-Specific Positive Rate Analysis

This section presents distributional information on the site-specific positive rates by employment category for pre-access, random, and for-cause testing. These data provide licensees and other entities with additional information to evaluate site-specific performance and improve the characterization of positive rates across the industry.

**Table 9. Industry Positive Test Results for Pre-Access, Random, and For-Cause Testing by Employment Category, 2015**

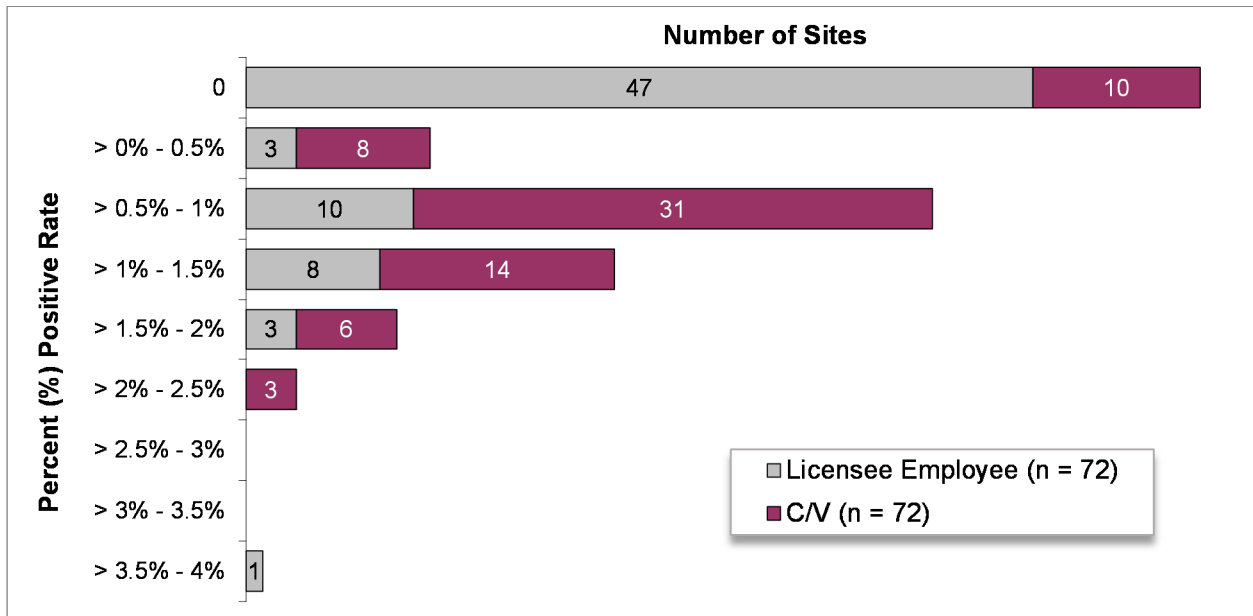
Test and Employment Categories	Tested	Positive Tests	Sites Reporting Test Results	Industry % Positive Rate	% Positive Rate Range (sites)
<b>Pre-Access Testing</b>					
Licensee Employee	9,709	38	72	0.39	0 - 4.00
C/V	78,902	766	72	0.97	0 - 2.33
<b>Random Testing</b>					
Licensee Employee	37,504	55	72	0.15	0 - 0.58
C/V	27,256	177	73	0.65	0 - 1.64
<b>For-Cause Testing</b>					
Licensee Employee	180	22	54	12.22	0 - 100
C/V	449	65	52	14.48	0 - 100

### Observations on Table 9

- Pre-access testing – C/Vs tested positive 2.5 times more often than licensee employees, based on a comparison of industry percent positive rates (i.e., 0.97 percent divided by 0.39 percent).
- Random testing – C/Vs tested positive 4.3 times more often than licensee employees, based on a comparison of industry percent positive rates.
- For-cause testing – C/Vs and licensee employees tested positive at comparable rates.

Note, the number of sites reporting test results in Table 9 through Table 12 and Chart 10 through Chart 12 may vary by employment and test category. For example, in 2015, 73 sites maintained an FFD program, but only 54 performed at least one for-cause test on a licensee employee and 52 performed at least one for-cause test on a C/V.

**Chart 10. Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, 2015**



\* Refer to Table 10 for the data summarized in this chart.

#### *Observations on Chart 10*

##### Licensee employee applicant:

- Approximately 65 percent of sites conducting pre-access testing reported no positive results (47 of 72 sites). In 2014, approximately 72 percent of sites reported no positive results.
- Of the 35 percent of sites reporting at least one positive test result (25 of 72 sites), 13 reported a positive rate of 1.0 percent or less, and 11 sites reported positive rates between 1.0 and 2.0 percent. One site reported a positive rate between 3.5 and 4.0 percent.
- All 12 site-specific positive rates above 1.0 percent were at operating power reactor sites, with the highest positive rate at 4.00 percent (tested 75 individuals with three positive).

##### C/V applicant:

- Approximately 14 percent of sites conducting pre-access testing reported no positive results (10 of 72 sites).
- Of the 86 percent of sites reporting at least one pre-access testing positive result (62 of 72 sites), 39 sites reported positive rates of 1 percent or less, with 23 sites reporting positive rates greater than 1.0 percent up to 2.5 percent.
- Of the three site-specific positive rates above 2.0 percent, two were reported by the power reactor construction sites, and one was reported by an operating power reactor site. The highest site-specific positive rate was 2.33 percent.
- The number of sites with C/V positives exceeded the number of sites with licensee employee positives in all but one positive rate range (i.e., > 3.5% - 4.0%).



**Table 10. Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, 2011–2015**

Positive Rate Range (%)	Number of Sites by Year									
	Licensee Employee					C/V				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
0	56	57	50	53	47	7	9	13	12	10
> 0 - 0.5	5	4	3	4	3	17	16	13	19	8
> 0.5 - 1.0	10	8	15	11	10	33	34	33	26	31
> 1.0 - 1.5	2	3	5	2	8	8	9	11	7	14
> 1.5 - 2.0	2	1	1	2	3	6	2	3	8	6
> 2.0 - 2.5				2		2	3	3	2	3
> 2.5 - 3.0						1	1		1	
> 3.0 - 3.5										
> 3.5 - 4.0		1	1		1		1			
Total Sites (with at least 1 test)	75	74	75	74	72	74	75	76	75	72

*Observations on Table 10*

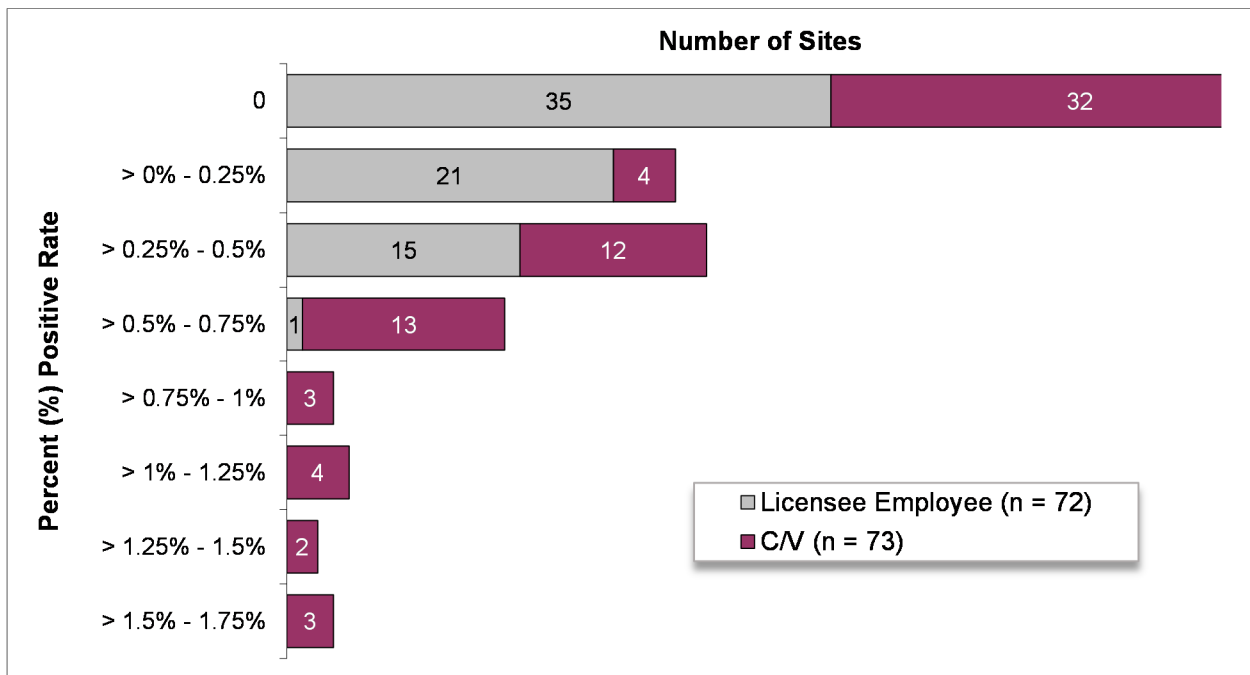
Licensee employee applicant:

- Between 65 and 77 percent of sites each year reported no pre-access testing positives for licensee employee applicants (47 to 57 sites per year).
- Four to 11 sites per year reported positive rates between 1.0 and 2.0 percent. Calendar year 2015 marked the largest number of sites in the past 5 years that reported a positive rate between 1.0 and 1.5 percent.
- Only one site per year in 2012, 2013, and 2015 reported a positive rate between 3.5 and 4.0 percent. Each site was an operating power reactor that conducted a small number of tests (in 2012, 75 individuals tested with three positive; in 2013, 26 individuals tested with one positive; in 2015, 75 individuals tested with three positive).

C/V applicant:

- Between 9 and 17 percent of sites each year reported no pre-access testing positives for C/Vs (7 to 13 sites per year). These data suggest that D&A testing programs are much less likely to deter substance-using C/Vs from applying for employment, as compared to licensee employee applicants.
- Eleven to 20 sites per year reported positive rates between 1.0 and 2.0 percent. Calendar year 2015 reflected the largest number of sites in the past 5 years that reported a positive rate between 1.0 and 2.0 percent.
- Three to four sites per year from 2011 through 2015 reported positive pre-access testing rates between 2.0 and 3.0 percent. In 2012, 2014, and 2015, both power reactor construction sites reported positive rates in this category; and in 2011 and 2013, one of the power reactor construction sites reported a positive rate in this category.
- The one site in 2012 with the highest positive rate (3.57 percent) was a corporate FFD program office that tested 28 individuals, with one positive result.

**Chart 11. Random Testing, Distribution of Site Specific Positive Rates by Employment Category, 2015**



\* Refer to Table 11 for the data summarized in this chart.

#### Observations on Chart 11

##### Licensee employee:

- Approximately 49 percent of sites reported no random testing positives (35 of 72 sites). Of the 51 percent of sites that reported at least one positive (37 of 72 sites), all but one reported positive rates of 0.50 percent or less.
- The one site with a random testing positive rate between 0.5 and 0.75 percent was an operating power reactor site with a positive rate of 0.58 percent.

##### C/V:

- Approximately 44 percent of sites reported no random testing positives (32 of 73 sites). In 2014, 31 percent of sites reported no random testing positives.
- Of the 56 percent of sites that reported at least one positive (41 of 73 sites), 32 sites reported random testing positive rates of 1 percent or less, with nine sites reporting positive rates between 1.0 and 1.75 percent. The highest site-specific positive rate, a power reactor construction site, was 1.64 percent.
- C/Vs tend to test positive at higher rates on random testing than licensee employees. Approximately 34 percent (25 of 73 sites) reported C/V positive rates greater than 0.5 percent. By comparison, approximately 1 percent (1 of 72 sites) reported licensee employee positive rates greater than 0.5 percent.

**Table 11. Random Testing, Distribution of Site Specific Positive Rates by Employment Category, 2011–2015**

Positive Rate Range (%)	Number of Sites by Year									
	Licensee Employee					C/V				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
0	34	33	40	39	35	24	25	32	23	32
> 0 - 0.25	21	20	20	20	21	5	7	1	2	4
> 0.25 - 0.50	17	19	11	11	15	19	19	9	17	12
> 0.50 - 0.75	2	2	3	3	1	5	7	15	18	13
> 0.75 - 1.00	1	1	1			9	4	7	4	3
> 1.00 - 1.25				1		4	6	3	3	4
> 1.25 - 1.50						4	3	8	4	2
> 1.50 - 1.75						3	3		3	3
> 1.75 - 2.00						1			1	
> 2.00 - 2.25						1		1		
Total Sites (with at least 1 test)	75	75	75	74	72	75	74	76	75	73

*Observations on Table 11*

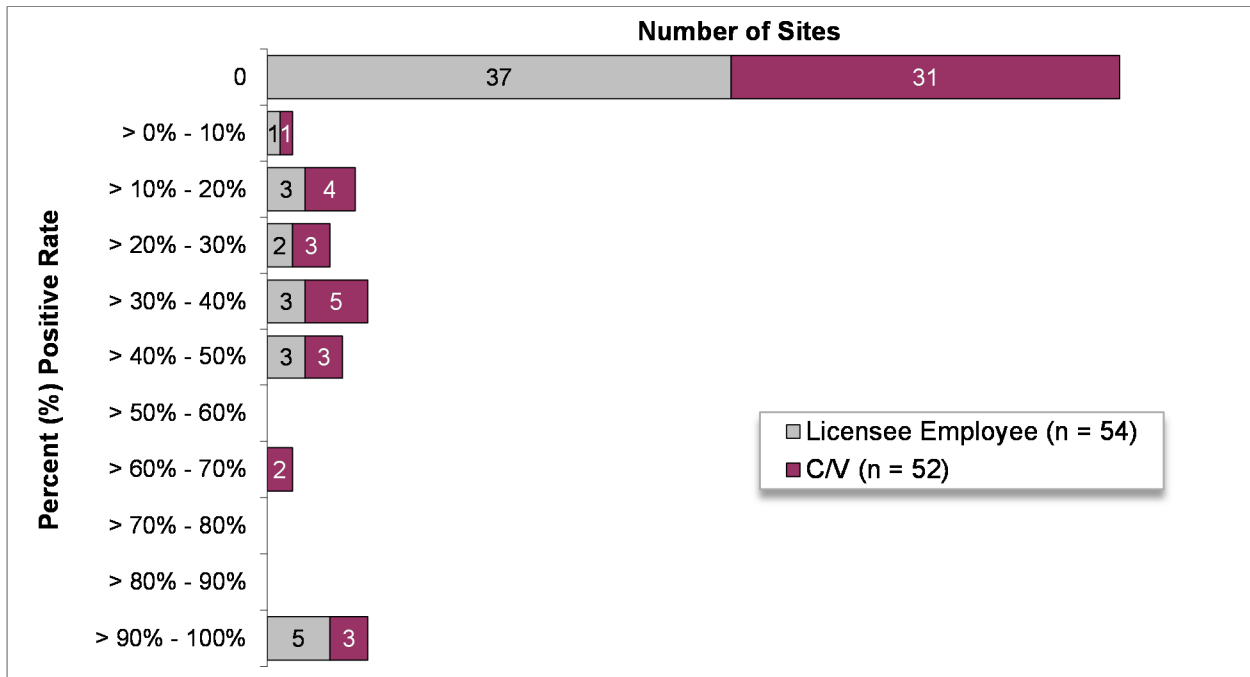
Licensee employee:

- Between 44 and 53 percent of sites each year reported no random testing positives for licensee employees (33 to 40 sites per year).
- The distribution of random testing positive rates appears highly consistent across years, with one identified variability between sites with no positive test results and those in the positive rate range of greater than 0.25 to 0.50 percent.
- Only one site in the last 5 years reported a random testing positive rate greater than 1 percent.

C/Vs:

- Between 31 and 44 percent of sites each year reported no random testing positives for C/Vs (23 to 32 sites per year).
- Nine to 13 sites per year reported random testing positive rates greater than 1 percent, accounting for between 12 and 17 percent of sites each year.

**Chart 12. For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, 2015**



\* Refer to Table 12 for the data summarized in this chart.

*Observations on Chart 12*

- As a point of reference, in 2015, 180 licensee employees and 449 C/Vs were for-cause tested, with 22 positives reported for licensee employees and 65 positives for C/Vs. (Table 6)
- Unlike pre-access testing (Chart 7) and random testing (Chart 8), no differential in site-specific positive rates by employment category appears to exist for for-cause testing. This observation is consistent with NRC staff assessment because for-cause testing is conducted based on signs of impairment or credible information of substance abuse.
- The high site-specific positive rates also are expected because this is impairment-based testing (see Table 12 for a comparison of positive rates from 2011 through 2015).
- Licensee employees – 74 percent of sites (54 of 73 sites) conducted at least one for-cause test in 2015, with 31 percent of those sites reporting at least one positive (17 of 54 sites).
- C/Vs – 71 percent of sites (52 of 73 sites) conducted at least one for-cause test in 2015, with 40 percent of those sites reporting at least one positive (21 of 52 sites).
- Operating power reactor sites reported all for-cause testing positive rates greater than 50 percent (five sites for licensee employees, five sites for C/Vs). In each case, one or two individuals tested positive at the site.

**Table 12. For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, 2011–2015**

Positive Rate Range (%)	Number of Sites by Year									
	Licensee Employee					C/V				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
0	38	43	41	40	37	29	29	29	36	31
> 0% - 10%	1		1		1	7	3	1	3	1
> 10% - 20%	1	1	4	3	3	6	8	7	4	4
> 20% - 30%	4	2	2	2	2	6	2	4	3	3
> 30% - 40%	5	5	3	1	3	1	4	7	5	5
> 40% - 50%	5		3	10	3	6	7	6	1	3
> 50% - 60%							3			
> 60% - 70%				1			1	1		2
> 70% - 80%			1							
> 80% - 90%										
> 90% - 100%	1	4	3	3	5	4	5	3	3	3
Total Sites (with at least 1 test)	55	55	58	60	54	59	62	58	55	52

*Observations on Table 12*

Licensee employee:

- Between 67 and 78 percent of sites per year that performed at least one for-cause test reported no positive results for licensee employees (37 to 43 sites per year).
- Between 15 and 29 percent of sites per year with at least one positive for-cause test result for a licensee employee, reported in the positive rate range of greater than 0 to 50 percent (8 to 16 sites per year).
- A small percentage of sites per year (2 to 9 percent) reported a for-cause positive rate for licensee employees of between 90 and 100 percent.

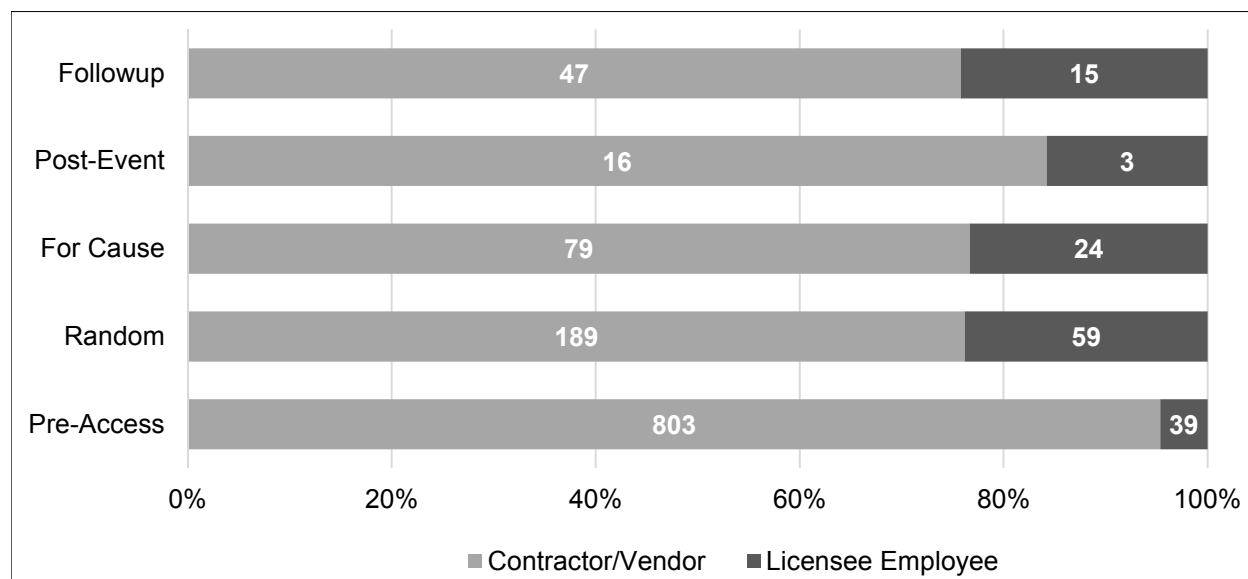
C/V:

- Between 47 and 65 percent of sites per year that performed at least one for-cause test reported no positive results for C/Vs (29 to 36 sites per year).
- Between 29 and 44 percent of sites per year with at least one positive for-cause test for a C/V, reported in the positive rate range of greater than 0 to 50 percent (16 to 26 sites per year).
- A small percentage of sites per year (5 to 15 percent) reported a for-cause positive rate for C/Vs of between 90 and 100 percent.

## Section 2h. Substance Results by Employment, Test, and Labor Categories

This section presents substance detection results and trends by employment and labor categories.

**Chart 13. Total Substances Identified\* by Employment Category for Each Test Category**



\* Substance totals include refusal to test results.

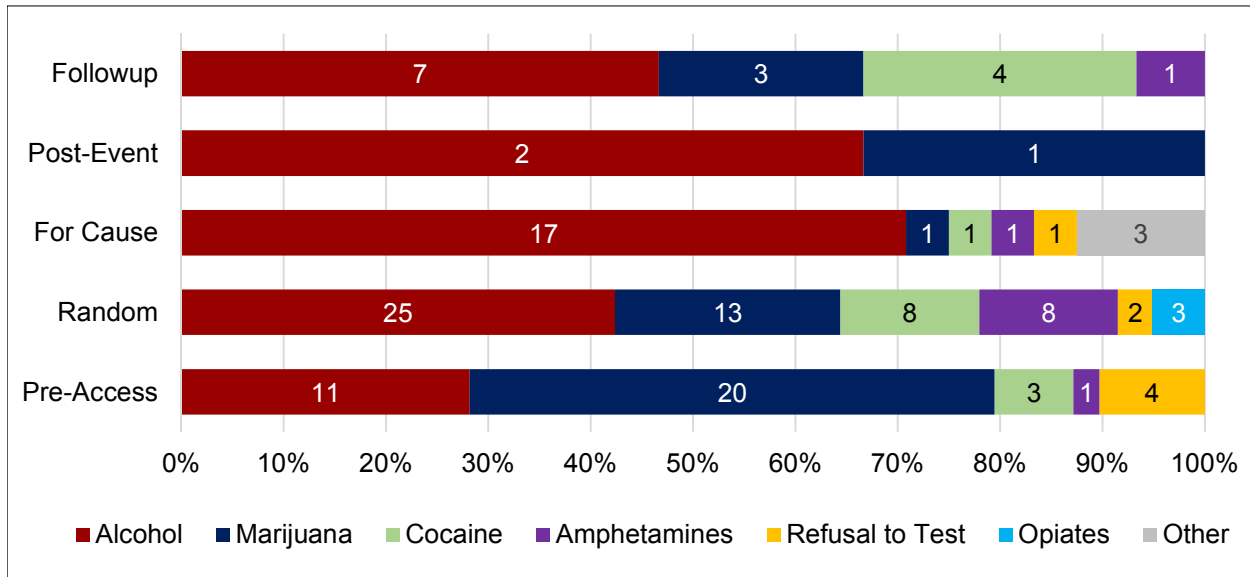
### Observations on Chart 13

- As a point of reference, in 2015, 1,200 individuals tested positive or refused to take an NRC-required test (Table 5).
  - The 1,068 C/Vs with a D&A testing violation tested positive for 924 substances and 144 refused to test (i.e., a total of 1,134 results). (Table 6 and Table 7)
  - The 132 licensee employees with a D&A testing violation tested positive for 125 substances and 7 refused to test (i.e., a total of 140 results). (Table 6 and Table 7)
- The number of substances (including refusals to test) reported for the 1,068 C/Vs with a D&A testing violation in 2015 is as follows: pre-access (803), random (189), for-cause (79), post-event (16), and follow-up (47).
- The number of substances (including refusals to test) reported for the 132 licensee employees with a D&A testing violation in 2015 is as follows: pre-access (39), random (59), for-cause (24), post-event (3), and follow-up (15).
- Pre-access testing identified 66 percent of substances (842 of 1,274 results) and random testing identified 19 percent of substances (248 of 1,274). The remaining 14 percent of substances were identified by for-cause (103), follow-up (62), and post-event (19) tests.

Chart 14 and Chart 15 highlight the percentage and number of positive results associated with each substance by test category for licensee employees and C/Vs, respectively. These charts provide a concise way to compare the relative percentage of positive results by substance for

each test category. Each horizontal bar accounts for 100 percent of test results for that test category, but this presentation does not reflect the magnitude of results. The number identified in each bar chart segment is the number of results for the substance.

**Chart 14. Licensee Employees, Percentage and Number of Positive Results for Each Substance by Test Category**

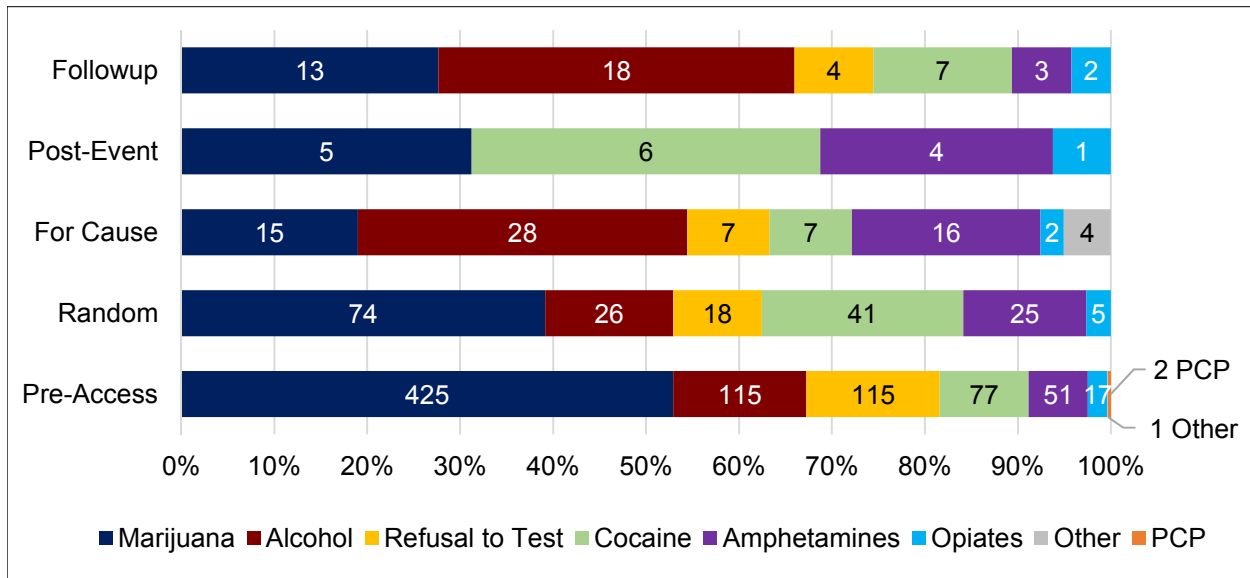


\* Refer to Table A-8 in the report appendix for the specific percentages for each substance detected.

*Observations on Chart 14*

- Marijuana and alcohol accounted for between 64 percent (38 of 69 random test results) and 100 percent (3 post-event test results) of results in each test category.
- Alcohol was the most prevalently identified substance in four test categories: for cause (71 percent of results, 17 of 24), post-event (67 percent of results, 2 of 3), follow-up (47 percent of results, 7 of 15), and random (42 percent of results, 25 of 59).
- Marijuana was the most prevalently identified substance in pre-access testing, accounting for 51 percent of results (20 of 39).
- Cocaine was primarily identified by random testing (8 results), with detection also in pre-access (3), for-cause (1), and follow-up (4) testing.
- Amphetamines were mostly identified by random testing (8 results), with one result each in pre-access, for-cause, and follow-up testing.
- Seven individuals refused to test on pre-access (4), random (2), and for-cause (1).
- “Other” substances (3) were identified by for-cause testing: fentanyl (1), oxycodone (1), and oxymorphone (1).
- Opiates (3) were identified by random testing.
- While not visible in how the data are presented, multiple substances were identified in the specimens of six licensee employees on pre-access (1), random (3), for-cause (1), and follow-up (1) tests.

**Chart 15. Contractor/Vendors, Percentage and Number of Positive Results for Each Substance by Test Category**



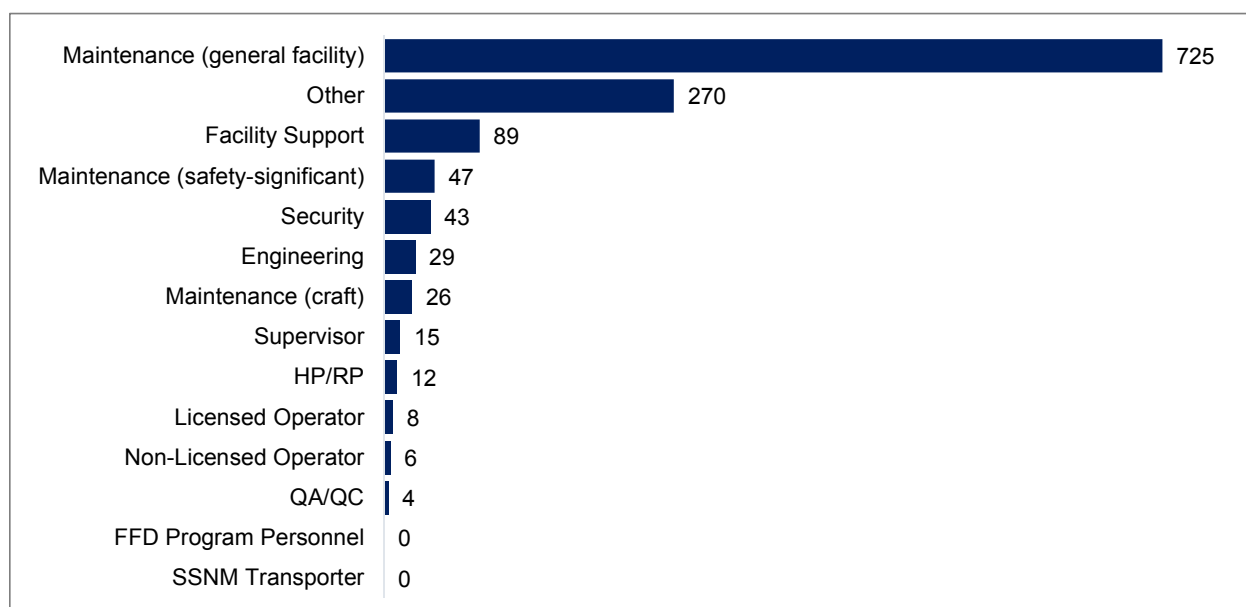
\* Refer to Table A-9 in the report appendix for the specific percentages for each substance detected.

**Observations on Chart 15**

- Marijuana accounted for 19 percent (for-cause, 15 of 79) to 53 percent (pre-access, 425 of 803) of positive results in a test category.
- Alcohol accounted for 14 percent (random, 26 of 189) to 38 percent (follow-up, 18 of 47) of positive results in a test category.
- Cocaine accounted for nine percent (for-cause, 7 of 79) to 38 percent (post-event, 6 of 16) of positive results in a test category.
- Refusals to test comprised between nine percent (follow-up, 4 of 47) to 14 percent (pre-access, 115 of 803) of D&A testing violations in a test category. As a result, the substances identified in some test categories were impacted by the number of subversion attempts without specimen testing (i.e., refusal to test results). Therefore, Chart 15 does not present a full accounting of the substances used in the tested population.
- Amphetamines positives ranged from 6 percent (pre-access, 51 of 803) to 25 percent (post-event, 4 of 16) of positive test results in a test category.
- Two test categories identified “other” substances (5):
  - for-cause (4): benzodiazepines (1), hydrocodone (1), and tramadol (2)
  - pre-access (1): buprenorphine (1)
- PCP was identified in two pre-access tests. The last time PCP was detected in personnel subject to Part 26 was in 2011, with three positive results reported. (Table A-3)
- While not visible in how the data are presented, multiple substances were identified in the specimens of 55 C/Vs on pre-access (32), random (10), for-cause (10), post-event (2), and follow-up (1) tests.



**Chart 16. Total Substances Identified by Labor Category**



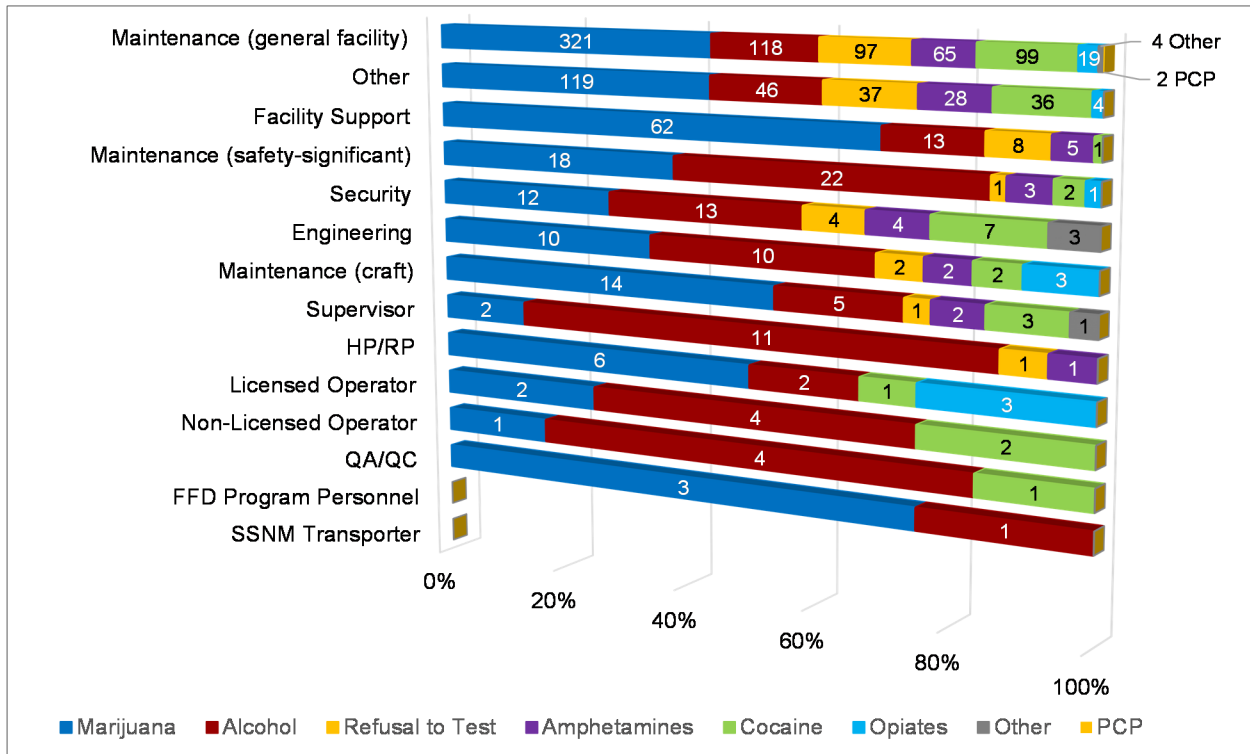
HP/RP Health Physics/Radiation Protection  
QA/QC Quality Assurance/Quality Control

**Observation on Chart 16**

- Three labor categories accounted for 85 percent of substances identified (including refusals to test) in 2015 (1,084 of 1,274): maintenance (general facility) (725), other (270), and facility support (89).
- Examples of “other” labor category descriptions reported by licensees and other entities included: accounting clerk, administrative assistant, cafeteria worker, carpenter, custodian, electrician, equipment operator, fire watch, general laborer, general mechanic, inspector, janitorial, laborer, painter, pipefitter, scaffold builder, student intern, IT support, training proctor, and welder. Use of the “other” labor category primarily reflected maintenance activities that could have been characterized under “maintenance (general facility)” or “facility support.”
- Descriptions of labor categories associated with maintenance activities include:
  - “Maintenance (general facility)” – maintenance activities not performed on safety- or security significant SSCs such as cleaners, painters, roofers, and scaffolders.
  - “Maintenance (safety-significant)” – maintenance or surveillance on safety- or security-related structures, systems, and components (SSCs) such as crane, gantry, and lift operators.
  - “Facility support” – activities and positions associated with delivery, equipment room attendant, warehousing, stocking, janitorial services, cafeteria, administrative assistances, and landscaping.

Note, the “maintenance (craft)” labor category was replaced in the Single Positive Test Form released prior to the 2015 reporting cycle (version 1.6.0), with three labor categories: “facility support”, “maintenance (general facility),” and “maintenance (safety-significant).” However, some licensees or other entities used the older form version.

**Chart 17. Substances Identified by Labor Category**



\* Refer to Table A-10 for the data used to create this chart.

**Observations on Chart 17**

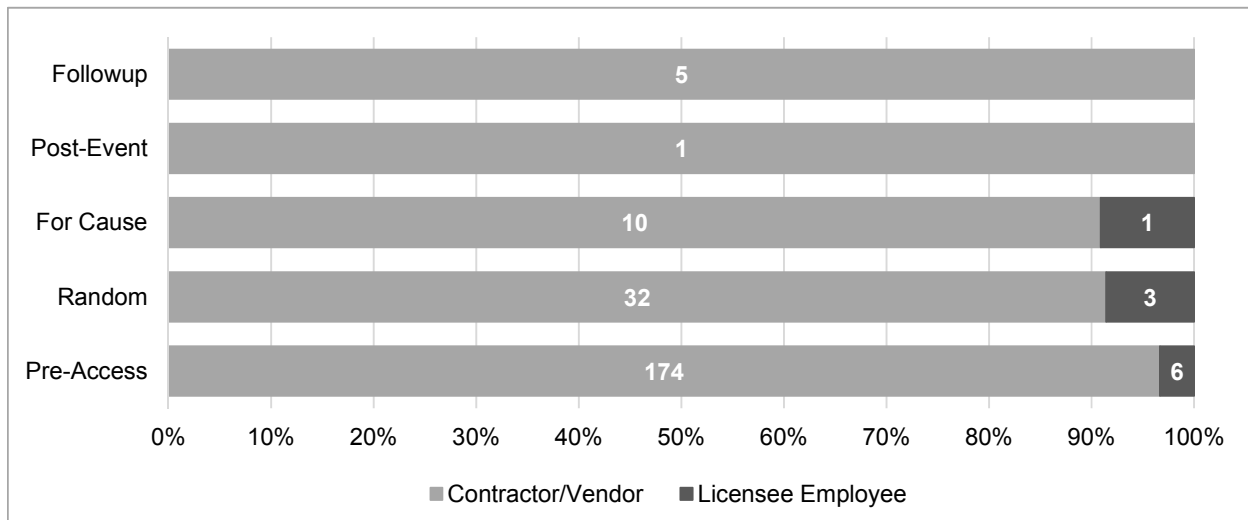
- Marijuana, the most detected substance (45 percent of substances, Table 7), was identified in each labor category with a positive result. It accounted for between 13 percent (supervisor, 2 of 15) to 75 percent (QA/QC, 3 of 4) of test results in each labor category.
- Alcohol, the second most detected substance (20 percent of substances, Table 7), also was identified in each labor category with a positive result. It accounted for between 16 percent (HP/RP, 2 of 12) to 73 percent (supervisor, 11 of 15) of test results in each labor category.
- Cocaine was identified in 10 of 12 labor categories with a positive test result.
- Opiates were identified in 5 of 12 labor categories with a positive test result.
- “Other” substances (8), those not included in the NRC-minimum testing panel, were detected in three labor categories:
  - maintenance (general facility): benzodiazepines (1), buprenorphine (1), hydrocodone (1), and tramadol (1)
  - security: fentanyl (1), oxycodone (1), and oxymorphone (1)
  - maintenance (craft): tramadol (1)
- The substances detected in the “maintenance (general facility)” and “other” labor categories are incomplete due to the high number of subversion attempts where no specimen was collected or tested (i.e., refusals to test).
- Seven licensed operators tested positive for alcohol (4), cocaine (2), and marijuana (2). As noted in Table 1, one of these individuals tested positive for two substances.

## Section 2i. Subversion Attempts

This section presents information on subversion attempts. Subversion attempts include efforts to avoid testing (e.g., refusing to provide a specimen), as well as efforts to cause an inaccurate test result (e.g., adulterating a specimen, using a specimen other than the donor's) to prevent detection of substance use or abuse.

Chart 18 and Chart 19 illustrate the relative contribution of licensee employees and C/Vs to subversion attempts, as identified by test category and labor category, respectively.

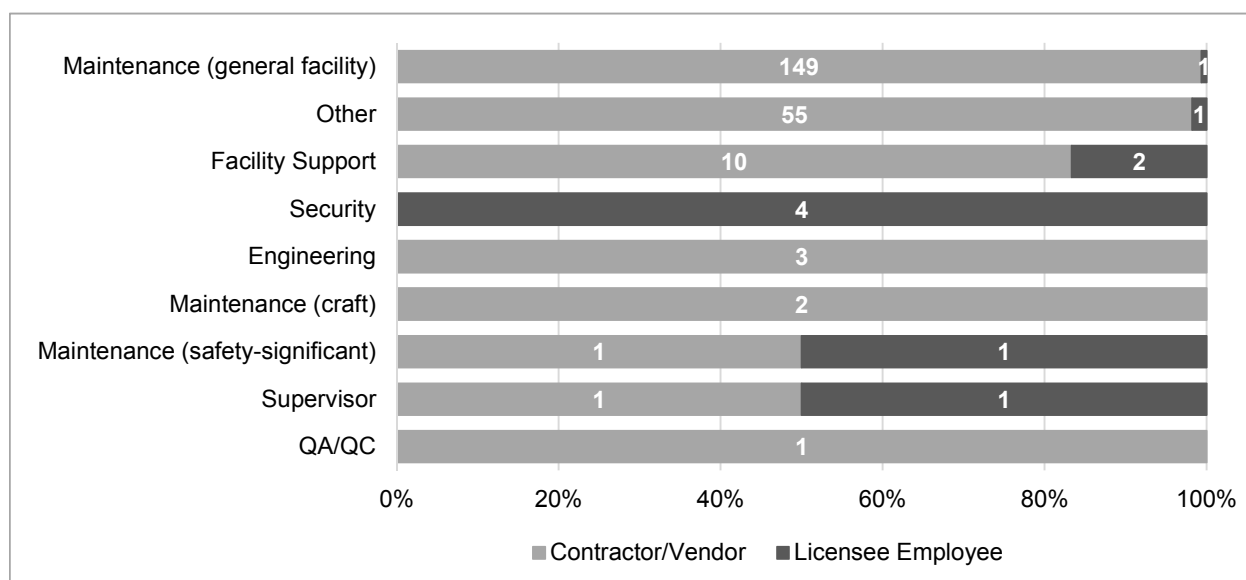
**Chart 18. Subversion Attempts by Test and Employment Categories**



### Observations on Chart 18

- Chart 18 presents the number of subversion attempts identified by test category, and within each test category, presents the number of subversions by employment category. For example, in the random test category, 35 subversion attempts were identified (32 by C/Vs and three by licensee employees). These data are charted in a 100 percent horizontal bar chart to convey relative percentages between employment categories for each test category. This means that for random testing, 91 percent of the subversion attempts were made by C/Vs, with the remaining 9 percent made by licensee employees.
- Approximately 78 percent (180 of 232) of subversion attempts occurred during pre-access testing, with C/Vs accounting for all but six of these attempts.

**Chart 19. Subversion Attempts by Labor\* and Employment Categories**



\* This chart only includes labor categories with reported subversion attempts.

*Observations on Chart 19*

Chart 19 presents the number of subversion attempts identified by labor category, and within each labor category by employment category.

- Approximately 96 percent of subversion attempts (222 of 232) were committed by individuals in five labor categories associated with maintenance activities: maintenance (general facility) (150), other (56), facility support (12), maintenance (craft) (2), and maintenance (safety-significant) (2). Note: the NRC staff reviewed the “other” labor category descriptions provided by licensees and other entities and determined that all responses would fall under the facility support, maintenance (general facility), and maintenance (safety-significant) labor categories.
- Licensee employees exceeded C/Vs in the number of subversion attempts in the security labor category, with all four subversions committed by licensee employees in 2015. This pattern is consistent with 2014, where five of seven subversions in the security labor category were committed by licensee employees.
- C/Vs committed approximately 96 percent of subversion attempts (222 of 232) in 2015.

Figure 1 presents a “road map” to the detection of subversion attempts in 2015. This “subversion map” includes three colored boxes that represent the three stages in the testing process: (1) the first specimen collection, (2) the second specimen collection (if necessary), and (3) the resulting subversion attempt determination.

Beginning in the “First Collection” box, the map presents a range of outcomes, including no specimen collected, a specimen collected with an indication of a subversion attempt, and a seemingly normal specimen collected. The “Second Collection” box identifies outcomes of the second collection; either no specimen is collected or a specimen is collected under direct observation. Finally, the third box tabulates subversion attempt determinations, including a donor refusal, testing results (drug, validity, or both), or a decision by FFD management to stop

the collection process because definitive evidence of a subversion attempt was obtained (e.g., identified paraphernalia).

The subversion map provides important information that licensees and other entities can use to train specimen collectors in identifying subversion attempts. The subversion map presents the results of a sophisticated analysis of data only possible because of the detailed event specific information provided by licensees and other entities in e-reports.

#### *Observations on Figure 1*

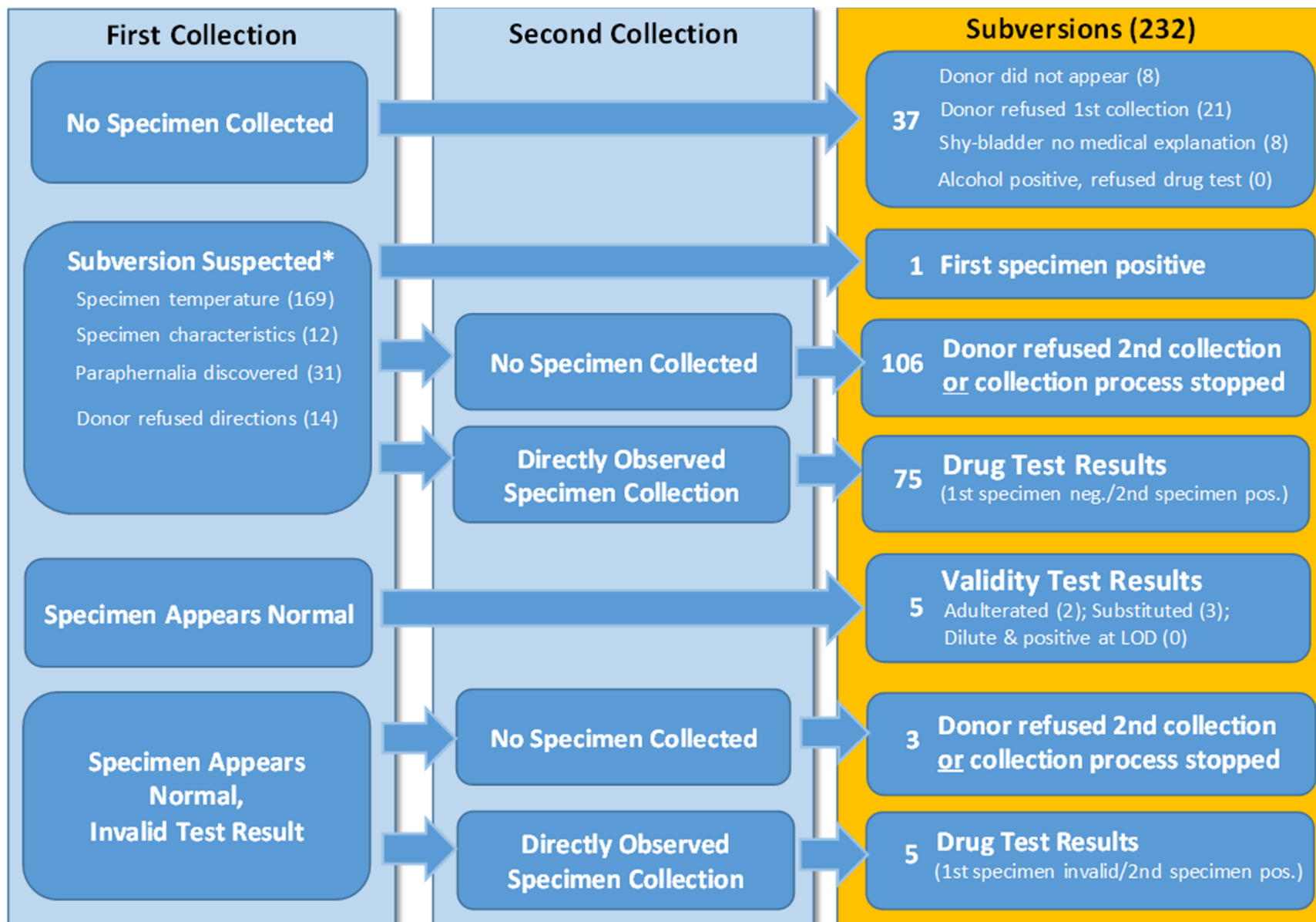
- The “Subversion Suspected” category in the “First Collection” column summarizes observations made by the specimen collector that indicated a possible subversion attempt (i.e., out of range specimen temperature, specimen characteristics (e.g., odor, color), cheating paraphernalia discovered, donor refused to follow directions). Specimen temperature was the best indicator of a potential subversion attempt, with “Temperature out of range” reported in 73 percent of subversion attempts in 2015 (169 of 232).
- A specimen was not tested in 63 percent of subversion attempts (146 of 232) (e.g., no specimen was provided, the collection was stopped). Due to the high number of subversions without specimen testing (i.e., 146 of 954 individuals with a drug testing violation), the charts and tables in this report on substance detection results and trends (e.g., Chart 6, Table 7) do not fully account for all substances used in the tested population.
- Only six percent of subversion attempts (13 of 232) were identified solely by testing at an HHS-certified laboratory (i.e., the specimen provided by each donor appeared normal during the specimen collection process). These results included invalid test results on the initial collection where the donor refused to provide a second specimen or the second specimen provided tested drug positive, and adulterated and substituted validity test results.
- Diligent and well-trained specimen collectors following the collection procedures in Subpart E of Part 26, verified in many cases by laboratory testing, proved instrumental in identifying the majority of individuals attempting to subvert the testing process.

Table 13 presents a variety of trending information on subversion attempts from 2011 through 2015. The information includes subversion map data from Figure 1, and other characteristics associated with electronic reporting of subversion data such as the percentage of D&A testing violations that subversion attempts comprise, the number of sites reporting a subversion attempt, and where the majority of subversion attempts are identified (i.e., at pre-access testing and by C/Vs).

#### *Observations on Table 13*

- From 2011 through 2015, subversion attempts comprised approximately 19 to 24 percent of drug testing violations each year (accounting for 130 of 698 individuals with a drug testing violation in 2011; and 232 of 954 individuals with a drug testing violation in 2015).
- Subversion attempts amongst sites is prevalent, with approximately 54 to 66 percent of sites each year from 2011 through 2015 reporting at least one attempt (36 to 47 sites per year).
- C/Vs accounted for approximately 95 to 97 percent of subversion attempts (123 to 180 per year from 2011 through 2015).
- Between 72 and 78 percent of subversion attempts occurred during pre-access testing (94 to 180 per year from 2011 through 2015).

**Figure 1. Subversion Attempts – Road Map to Detection**



**Table 13. Subversion Attempts Road Map Trends, 2011–2015**

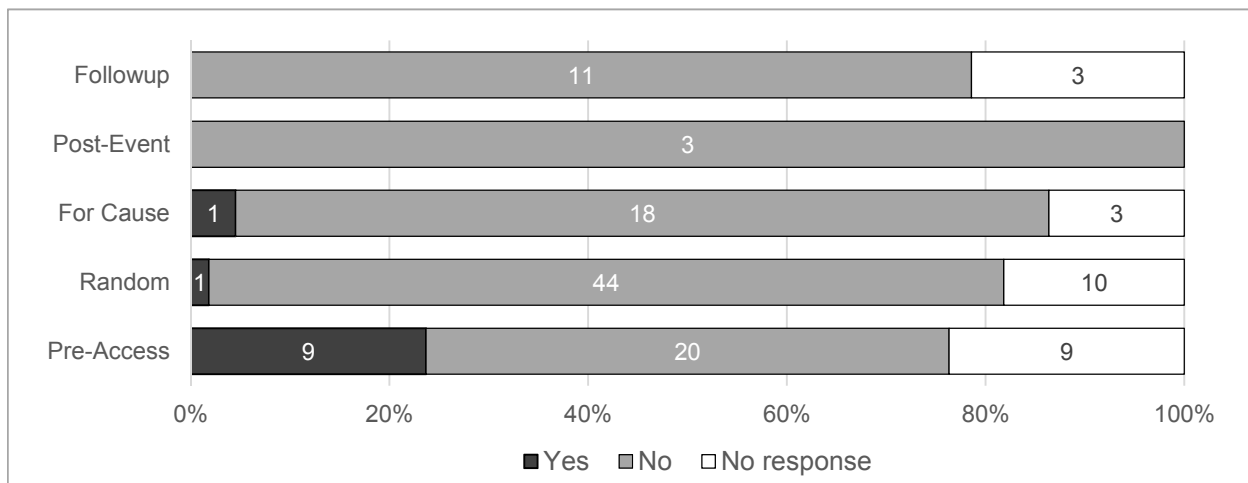
<b>Subversion Attempt Description (E-reported data)</b>		<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
No first specimen		14	40	25	41	37
First specimen (subversion attempt suspected)	First specimen drug positive	0	0	0	0	1
	No second specimen	69	57	73	74	106
	Second specimen collected under direct observation is drug positive	38	50	39	63	75
First specimen (validity test result) – adulterated, substituted, or dilute positive at LOD testing		5	4	4	4	5
First specimen (invalid test result)	No second specimen	2	3	3	5	3
	Second specimen collected under direct observation is drug positive	2	5	1	0	5
<b>Total Subversion Attempts (e-reported)</b>		<b>130</b>	<b>159</b>	<b>145</b>	<b>187</b>	<b>232</b>
<b>Additional Subversion Attempt Information (E-reported data)</b>						
Percentage of total subversion attempts reflected in e-reported data		90.9% (130 of 143)	89.8% (159 of 177)	97.9% (145 of 148)	100% (187)	100% (232)
Total D&A testing violations (and alcohol only)		918 SPTFs (220 alcohol)	1,003 SPTFs (223 alcohol)	975 SPTFs (225 alcohol)	1,133 SPTFs (251 alcohol)	1,200 SPTFs (246 alcohol)
Subversion attempts – percentage of drug testing violations		18.6% (130 of 698)	20.4% (159 of 780)	19.3% (145 of 750)	21.2% (187 of 882)	24.3% (232 of 954)
Percentage of sites with at least one subversion attempt		65.6% (40 of 61)	53.7% (36 of 67)	59.2% (42 of 71)	60.0% (45 of 75)	64.4% (47 of 73)
Percentage of subversion attempts identified at pre-access testing		72.3% (94 of 130)	76.7% (122 of 159)	75.8% (110 of 145)	72.2% (135 of 187)	77.6% (180 of 232)
Percentage of subversion attempts by C/Vs		94.6% (123 of 130)	96.2% (153 of 159)	96.6% (140 of 145)	96.3% (180 of 187)	95.7% (222 of 232)
Percentage of subversion attempts from reactor construction sites		8.4% (12 of 143)	26.0% (46 of 177)	31.1% (46 of 148)	34.2% (64 of 187)	30.6% (71 of 232)
Total D&A testing violations (hard copy and e-reported)		1,080 D&A (262 alcohol)	1,114 D&A (255 alcohol)	1,007 D&A (238 alcohol)	1,133 D&A (251 alcohol)	1,200 D&A (246 alcohol)
Percentage of sites e-reporting		80.3% (61 of 76)	88.2% (67 of 76)	93.4% (71 of 76)	100% (75 of 75)	100% (73 of 73)

## Section 2j. Outage Workers

This section includes new data on D&A test results for a particular type of work activity at operating power reactor sites, workers who support outages (e.g., refueling and maintenance). Chart 20 and Chart 21 present information on whether a licensee employee or C/V that tested positive, respectively, supported outage activities.

In the SPTF for each D&A testing violation, the licensee or other entity can enter information into a voluntary data collection field titled “Outage Worker (optional)?” Because not all licensee and other entities answered the outage worker question, the bar chart for one or more test categories may include results categorized as “No response.” In addition, for Chart 21, due to the high number of tests conducted by reactor construction sites in 2015, these sites are presented separately as “No (construction)” responses.

**Chart 20. Licensee Employees, Positive Results by Test Category for the Question: “Is this Individual an Outage Worker?”**



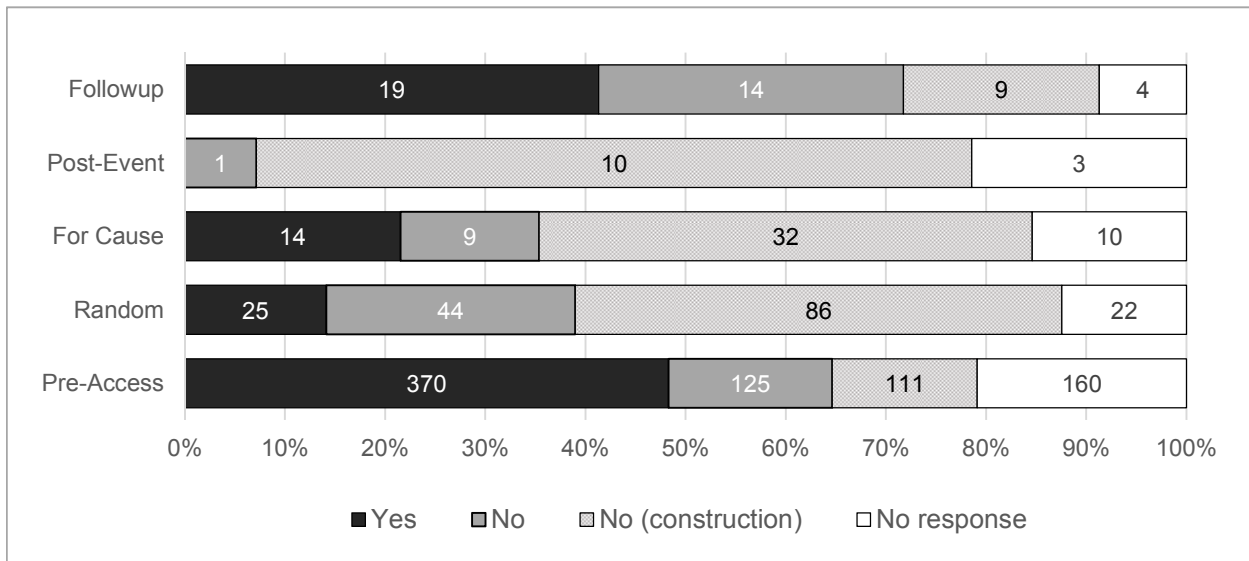
### Observations on Chart 20

As a point of reference, the total number of C/V positives presented in Chart 20 for each test category aligns with the values presented in Table 6. For example, 38 licensee employees tested positive on pre-access testing in 2015.

- Only a limited number of positive test results were associated with licensee employees supporting outage activities: pre-access testing (9), random testing (1), and for-cause testing (1).
- Approximately 19 percent of SPTFs (25 of 132) submitted for the D&A testing violations of licensee employees did not contain a response to the outage worker question.



**Chart 21. Contractor/Vendors, Positive Results by Test Category for the Question: “Is this Individual an Outage Worker?”**



*Observations on Chart 21*

As a point of reference, the total number of positives presented in Chart 21 for each test category aligns with the values presented in Table 6. For example, 14 C/Vs tested positive on post-event testing in 2015.

- C/V outage workers accounted for the following percentages of test results (note, the total number of individuals only includes “Yes”, “No”, and “No (construction)” responses):
  - 61 percent of pre-access testing positives (370 of 606)
  - 16 percent of random testing positives (25 of 155)
  - 26 percent of for-cause testing positives (14 of 55)
  - 0 percent of post-event testing positives (0 of 11)
  - 45 percent of follow-up testing positives (19 of 42)
- Approximately 19 percent of SPTFs (199 of 1,068) submitted for the D&A testing violations of C/Vs did not contain a response to the outage worker question.
- This chart also demonstrates the impact of reactor construction site test results on total results for C/Vs. In 2015, reactor construction sites accounted for 23 percent of positive test results for C/Vs (248 of 1,168 individuals):
  - 14 percent of pre-access testing positives (111 of 766)
  - 49 percent of random testing positives (86 of 177)
  - 49 percent of for-cause testing positives (32 of 65)
  - 71 percent of post-event testing positives (10 of 14)
  - 20 percent of follow-up testing positives (9 of 46)

## TABLE OF CHANGES

This table highlights changes made to charts and tables as compared to the prior year's report (i.e., Summary of Fitness for Duty Program Performance Reports for Calendar Year 2014).

2014 Report		Current Report (2015)		Changes Made
Chart/ Table No.	Chart/Table Title	Chart/ Table No.	Chart/Table Title	
Chart 3	Trends in Positive Random Testing Rates*	Chart 5	Trends in Positive Random Testing Rates	Renumbered chart
Chart 4	Trends in Substances* Identified, Percentage of Total Positives by Substance Tested	Chart 6	Trends in Substances* Identified, Percentage of Total Positives by Substance Tested	Renumbered chart
Chart 5	Pre-Access Testing – Trends in Positive Rates by Employment Category*	Chart 7	Pre-Access Testing, Trends in Positive Rates by Employment Category	Renumbered chart
Chart 6	Random Testing – Trends in Positive Rates by Employment Category*	Chart 8	Random Testing, Trends in Positive Rates by Employment Category	Renumbered chart
Chart 7	For-Cause Testing – Trends in Positive Rates by Employment Category*	Chart 9	For-Cause Testing, Trends in Positive Rates by Employment Category	Renumbered chart
Chart 8	Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014	Chart 10	Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, 2015	Renumbered chart
Chart 9	Random Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014	Chart 11	Random Testing, Distribution of Site Specific Positive Rates by Employment Category, 2015	Renumbered chart
Chart 10	For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014	Chart 12	For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, 2015	Renumbered chart
Chart 11	Licensee Employees, Positive Results by Substance and Test Category	N/A	N/A	Removed. Data already presented in Chart 15 in the 2015 report

2014 Report		Current Report (2015)		Changes Made
Chart/ Table No.	Chart/Table Title	Chart/ Table No.	Chart/Table Title	
Chart 12	Contractors/Vendors, Substances Detected (Including Testing Refusals) by Test Category	Chart 13	Total Substances Identified* by Employment Category for Each Test Category	<ul style="list-style-type: none"> <li>Added licensee employee data to chart</li> <li>Changed chart type to 100 percent horizontal bar chart to convey relative percentages of total substances by employment category for each test category</li> <li>Revised chart title</li> </ul>
Chart 13	Contractors/Vendors, Pre-Access Positive Results by Substance	N/A	N/A	Removed. Data already presented in Chart 15 in the 2015 report
Chart 14	Contractors/Vendors, Positive Results by Substance and Test Category	N/A	N/A	Removed. Data already presented in Chart 15 in the 2015 report
Chart 15	Licensee Employees, Percentage of Positive Results by Substance and Test Category	Chart 14	Licensee Employees, Percentage and Number of Positive Results for Each Substance by Test Category	<ul style="list-style-type: none"> <li>Renumbered chart</li> <li>Revised chart title</li> </ul>
Chart 16	Contractors/Vendors, Percentage of Positive Results by Substance and Test Category*	Chart 15	Contractor/Vendors, Percentage and Number of Positive Results for Each Substance by Test Category*	<ul style="list-style-type: none"> <li>Renumbered chart</li> <li>Revised chart title</li> </ul>
Chart 17	Total Substances Identified by Labor Category	Chart 16	Total Substances Identified by Labor Category	Renumbered chart
Chart 18	Substances Identified by Labor Category	Chart 17	Substances Identified by Labor Category	Renumbered chart
Chart 19	Alcohol Positives by Blood Alcohol Concentration Level and Test Category	Chart 3	Alcohol Positives by Blood Alcohol Concentration Level and Test Category	Relocated to improve flow of information in report, which resulted in the renumbering of the chart
Chart 20	Alcohol Positives by Blood Alcohol Concentration Level	Chart 4	Alcohol Positives by Blood Alcohol Concentration Level	Relocated to improve flow of information in report, which resulted in the renumbering of the chart
Table 5	Test Results by Test Category	Table 5	Test Results by Test Category	Changed column headers from "Number Tested" to "Tested," and from "Number Tested Positive" to "Positive"

2014 Report		Current Report (2015)		Changes Made
Chart/ Table No.	Chart/Table Title	Chart/ Table No.	Chart/Table Title	
Table 6	Test Results by Test and Employment Categories	Table 6	Test Results by Test and Employment Categories	Changed column headers from "Number Tested" to "Tested," and from "Number Positive" to "Positive"
Table 7	Substances Identified by Employment Category for All Test Categories	Table 7	Substances Identified by Employment Category for All Test Categories	Changed column headers from "Positive Test Result" to "Substance"; from "Number" to "Positive"; and from "Percent" to "Percent of Substances"
Table 8	Significant Fitness-for-Duty Events	N/A	N/A	Removed. Consolidated information in Table A-1.
Table 9	Trends in Testing by Test Category	Table 8	Trends in Testing by Test Category, 2004–2015	<ul style="list-style-type: none"> <li>Renumbered table</li> <li>Moved data from 2003 to Table A-9</li> <li>Added data for 2015</li> <li>Changed row labels from "Number Tested" to "Tested," and from "Number Positive" to "Positive"</li> </ul>
Table 10	Industry Positive Test Results for Pre-Access, Random, and For-Cause Testing by Employment Category, CY 2014	Table 9	Industry Positive Test Results for Pre-Access, Random, and For-Cause Testing by Employment Category, 2015	<ul style="list-style-type: none"> <li>Renumbered table</li> <li>Changed column header from "Tests" to "Tested"</li> </ul>
Table 11	Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2011 – CY 2014	Table 10	Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, 2011–2015	<ul style="list-style-type: none"> <li>Renumbered table</li> <li>Added data for 2015</li> </ul>
Table 12	Random Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2011 – CY 2014	Table 11	Random Testing, Distribution of Site Specific Positive Rates by Employment Category, 2011–2015	<ul style="list-style-type: none"> <li>Renumbered table</li> <li>Added data for 2015</li> </ul>
Table 13	For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2011 – CY 2014	Table 12	For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, 2011– 2015	<ul style="list-style-type: none"> <li>Renumbered table</li> <li>Added data for 2015</li> </ul>
Table 14	Subversion Attempts Road Map Trends, CY 2011 – CY 2014	Table 13	Subversion Attempts Road Map Trends, 2011–2015	<ul style="list-style-type: none"> <li>Renumbered table</li> <li>Added data for 2015</li> </ul>

2014 Report		Current Report (2015)		Changes Made
Chart/ Table No.	Chart/Table Title	Chart/ Table No.	Chart/Table Title	
Table A-1	Significant Fitness-for-Duty Events (1990-2004)	Table A-1	Significant Fitness-for-Duty Events	Added data from 2005 through 2015
Table A-2	Trends in Testing by Test Category (1990-2002)	Table A-2	Trends in Testing by Test Category, 1990–2003	<ul style="list-style-type: none"> <li>Added data from 2003</li> <li>Changed row labels from “Number Tested” to “Tested,” and from “Number Positive” to “Positive”</li> </ul>
Table A-3	Trends in Substances* Identified	Table A-3	Trends in Substances* Identified	Added data for 2015
Table A-4	Trends in Positive Testing Rates (All Test Types) by Employment Category (1993-2014)	Table A-4	Trends in Positive Testing Rates by Employment Category (All Test Categories*)	<ul style="list-style-type: none"> <li>Added historical results from 1990 through 1992</li> <li>Added data for 2015</li> <li>Updated table title</li> <li>Changed column headers from “Total Tests” to “Tested,” and from “Number Positive” to “Positive”</li> </ul>
Table A-5	Trends in Positive Pre-Access Testing Rates by Employment Category (1993-2014)	Table A-5	Pre-Access Testing, Trends in Positive Rates by Employment Category	<ul style="list-style-type: none"> <li>Added historical results from 1990 through 1992</li> <li>Added data for 2015</li> <li>Updated table title</li> <li>Changed column headers from “Total Tests” to “Tested,” and from “Number Positive” to “Positive”</li> </ul>
Table A-6	Trends in Positive Random Testing Rates by Employment Category (1993-2014)	Table A-6	Random Testing, Trends in Positive Rates by Employment Category	<ul style="list-style-type: none"> <li>Added historical results from 1990 through 1992</li> <li>Added data for 2015</li> <li>Updated table title</li> <li>Changed column headers from “Total Tests” to “Tested,” and from “Number Positive” to “Positive”</li> </ul>
Table A-7	Trends in Positive For-Cause Testing Rates by Employment Category (1993-2014)	Table A-7	For-Cause Testing, Trends in Positive Rates by Employment Category	<ul style="list-style-type: none"> <li>Added historical results from 1990 through 1992</li> <li>Added data for 2015</li> <li>Updated table title</li> <li>Changed column headers from “Total Tests” to “Tested,” and from “Number Positive” to “Positive”</li> </ul>

The following table presents information on new tables and charts included in the 2015 report. The presentation of each table or chart is consistent with the order of appearance in the report.

### NEW TABLES AND CHARTS

Table/ Chart	Title	Description
Chart 20	Licensee Employees, Positive Results by Test Category for the Question "Is this Individual an Outage Worker?"	New chart created to present information on positive test results for licensee employee workers supporting outage activities at operating power reactors.
Chart 21	Contractor/Vendors, Positive Results by Test Category for the Question "Is this Individual an Outage Worker?"	New chart created to present information on positive test results for C/Vs supporting outage activities at operating power reactors.

## APPENIDIX TABLES

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**Table A-1. Significant Fitness-for-Duty Events\***

Year	Licensed Reactor Operators	Supervisors		FFD Program Personnel	Substances Found	Other Events <sup>†</sup>	Total
		Licensee Employee	C/V				
1990	19	26	12	1	6	-	64
1991	16	18	24	5	8	-	71
1992	18	22	28	0	6	-	74
1993	8	25	16	0	2	-	51
1994	7	11	11	1	0	-	30
1995	8	16	10	0	5	-	39
1996	8	19	8	2	5	-	42
1997	9	16	10	0	4	-	39
1998	5	10	10	3	0	-	28
1999	5	2	12	2	2	-	23
2000	5	11	8	0	3	-	27
2001	4	9	12	0	0	-	25
2002	3	3	12	3	1	-	22
2003	6	3	8	0	2	-	19
2004	9	7	4	0	9	-	29
2005	5	13	14	1	9	-	42
2006	3	6	6	0	2	-	17
2007	3	7	1	1	0	-	12
2008	2	8	6	1	0	-	17
2009	1	5	4	1	2	-	13
2010	4	7	3	2	3	-	19
2011	2	10	14	2	3	6	31
2012	6	9	13	1	4	2	35
2013	12	9	8	1	5	5	40
2014	9	12	16	2	2	4	45
2015	7	11	6	0	8	2	34

\* This table summarizes the number of 24-hour reportable events made under 10 CFR 26.73 (prior to the 2008 Part 26 final rule), and then 10 CFR 26.719(b). For the current reporting year, Table 1 and Table 2 provide additional detail on each event.

† In 2013, the NRC added the “Other Events” column to capture 24-hour reportable events not associated with an individual employee violation (e.g., programmatic failures or vulnerabilities such as HHS laboratory testing errors) and for events in which insufficient information existed in the 10 CFR 26.719(b) report to categorize the event under the associated labor category. The NRC staff did not tabulate results for years prior to 2011 because historical information was not readily available.

**Table A-2. Trends in Testing by Test Category, 1990–2003**

<b>Test Category</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994*</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Pre-Access</b>														
Tested	122,491	104,508	104,842	91,471	80,217	79,305	81,041	84,320	69,146	69,139	68,333	63,744	73,155	72,988
Positive	1,548	983	1,110	952	977	1,122	1,132	1,096	822	934	965	720	805	757
Percent Positive	1.26%	0.94%	1.06%	1.04%	1.22%	1.41%	1.40%	1.30%	1.19%	1.35%	1.41%	1.13%	1.10%	1.04%
<b>Random</b>														
Tested	148,743	153,818	156,730	146,605	78,391	66,791	62,307	60,829	56,969	54,457	51,955	50,080	49,741	49,402
Positive	550	510	461	341	223	180	202	172	157	140	204	148	114	132
Percent Positive	0.37%	0.33%	0.29%	0.23%	0.28%	0.27%	0.32%	0.28%	0.28%	0.26%	0.39%	0.30%	0.23%	0.27%
<b>For-Cause</b>														
Tested	664	572	552	599	521	576	621	531	455	506	609	506	617	637
Positive	212	167	175	163	119	138	136	144	97	120	132	99	110	123
Percent Positive	31.93%	29.20%	31.70%	27.21%	22.84%	23.96%	21.90%	27.12%	21.32%	23.72%	21.67%	19.57%	17.83%	19.31%
<b>Post-Event</b>														
Tested	68	155	144	152	237	187	227	191	265	230	274	224	455	415
Positive	2	0	3	0	3	1	2	5	3	0	6	2	2	3
Percent Positive	2.94%	0.00%	2.08%	0.00%	1.27%	0.53%	0.88%	2.62%	1.13%	0.00%	2.19%	0.89%	0.44%	0.72%
<b>Follow-up</b>														
Tested	2,633	3,544	4,283	4,139	3,875	3,262	3,262	3,296	2,863	3,008	2,861	2,649	2,892	3,142
Positive	65	62	69	56	50	35	40	31	43	30	49	35	21	42
Percent Positive	2.47%	1.75%	1.61%	1.35%	1.29%	1.07%	1.23%	0.94%	1.50%	1.00%	1.71%	1.32%	0.73%	1.34%
<b>TOTAL</b>														
Tested	274,599	262,597	266,551	242,966	163,241	150,121	147,458	149,167	129,698	127,340	124,032	117,203	126,860	126,584
Positive	2,377	1,722	1,818	1,512	1,372	1,476	1,512	1,448	1,122	1,224	1,356	1,004	1,052	1,057
Percent Positive	0.87%	0.66%	0.68%	0.62%	0.84%	0.98%	1.03%	0.97%	0.87%	0.96%	1.09%	0.86%	0.83%	0.84%

\* Beginning in 1994, the NRC reduced the minimum annual random testing rate from 100 percent to 50 percent of the subject population.

**Table A-3. Trends in Substances\* Identified**

Year	Marijuana	Cocaine	Alcohol	Amphetamines**	Opiates***	Phencyclidine	Total
1990	1,153	706	452	69	45	8	2,433
1991	746	549	401	31	24	11	1,762
1992	953	470	427	31	8	4	1,893
1993	781	369	357	51	13	5	1,576
1994	739	344	251	54	11	1	1,400
1995	819	374	265	61	17	7	1,543
1996	868	352	281	53	14	2	1,570
1997	842	336	262	49	39	0	1,528
1998	606	269	212	46	19	1	1,153
1999	672	273	230	40	16	2	1,233
2000	620	251	211	50	32	1	1,165
2001	523	225	212	50	17	2	1,029
2002	560	228	214	47	21	3	1,073
2003	518	228	199	64	17	0	1,026
2004	514	247	222	60	14	1	1,058
2005	432	246	196	59	16	2	951
2006	446	307	206	53	14	1	1,027
2007	386	232	189	29	22	5	863
2008	506	184	177	35	16	1	919
2009	500	157	261	38	10	1	967
2010	534	125	222	54	15	1	951
2011	530	127	262	85	18	3	1,025
2012	568	134	255	64	19	0	1,040
2013	480	124	238	84	15	0	941
2014	562	106	255	112	22	0	1,057
2015	570	154	249	110	30	2	1,115
<b>Total</b>	<b>16,934</b>	<b>7,269</b>	<b>6,938</b>	<b>1,622</b>	<b>539</b>	<b>64</b>	<b>33,366</b>

\* This table only includes positive test results for substances that licensees and other entities are required to test for in each urine specimen collected under 10 CFR 26.31(d).

\*\* Amphetamines results include amphetamine and methamphetamine.

\*\*\* Opiates results include 6-acetylmorphine (6-AM), codeine, and morphine.

**Table A-4. Trends in Positive Testing Rates by Employment Category  
(All Test Categories\*)**

Year	Licensee Employees			C/Vs		
	Tested	Positive	Percent Positive	Tested	Positive	Percent Positive
1990	130,701	657	0.50%	143,898	1,720	1.20%
1991	121,513	397	0.33%	141,084	1,325	0.94%
1992	114,608	338	0.29%	151,943	1,480	0.97%
1993	109,375	274	0.25%	133,591	1,238	0.93%
1994	65,850	219	0.33%	97,391	1,153	1.18%
1995	58,801	197	0.34%	91,320	1,279	1.40%
1996	56,387	244	0.43%	91,071	1,268	1.39%
1997	55,402	187	0.34%	93,765	1,261	1.34%
1998	51,926	169	0.33%	77,772	953	1.23%
1999	49,046	159	0.32%	78,294	1,065	1.36%
2000	46,385	206	0.44%	77,647	1,150	1.48%
2001	46,466	147	0.32%	70,737	857	1.21%
2002	45,905	117	0.25%	81,095	935	1.15%
2003	44,892	146	0.33%	81,692	911	1.12%
2004	44,900	123	0.27%	87,369	911	1.04%
2005	44,405	122	0.27%	90,104	810	0.90%
2006	47,219	118	0.25%	91,705	907	0.99%
2007	47,974	115	0.24%	92,229	792	0.86%
2008	51,852	113	0.22%	97,914	823	0.84%
2009	54,845	153	0.28%	109,602	840	0.77%
2010	53,287	119	0.22%	113,354	862	0.76%
2011	54,203	127	0.23%	124,383	953	0.77%
2012	54,524	125	0.23%	124,611	989	0.79%
2013	53,477	135	0.25%	108,220	872	0.81%
2014	50,928	118	0.23%	115,662	1,015	0.88%
2015	51,110	132	0.26%	112,286	1,068	0.95%

\* This table includes results for pre-access, random, for-cause, post-event, and follow-up testing.

**Table A-5. Pre-Access Testing, Trends in Positive Rates by Employment Category**

Year	Licensee Employees			C/Vs		
	Tested	Positive	Percent Positive	Tested	Positive	Percent Positive
1990	28,074	249	0.89%	94,417	1,299	1.38%
1991	17,563	74	0.42%	86,945	909	1.05%
1992	12,886	55	0.43%	91,956	1,055	1.15%
1993	11,119	47	0.42%	80,352	905	1.13%
1994	10,254	49	0.48%	69,963	928	1.33%
1995	10,534	60	0.57%	68,771	1,062	1.54%
1996	9,901	94	0.95%	71,140	1,038	1.46%
1997	11,195	62	0.55%	73,125	1,034	1.41%
1998	9,422	50	0.53%	59,724	772	1.29%
1999	8,386	44	0.52%	60,753	890	1.46%
2000	7,613	51	0.67%	60,720	914	1.51%
2001	8,442	44	0.52%	55,302	676	1.22%
2002	8,050	28	0.35%	65,138	777	1.19%
2003	8,309	41	0.49%	64,679	716	1.11%
2004	7,661	35	0.46%	68,458	702	1.03%
2005	8,210	28	0.34%	70,795	620	0.88%
2006	9,336	24	0.26%	70,644	723	1.02%
2007	9,783	34	0.35%	72,149	634	0.88%
2008	11,498	21	0.18%	75,970	643	0.85%
2009	10,619	41	0.39%	85,259	636	0.75%
2010	10,312	21	0.20%	86,231	656	0.76%
2011	10,729	28	0.26%	93,119	713	0.77%
2012	10,529	28	0.27%	90,909	738	0.81%
2013	10,143	35	0.35%	79,044	618	0.78%
2014	9,545	27	0.28%	82,823	735	0.89%
2015	9,709	38	0.39%	78,902	766	0.97%

**Table A-6. Random Testing, Trends in Positive Rates by Employment Category**

Year	Licensee Employees			C/Vs		
	Tested	Positive	Percent Positive	Tested	Positive	Percent Positive
1990	100,237	277	0.28%	48,506	273	0.56%
1991	101,041	220	0.22%	52,777	290	0.55%
1992	98,611	199	0.20%	58,119	262	0.45%
1993	95,103	157	0.17%	51,502	184	0.36%
1994*	52,493	96	0.18%	25,898	127	0.49%
1995	45,815	82	0.18%	20,976	98	0.47%
1996	44,183	94	0.21%	18,124	108	0.60%
1997	42,011	76	0.18%	18,818	96	0.51%
1998	40,415	71	0.18%	16,554	86	0.52%
1999	38,692	71	0.18%	15,765	69	0.44%
2000	36,784	116	0.32%	15,171	88	0.58%
2001	36,048	64	0.18%	14,032	84	0.60%
2002	35,608	55	0.15%	14,240	59	0.41%
2003	34,202	61	0.18%	15,200	71	0.47%
2004	34,723	51	0.15%	16,516	76	0.46%
2005	33,587	60	0.18%	16,699	87	0.52%
2006	34,818	55	0.16%	17,739	77	0.43%
2007	34,984	55	0.16%	16,681	62	0.37%
2008	36,721	50	0.14%	18,038	77	0.43%
2009	40,682	67	0.16%	20,195	87	0.43%
2010	39,588	69	0.17%	22,420	122	0.54%
2011	39,817	63	0.16%	25,961	139	0.54%
2012	39,951	65	0.16%	27,992	140	0.50%
2013	39,140	54	0.14%	24,538	141	0.57%
2014	37,546	53	0.14%	27,143	168	0.62%
2015	37,504	55	0.15%	27,256	177	0.65%

\* Beginning in 1994, the NRC reduced the minimum annual random testing rate from 100 percent to 50 percent of the subject population.

**Table A-7. For-Cause Testing, Trends in Positive Rates by Employment Category**

Year	Licensee Employees			C/Vs		
	Tested	Positive	Percent Positive	Tested	Positive	Percent Positive
1990	282	69	24.47%	382	143	37.43%
1991	229	51	22.27%	343	116	33.82%
1992	206	36	17.48%	346	139	40.17%
1993	230	35	15.22%	369	128	34.69%
1994	199	39	19.60%	322	80	24.84%
1995	235	35	14.89%	341	103	30.21%
1996	244	34	13.93%	377	102	27.06%
1997	208	34	16.35%	323	110	34.06%
1998	185	26	14.05%	270	71	26.30%
1999	203	29	14.29%	303	91	30.03%
2000	205	21	10.24%	404	111	27.48%
2001	219	20	9.13%	287	79	27.53%
2002	243	23	9.47%	374	87	23.26%
2003	232	22	9.48%	405	101	24.94%
2004	266	23	8.65%	435	111	25.52%
2005	309	19	6.15%	362	86	23.76%
2006	322	24	7.45%	394	80	20.30%
2007	292	15	5.14%	428	66	15.42%
2008	329	22	6.69%	468	72	15.38%
2009	232	28	12.07%	315	80	25.40%
2010	214	11	5.14%	335	36	10.75%
2011	350	22	6.29%	506	51	10.08%
2012	218	17	7.80%	506	69	13.64%
2013	187	21	11.23%	440	63	14.32%
2014	215	23	10.70%	479	60	12.53%
2015	180	22	12.22%	449	65	14.48%

**Table A-8. Licensee Employees, Percentage of Positive Results by Substance and Test Category, 2015**

Substance	Test Category				
	Pre-Access	Random	For-Cause	Post-Event	Follow-up
Alcohol	28.2%	42.4%	70.8%	66.7%	46.7%
Marijuana	51.3%	22.0%	4.2%	33.3%	20.0%
Amphetamines	2.6%	13.6%	4.2%		6.7%
Cocaine	7.7%	13.6%	4.2%	-	26.7%
Refusal to Test	10.3%	3.4%	4.2%	-	-
Opiates	-	5.1%	-	-	-
Other	-	-	12.5%	-	-
PCP	-	-	-	-	-
Total*	100%	100%	100%	100%	100%
	(n = 39)	(n = 59)	(n = 24)	(n = 3)	(n = 15)

\* The "n" value is the total number of occurrences for each Test Category.

**Table A-9. Contractors/Vendors, Percentage of Positive Results by Substance and Test Category, 2015**

Substance	Test Category				
	Pre-Access	Random	For-Cause	Post-Event	Follow-up
Marijuana	52.9%	39.2%	19.0%	31.3%	27.7%
Alcohol	14.3%	13.8%	35.4%	-	38.3%
Refusal to Test	14.3%	9.5%	8.9%	-	8.5%
Amphetamines	6.4%	13.2%	20.3%	25.0%	6.4%
Cocaine	9.6%	21.7%	8.9%	37.5%	14.9%
Opiates	2.1%	2.6%	2.5%	6.3%	4.3%
Other	0.1%	-	5.1%	-	-
PCP	0.2%	-	-	-	-
Total*	100%	100%	100%	100%	100%
	(n = 803 )	(n = 189)	(n = 79)	(n = 16)	(n = 47)

\* The "n" value is the total number of occurrences for each Test Category.



**Table A-10. Substances Identified by Labor Category, 2015**

Substance	Maintenance (general facility)	Other	Facility Support	Maintenance (safety- significant)	Security	Engineering	Maintenance (craft)	Supervisor	HP/RP	Licensed Operator	Non-Licensed Operator	QA/QC	FFD Program Personnel	SSNM Transporter	Total
Marijuana	321	119	62	18	12	10	14	2	6	2	1	3	0	0	570
Alcohol	118	46	13	22	13	10	5	11	2	4	4	1	0	0	249
Cocaine	99	36	1	2	7	2	3	0	1	2	1	0	0	0	154
Refusal to Test	97	37	8	1	4	2	1	1	0	0	0	0	0	0	151
Amphetamines	65	28	5	3	4	2	2	1	0	0	0	0	0	0	110
Opiates	19	4	0	1	0	3	0	0	3	0	0	0	0	0	30
Other	4	0	0	0	3	0	1	0	0	0	0	0	0	0	8
PCP	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	<b>725</b>	<b>270</b>	<b>89</b>	<b>47</b>	<b>43</b>	<b>29</b>	<b>26</b>	<b>15</b>	<b>12</b>	<b>8</b>	<b>6</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1,274</b>