



Summary of Fitness for Duty Program Performance Reports for Calendar Year 2014

SECTION 1, SUMMARY INFORMATION

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, 26.717, and 26.719.

This report presents information on calendar year (CY) 2014 D&A test results, associated site- and event-specific descriptions, and data presentations in both graphical and tabular formats. To improve the characterization of positive testing rates, this report includes new exhibits on multi-year site-specific positive rate data for pre-access, random, and for-cause testing.

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

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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.

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”). The 2008 final rule also established the explicit performance objective that an FFD program provide reasonable assurance that subject individuals are trustworthy and reliable as demonstrated by the avoidance of substance abuse.

AVAILABILITY, USE, AND PUBLIC COMMENT

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 2014 can be viewed on the NRC Web site: <http://www.nrc.gov/reactors/operating/ops-experience/fitness-for-duty-programs/performance-reports.html>.

Use

The information presented in this report serves to inform the public on the performance of FFD programs in detecting and deterring illegal¹ drug use and alcohol misuse at NRC-licensed facilities. Informing the public on FFD program performance aligns with the Commission’s Operational Excellence objective² to appropriately inform and involve stakeholders in the regulatory process.

Licensees and other entities may use D&A testing information presented in this report to enhance FFD program performance by evaluating site-specific performance, incorporating process improvements and lessons learned, and taking 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 and to monitor trends in substance use. The information in this report also is used to inform the inspection process

¹ 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, cocaine metabolite, opiates (codeine, morphine, 6-acetylmorphine), amphetamines (amphetamine, methamphetamine), and phencyclidine (PCP).

² See NUREG-1614, Vol. 6, Strategic Plan: Fiscal Years 2014-2018 (ADAMS Accession No. ML14246A439).

conducted under NRC Inspection Manual Chapter (IMC) 2201, “Security Inspection Program for Commercial Nuclear Power Reactors,” IMC 2681, “Physical Protection and Transport of SNM and Irradiated Fuel Inspection of Fuel Facilities,” and IMC 2504, “Construction Inspection Program – Inspection of Construction and Operational Programs.” Of these chapters, only IMC 2504 is publicly available (ADAMS Accession No. ML12298A106).

Public Comment

The NRC welcomes public comment on this report. Please submit comments through the NRC FFD Web site at: <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

DISCUSSION

1. Reporting Entities (Licensees and Other Entities)

In CY 2014, 75 licensees and other entities³ (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:

- 61 operating power reactor sites
- 2 power reactor construction sites (V.C. Summer Units 2 and 3, Vogtle Units 3 and 4)
- 4 formerly operating power reactor sites (Crystal River, Kewaunee, San Onofre, Zion)⁴
- 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)⁵
- 1 contractor/vendor (C/V), Institute of Nuclear Power Operations (INPO)⁶

³ Information on each licensee and other entity site referenced in this report can be obtained in the NRC Information Digest (NUREG 1350, Volume 26, August 2014), ADAMS Accession No. ML14240A480.

⁴ These four power reactor sites permanently ceased operating as follows: Crystal River (02/20/2013), Kewaunee (05/07/2013), San Onofre (06/12/2013), and Zion (Unit 1 on 02/21/1997, Unit 2 on 09/19/1996). Also, while Vermont Yankee permanently ceased operating on 12/29/2014, the site was operating for all but two days in 2014 and is accounted for as an operating power reactor site in this report.

⁵ 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.

⁶ Only one C/V, INPO, maintains its own D&A testing program under Part 26. All other C/Vs fall under the licensee or other entity’s D&A testing program at each site.

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)⁷ 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.

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 2014 is the first 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 to the industry, and to provide additional 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 CY 2014 Results

Based on the NRC staff analysis of FFD performance data presented in this report and comparison of CY 2014 results to previous years, the licensee and other entity FFD programs implemented under Part 26 directly contribute 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 program weaknesses, lessons learned, and corrective actions demonstrate continued focus on FFD program improvement. These outcomes helped provide reasonable assurance that persons who performed safety- or

⁷ 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.

security-significant activities, or who had unescorted access to certain NRC-licensed facilities, information, or SSNM, were fit for duty and trustworthy and reliable.

The NRC staff is monitoring the following three multi-year FFD program performance trends:

- Subversion attempts have been prevalent (18.3 to 21.2 percent of drug testing violations per year from CY 2011 through CY 2014, or 128 to 187 events per year), with 53.7 to 65.6 percent of sites each year reporting a subversion attempt (36 to 45 sites per year).
- Amphetamines positive results have been increasing over the past 6 years (from 3.8 percent of total D&A positives in CY 2008 to 10.6 percent of total D&A positives in CY 2014).
- Power reactor construction sites continue to report higher positive testing rates than operating power reactor sites, primarily during 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 CY 2014, with references to additional information in Section 2, “Detailed Data Analysis.”

Summary of Drug and Alcohol Test Results, CY 2014

| Test Category | Tested | Tested Positive ⁸ | Percent Positive |
|---------------|----------------|------------------------------|------------------|
| Pre-Access | 92,368 | 762 | 0.82% |
| Random | 64,689 | 221 | 0.34% |
| For Cause | 694 | 83 | 11.96% |
| Post-Event | 897 | 13 | 1.45% |
| Follow-up | 7,942 | 54 | 0.68% |
| Total | 166,590 | 1,133 | 0.68% |

- **The total number of tests conducted (166,590) increased by 3 percent from the previous year (161,697).** The number of tests increased in each test category, with the largest increases in pre-access (3,181) and random (1,011) tests. The change in tests performed is largely attributable to increased testing at the two power reactor construction sites. (Table 9)
- **The positive rate for all tests performed increased to 0.68 percent from the previous year.** The positive rate in CY 2012 and CY 2013 was 0.62 percent.

⁸ The total number of individuals testing positive includes drug and alcohol test positives, adulterated and substituted validity test results, and refusals to test. This footnote applies to all tables and charts in this report, unless otherwise noted.

The overall positive rate is low. By comparison, 1.03 percent was the highest rate in a year (CY 1996) and lowest rate was 0.59 percent in CY 2010. (Table 9 and Table A-2)

- **Pre-access testing accounted for 67.3 percent of substance-using individuals identified by D&A testing in CY 2014.** Pre-access testing is the first 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 more stringent sanctions, especially for a first positive test result (e.g., 1 year or longer). (Table 9)
- **Random testing accounted for 19.5 percent of substance-using individuals identified by D&A testing CY 2014.** 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 9)
- **For-cause testing had the highest positive testing rate in CY 2014 at 11.96 percent.** For-cause testing is the third defense-in-depth testing measure and is only performed in response to observations of possible impairment or credible information on substance abuse. Therefore, this testing has the highest positive test rate of all test categories. For-cause testing positive rates were 13.40 percent in CY 2013 and 11.88 percent in CY 2012. (Table 9)
- **An individual’s employment category (i.e., licensee employee, C/V) is highly predictive of substance use.** For all tests conducted in CY 2014, C/Vs tested positive at a rate of 0.88 percent and licensee employees at a rate of 0.23 percent. This 3-to-1 positive testing rate ratio has been consistent since 1993 and demonstrates two distinct substance-using populations. (Table A-4) This trend is most notable in pre-access testing (Chart 5) and random testing (Chart 6).
- **Subversion attempts (i.e., attempt to cheat on a test) continued to rise in CY 2014, accounting for 16.5 percent of D&A testing violations (187 of 1,133)** (Table 14 and Figure 1). Any individual identified as attempting to subvert a test administered under Part 26 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 final rule. In CY 2014:
 - Pre-access testing identified 72 percent of subversion attempts (135 of 187). (Chart 21)
 - Attempts to subvert tests was prevalent amongst sites, with 60 percent (45 of 75 sites) reporting at least one subversion attempt.
 - Ninety-six percent of subversion attempts (180 of 187) were made by C/Vs.

- Sixty-four percent of subversion attempts (120 of 187) were associated with events where a specimen was not tested (e.g., no specimen was provided, the collection was stopped). (Figure 1) Due to the high number of subversions without specimen testing (i.e., 120 of 882 individuals with a drug testing violation in CY 2014), the charts and tables in this report on substance detection results and trends (e.g., Chart 4, Table 7) do not fully account for all substances used in the tested population.
- Power reactor construction sites accounted for 34 percent of subversion attempts (64 of 187) identified in CY 2014. Similarly, in CY 2013, power reactor construction sites accounted for 31 percent of subversion attempts (46 of 148).
- **Three substances (marijuana, alcohol, and amphetamines) accounted for approximately 88 percent of positive test results in CY 2014.**

Abuse Substances of Choice¹

| Substance | 1990 | 2008 ² | 2009 ² | 2013 | 2014 | Change (1990–2014) |
|--------------|--------------|-------------------|-------------------|--------------|--------------|--------------------|
| Marijuana | 47.4% | 55.1% | 51.7% | 51.0% | 53.2% | + 5.8% |
| Alcohol | 18.6% | 19.3% | 27.9% | 25.3% | 24.1% | + 5.5% |
| Amphetamines | 2.8% | 3.81% | 3.9% | 8.9% | 10.6% | + 7.8% |
| Cocaine | 29.0% | 20.0% | 16.2% | 13.2% | 10.0% | - 19.0% |
| Total | 97.8% | 98.2% | 98.9% | 98.4% | 97.9% | |

1. 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).
2. 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 been the most detected substance since Part 26 testing began in 1990, and accounted for 53.2 percent of total positives in 2014. (Chart 4) 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 4) Alcohol is the most identified substance in licensee employees. (Chart 1) The 2008 Part 26 final rule enhanced detection by implementing lowering testing cutoff levels for alcohol. These lower testing cutoff levels accounted for 31 percent of alcohol positives in 2014. (Chart 20)
- Amphetamines⁹ accounted for 10.6 percent of total substances identified in 2014. Amphetamines positives have trended upward since 2009. (Chart 4) The NRC staff

⁹ Part 26 requires initial drug testing for amphetamines and confirmatory drug testing for amphetamine and methamphetamine.

notes similar increases in amphetamines positive rates in other Federal testing programs over the same time period, such as testing of transit workers mandated by the U.S. Department of Transportation.

- Cocaine use has steadily declined since 2006. It was the second most detected substance from 1990 through 2008, the third most detected substance from 2009 through 2013, and is now the fourth most detected substance in 2014, surpassed by amphetamines. Prevalence of use has declined from 29.0 percent of substances detected in 1990 to 10.0 percent in 2014. (Chart 4)
- **Two power reactor construction sites conducted 8.7 percent of the industry tests in CY 2014, and accounted for 26 percent of the positive test results and refusals to test.** V.C. Summer Units 2 and 3 and Vogtle Units 3 and 4 performed 14,539 tests, with 245 individuals testing positive on D&A testing and 50 refusing to be tested. Testing at these sites increased by 54 percent over CY 2013 levels (9,394 tests) and appears to suggest that the advancing stages of construction demand larger workforces. Pre-access testing identified approximately 65 percent of testing violations (191 of 295), with random (63), for cause (33), post-event (7) and follow-up (1) testing identifying the remaining individuals with a D&A testing violation.
- **Approximately 92 percent of facilities (69 of 75) have implemented the optional regulatory provision to conduct limit of detection (LOD)¹⁰ drug testing on dilute¹¹ 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 – and has proven to be an effective testing method, with a positive rate in CY 2014 1.8 times higher than that of the industry positive rate for all tests performed (0.68 percent). LOD testing identified 10 substance-using individuals in CY 2014.
- **Approximately seven percent of facilities (5 of 75) used more stringent drug testing cutoff levels than specified by rule.** This action is permitted under 10 CFR 26.31(d)(3)(iii). Four facilities used lower cutoff levels to test for marijuana. One facility used lower cutoff levels for all drugs in the NRC-testing panel when performing return to work testing.
- **Approximately 12 percent of facilities (9 of 75) 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 a combination of the following nine substances: barbiturates, benzodiazepines, hydrocodone, hydromorphone,

¹⁰ The “limit of detection” is the lowest concentration that a laboratory’s testing procedure can reliably detect an analyte and is dependent on specimen preparation, test equipment, procedures, and technician expertise (see 10 CFR 26.5, “Definitions”).

¹¹ A “Dilute” validity test result is a laboratory determination per 10 CFR 26.161(e) that the creatinine and specific gravity concentrations are lower than expected for human urine (see also 10 CFR 26.5, “Definitions”).

methadone, oxycodone, oxymorphone, propoxyphene, and suboxone. Six individuals tested positive for a total of 10 additional substances in CY 2014. (Table 7)

- **24-hour event reports – 45 reports received in CY 2014 under 10 CFR 26.719(b).** Licensees and other entities report to the NRC within 24 hours of a significant violation of FFD policy involving personnel in designated positions such as supervisors and NRC-licensed reactor operators, as well as when a programmatic failure or vulnerability is discovered. NRC reviews all 24-hour event reports and may take inspection, enforcement, or other agency action if necessary to improve performance and preclude recurrence.
 - The NRC received 39 event reports on individuals in designated positions: 28 supervisors (12 licensee employees, 16 C/Vs), nine NRC-licensed reactor operators, and two for FFD program personnel. (Table 1 and Table 8)
 - Two substances, alcohol (19) and marijuana (8), accounted for 69 percent of the 24-hour event reports pertaining to individuals.
 - The number of 24-hour reportable events received in CY 2014 on individuals in designated positions increased by 30 percent from CY 2013 (30 events). This change primarily was due to an increase in the number of supervisors testing positive on random testing, with 16 testing positive in CY 2014 and nine testing positive in CY 2013. The NRC staff is monitoring this potentially increasing trend.
 - The NRC received six events on programmatic failures or vulnerabilities. The events consisted of inconsistent test results received from U.S. Department of Health and Human Services (HHS)-certified laboratories testing blind performance test samples (BPTs) (2), programmatic failures or vulnerabilities associated with random testing (2), and prohibited substances discovered in the protected area of power reactor sites (2). (Table 2 and Table 8)
- **30-day event reports – five reports received in CY 2014 under 10 CFR 26.719(c).** 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 an HHS-certified laboratory regarding drug or validity testing. As detailed in Table 3, these issues involved equipment malfunctions, human errors, and process or procedural problems identified in the testing of BPTs. The number of reports received decreased by 67 percent from CY 2013 (15 events, 13 of which were associated with the preparation or laboratory testing of BPTs).

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SECTION 2, DETAILED DATA ANALYSIS

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Section 2a. Detailed Data Analysis Summary

This section summarizes key observations on the FFD program performance data reported for CY 2014 D&A testing. Consult the referenced tables and charts associated with each observation for additional information.

- **The total number of tests performed (166,590) increased by 3 percent from CY 2013.** The total increase for each test category is as follows: pre-access (3,180), random (1,010), for cause (69), post-event (179), and follow-up (455). (Table 9)
- **Pre-access testing accounted for 67.3 percent of substance-using individuals identified by D&A testing in CY 2014.** 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 76.3 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 positive test results. (Table 9 and Table A-2)

An analysis of annual site-specific pre-access testing positive rates presented in Table 11 indicates that from CY 2011 through CY 2014, 67 to 77 percent of sites reported no positive test results for licensee employee applicants; whereas only 7 to 17 percent of sites reported no positive test results for C/V applicants.

- **Random testing accounted for 19.5 percent of substance-using individuals identified by D&A testing in CY 2014.** The random testing positive rate has remained low since required testing began in 1990, and has fluctuated minimally over the past 5 years (between 0.30 and 0.34 percent). The only years with positive random testing rates of 0.30 percent or higher were 1990, 1991, 1996, 2000, and 2001. The highest positive rate was in 2000, at 0.39 percent. (Table 9 and Table A-2)

An analysis of annual site-specific random testing positive rates presented in Table 12 indicates that from CY 2011 through CY 2014, 47 to 56 percent of sites reported detection of substance use in the licensee employee population, and 58 to 69 percent of sites reported detection of use in the C/V population.

- **The positive rate for all tests conducted increased to 0.68 percent, but remained low.** The positive rate in CY 2012 and CY 2013 was 0.62 percent. By comparison, 1.03 percent is the highest rate in a year (CY 1996) and lowest rate was 0.59 percent in CY 2010. (Table 9 and Table A-2)
- **The positive rate by employment category for all tests conducted in CY 2014 remained low.** (Table 6 and Table A-4)
 - Licensee employees: 0.23 percent (declined from 0.25 percent in CY 2013)
 - C/Vs: 0.88 percent (increased from 0.81 percent in CY 2013)
- **An individual's employment category (i.e., licensee employee, C/V) is highly predictive of substance use.** For all tests conducted in CY 2014, C/Vs tested positive at a rate of 0.88 percent and licensee employees at a rate of 0.23 percent. This 3-to-1 positive testing rate ratio has been consistent since 1993 and demonstrates two distinct substance-using populations. (Table A-4) This positive rate differential is most notable in pre-access testing (Chart 5) and random testing (Chart 6).

- **Industry positive rates remained below 1 percent for pre-access and random testing**, but site-specific positive rates and positive rates by employment category varied considerably (Table 10, Table 11, and Table 12), as described below.

Pre-access testing positive rates

- Licensee employees: 0.28 percent (site-specific range¹² is 0 to 2.27 percent)
- C/Vs: 0.89 percent (site-specific range is 0 to 2.52 percent)

Random testing positive rates

- Licensee employees: 0.14 percent (site-specific range is 0 to 1.23 percent)
- C/Vs: 0.62 percent (site-specific range is 0 to 1.81 percent)

- **For-cause testing accounted for the highest industry positive rate at 11.96 percent.** This high rate is anticipated 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. (Table 9)
- **Three substances (marijuana, alcohol, and amphetamines) accounted for 87.9 percent of positive results in CY 2014.** In comparison to the first year of NRC-required testing in 1990, substance use preferences have changed, with increases in marijuana, alcohol, and amphetamines, and a decrease in cocaine. (Chart 4 and Table A-3)
 - Marijuana, 47.4 percent of substances in 1990; 53.2 percent in 2014
 - Alcohol, 18.6 percent of substances in 1990; 24.1 percent in 2014
 - Amphetamines, 2.8 percent of substances in 1990; 10.6 percent in 2014
 - Cocaine, 29.0 percent of substances in 1990; 10.0 percent in 2014
- **Substance-using preferences in CY 2014, as in prior years, differed by employment category.** (Table 7) The top three test results for each labor category are as follows:
 - Licensee employees: alcohol (52.1%), marijuana (26.1%), cocaine (6.7%)
 - C/Vs: marijuana (49.5%), alcohol (18.0%), refusal to test (11.0%)
- **Three labor categories accounted for over 80 percent of the substances identified (including refusals to test) in CY 2014:** maintenance (craft) (643), other (169), and maintenance (general facility) (161). (Chart 17)
- **Thirty-one percent of alcohol positives in CY 2014 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 has greatly strengthened the alcohol detection capabilities of licensees and other entities. (Chart 19 and Chart 20)

¹² The positive-rate range reflects the lowest and the highest site-specific positive rate reported amongst all sites that conducted a test in CY 2014.

- **Amphetamines positives continued to increase in CY 2014, accounting for 10.6 percent of total substances identified.** Amphetamines positives have trended upward since 2009, accounting for 3.93 percent of substances identified in CY 2009, 5.68 percent in CY 2010, 8.29 percent in CY 2011, 6.15 percent in CY 2012, and 8.93 percent in CY 2013. (Chart 4 and Table A-3)
- **Subversion attempts continued to rise in CY 2014, accounting for 16.5 percent of D&A testing violations (187 of 1,133).** (Table 14 and Figure 1) By comparison, subversion attempts accounted for 14.9 percent and 15.9 percent of testing violations in CY 2012 and CY 2013, respectively. In CY 2014:
 - Pre-access testing identified 72 percent of subversion attempts. (Chart 21) 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 was prevalent amongst sites, with 60 percent (45 of 75 sites) reporting at least one subversion attempt in CY 2014. In CY 2013, 55 percent of sites reported at least one subversion attempt (42 of 76 sites).
 - Ninety-six percent of subversion attempts (180 of 187) were made by C/Vs. Of the seven licensee employees identified as attempting to subvert a test in CY 2014, five were security officers – each at a different operating power reactor site (three pre-access tests, one random test and one for-cause test). (Chart 22)
 - Sixty-four percent (120 of 187) of subversion attempts were associated with events where a specimen was not tested (e.g., no specimen was provided, the collection was stopped). Due to the high number of subversions without specimen testing (i.e., 120 of 882 individuals with a drug testing violation), the charts and tables in this report on substance detection results and trends (e.g., Chart 4, Table 7) do not fully account for all substances used in the tested population.
 - Power reactor construction sites accounted for 34 percent (64 of 187) of subversion attempts identified in CY 2014. In CY 2013, power reactor construction sites accounted for 31 percent of identified subversion attempts (46 of 148).
 - 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** – 41 facilities conducted LOD testing on 834 dilute specimens, with 10 positive results. This correlates to a 1.2 percent positive rate for LOD testing, which is 1.8 times higher than the overall industry positive rate for all tests conducted (0.68 percent).
- **Approximately 12 percent of facilities (9 of 75) 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 a combination of the following nine substances: barbiturates, benzodiazepines, hydrocodone, hydromorphone, methadone, oxycodone, oxymorphone, propoxyphene, and suboxone. In CY 2014:
 - Six individuals tested positive for a total of 10 additional substances. (Table 7)

- “Other” substances only were identified in the C/V employment category, and on pre-access (3), random (6), and follow-up (1) testing. (Chart 16)
- “Other” substances were detected in three labor categories (maintenance (craft), maintenance (general facility), and other). (Chart 18)
- **Power reactor construction sites** (V.C. Summer Units 2 and 3, Vogtle Units 3 and 4)¹³ performed 14,539 tests (8.7 percent of industry tests performed), and accounted for 26.0 percent of the D&A testing violations in the industry. In CY 2014, 245 individuals tested positive on D&A testing and 50 refused to be tested. The number of tests performed at the power construction sites increased by 54 percent from CY 2013. The positive tests and testing refusals primarily were identified during pre-access testing (191), with the remainder at random (63), for-cause (33), post-event (7) and follow-up (1) testing.

Power reactor construction site test results influenced three industry positive testing rate increases in CY 2014. These impacts become apparent when construction site data are removed from the industry results:

- All tests – positive rate dropped from 0.68 to 0.55 percent
- Pre-access – positive rate dropped from 0.82 to 0.68 percent
- Random – positive rate dropped from 0.34 to 0.26 percent
- **30-day reportable events – five received in CY 2014.** The NRC receives an event report under 10 CFR 26.719(c) in response to performance issues at HHS-certified laboratories associated with the testing of BPTs. The number of events reported decreased by 67 percent from CY 2013 (15 events). (Table 3)
- **24-hour reportable events – 45 received in CY 2014.** The NRC receives an event report under 10 CFR 26.719(b) when individuals in designated positions (e.g., supervisor, licensed reactor operator, FFD program personnel) violate the FFD policy of the licensee or other entity. (Table 1) 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 protected area of an NRC-licensed facility. (Table 2)
 - The NRC received 39 event reports on individuals in designated positions: 28 supervisors (12 licensee employees, 16 C/Vs), nine NRC-licensed reactor operators, and two FFD program personnel. (Table 8)
 - The number of 24-hour reportable events in CY 2014 increased by 30 percent from CY 2013 (30 events). This change was primarily due to an increase in the number of supervisors testing positive on random testing, with 16 testing positive in CY 2014 and nine testing positive in CY 2013. The NRC staff is monitoring this potentially increasing trend.

¹³ These 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 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.

- Two substances, alcohol (19) and marijuana (8), accounted for 69 percent of the 24-hour event reports in CY 2014.
- The NRC received six event reports on programmatic failures or vulnerabilities. The events consisted of inconsistent test results received from HHS-certified laboratories testing BPTSs (2), programmatic failures or vulnerabilities associated with random testing (2), and prohibited substances discovered in the protected area of power reactor sites (2). (Table 2 and Table 8)

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

Table 1 and Table 2 summarize information reported to the NRC Operations Center under section 26.719, "Reporting Requirements," (i.e., 24-hour event reports), as well as information contained in 10 CFR 26.419(b)(2) and 26.717 performance e-reports (SPTFs and ARFs). Information on any 24-hour event report referenced 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.

Table 1 presents information on significant FFD policy violations by individuals in designated positions (e.g., supervisors, licensed reactor operators, FFD program personnel). Table 2 presents information on programmatic failures and vulnerabilities.

Table 1. 24-Hour Reportable Events – Individuals with Significant FFD Policy Violations

| Event Type | Facility | Employment Category | Labor Category | Substance/ FFD violation | NRC Event Number |
|-------------|------------------|---------------------|---------------------|--------------------------|------------------|
| Random Test | Browns Ferry | Employee | Supervisor | Alcohol* | 50173 |
| | Columbia | Employee | Supervisor | Marijuana | 50292 |
| | Corporate-Duke | Employee | Supervisor | Alcohol | 50230 |
| | Crystal River | Employee | Supervisor | Alcohol | 50269 |
| | D.C. Cook | CV | Supervisor | Alcohol | 50320 |
| | FitzPatrick | Employee | Supervisor | Cocaine | 50104 |
| | | Employee | Supervisor | Alcohol | 50558 |
| | Fort Calhoun | Employee | Supervisor | Marijuana | 49829 |
| | McGuire | Employee | Licensed Operator** | Marijuana | 50631 |
| | Palo Verde | Employee | Licensed Operator | Alcohol* | 50158 |
| | | Employee | Supervisor | Alcohol | 50563 |
| | Quad Cities | Employee | Licensed Operator** | Alcohol | 49962 |
| | Salem/Hope Creek | Employee | Licensed Operator | Cocaine | 49872 |
| | | CV | Supervisor | Cocaine | 50508 |
| | Sequoyah | CV | Supervisor | Marijuana | 50696 |
| | V.C. Summer 2&3 | CV | Supervisor | Marijuana | 49882 |
| | Vermont Yankee | CV | Supervisor | Alcohol | 49934 |
| | Vogtle 3&4 | CV | Supervisor | Marijuana | 50163 |
| | | CV | Supervisor | Marijuana | 50226 |
| | Watts Bar | CV | Supervisor | Alcohol | 49730 |
| CV | | Supervisor | Alcohol | 50242 | |

Table 1. 24-Hour Reportable Events – Individuals with Significant FFD Policy Violations

| Event Type | Facility | Employment Category | Labor Category | Substance/ FFD violation | NRC Event Number |
|----------------|-----------------|---------------------|-----------------------|--|------------------|
| For-Cause Test | Catawba | CV | Supervisor | Refusal to Test | 50552 |
| | Grand Gulf | Employee | Supervisor | Alcohol | 50561 |
| | Indian Point | Employee | Supervisor | Alcohol | 49949 |
| | LaSalle | Employee | Supervisor | Refusal to Test | 50183 |
| | Point Beach | Employee | Licensed Operator** | Alcohol | 49844 |
| | Vogtle 3&4 | CV | FFD Program Personnel | Alcohol | 50574 |
| | Zion | Employee | Licensed Operator** | Alcohol | 49728 |
| Follow-up Test | Brunswick | CV | Supervisor | Marijuana | 50671 |
| | Nine Mile Point | Employee | Supervisor | Alcohol | 50606 |
| | Surry | CV | Supervisor | Alcohol | 50286 |
| | Waterford | CV | Supervisor | Alcohol, Amphetamine | 50058 |
| PDI | Beaver Valley | Employee | Licensed Operator | FFD policy violation (offsite) | 50234 |
| | E.I. Hatch | Employee | Licensed Operator** | FFD policy violation (offsite) | 49947 |
| | R.E. Ginna | CV | Supervisor | FFD policy violation (offsite) | 50119 |
| | Shearon Harris | CV | Supervisor | FFD policy violation (during in processing) | 50102 |
| Other | Vogtle 3&4 | Not reported | FFD Program Personnel | Responded to unscheduled work (consumed alcohol during 5-hour abstinence period) | 52147 |
| Unknown | Millstone | CV | Supervisor | Not reported | 49966 |
| | Prairie Island | Employee | Licensed Operator** | Not reported | 50598 |

* Testing violation under the licensee’s FFD policy, not a confirmed positive under 10 CFR 26.103
 ** Labor category reported as licensed operator and supervisor
 Employee Licensee employee
 PA Protected area (see definition of term in 10 CFR 26.5)
 PDI Potentially disqualifying FFD information (see definition of term in 10 CFR 26.5)

Observations on Table 1

- The number of individuals with a significant FFD policy violation (39) increased by 30 percent from CY 2013 (30 events). This change was primarily due to an increase in the number of events associated with random tests (15 in CY 2013 and 21 in CY 2014).
- Twenty-eight events were associated with supervisors (12 licensee employees, 16 C/Vs), nine events involved NRC-licensed reactor operators, and two events involved FFD program personnel.
- Alcohol was the most identified substance (19 individuals), followed by marijuana (8 individuals).

- For-cause testing violations (i.e., impairment-based testing) remained the same in CY 2013 and CY 2014 (i.e., seven reports in each year).

Table 2. 24-Hour Reportable Events – Programmatic Failures or Vulnerabilities

| Event Type | Facility | Description | NRC Event Number |
|---|------------------|--|------------------|
| Laboratory Testing | Callaway | Received inconsistent HHS-certified laboratory test results for three BPTSs from the same lot (formulated by Professional Toxicology as drug negative and dilute). The laboratory test results only indicated the specimens were drug negative. | 49857 |
| | | Additional detail on this event was provided by the licensee in a 30-day report described in Table 3 | |
| Laboratory Testing | Callaway | A BPTS tested by an HHS-certified laboratory (Clinical Reference Laboratory) reported unexpected results. The laboratory determined the inaccurate result was due to an inadequate aliquot volume of the specimen was tested. | 50056 |
| | | Additional detail on this event was provided by the licensee in a 30-day report described in Table 3 | |
| Programmatic Failure or Vulnerability | FitzPatrick | An NRC inspection identified a potential vulnerability in the site's random testing program where some individuals could control and predict the date and time that a random testing select list was generated. | 49941 |
| | North Anna/Surry | Four personnel in the Emergency Response Organization were not subject to Part 26 random testing. These individuals did not have unescorted access to the PA, but would respond to the Emergency Operations Facility, if needed. The licensee addressed this issue by including affected individuals in the random FFD testing pool. | 50448/ 50449 |
| Prohibited Substance Discovered in the PA | Braidwood | Discovered two beer bottles and three beer cans hidden in the overhead panels in the woman's locker room in the site access facility. The bottles were old based on appearance (dust accumulation and no liquid remaining). | 50685 |
| | D.C. Cook | A bottle of beer was identified in the Control Room complex refrigerator by oncoming shift personnel. The person responsible for bringing the bottle into the PA immediately acknowledged their mistake, was for-cause tested (negative results), and site access was suspended. Site security removed the beer bottle from the PA. | 50022 |

Observations on Table 2

- Licensees and other entities reported six reportable events in CY 2014 on programmatic failures or vulnerabilities. In CY 2013, the same number of reportable events were received for each event type.
- The programmatic failures and vulnerabilities consisted of inconsistent test results from HHS-certified laboratory testing of BPTSs, predictability in a random testing program or personnel not included in the random testing program, and the discovery of prohibited substances in the PA of operating power reactor sites.

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 BPTSs 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.

The number of 30-day event reports decreased from 15 in CY 2013 to five in CY 2014. Each of the five reports received in CY 2014 pertained to the testing of BPTSs (i.e., quality assurance checks on the accuracy of laboratory testing). Reports were received on specimen testing errors at two HHS-certified laboratories, and incorrectly formulated BPTSs from one supplier.

Table 3. Laboratory Testing Performance Issues¹⁴

| Issue | Facility | Description of Issue | Cause(s) of Issue | Corrective Action(s) |
|------------------------------|----------|--|---|---|
| BPTS: Incorrect Result | Callaway | BPTSs formulated as “dilute and negative” were reported as “negative” by three HHS-certified laboratories that tested the samples (Quest, Clinical Reference Laboratory, and Drug Monitoring Laboratory). ADAMS Accession No.: ML14085A310 | The BPTS supplier (Professional Toxicology) reported to the licensee that a very small deviation on the creatinine calibration solutions at a laboratory could “easily move a 15 creatinine to a 20 creatinine, so a lab mismeasurement could be a possibility.” The supplier also reported that several other clients that also used samples from the same lot received inconsistent “negative” test results. | The BPTS supplier retired the lot due to the inconsistent results received from several HHS-certified laboratories that had tested the samples. |

¹⁴ 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 Issues¹⁴

| Issue | Facility | Description of Issue | Cause(s) of Issue | Corrective Action(s) |
|------------------------------|---------------------------|---|---|--|
| BPTS: Incorrect Result | Callaway | A BPTS formulated as “dilute and negative” was reported as “negative” by the HHS-certified laboratory (Clinical Reference Laboratory). ADAMS Accession No.: ML14182A587 | Due to low aliquot volume, the sample probe could not be fully immersed which resulted in bubbling in the chamber of the automated refractometer. The laboratory determined that bubbles could result in erroneously elevated specific gravity readings. | Clinical Reference Laboratory: 1) Revised its standard operating procedure to require technicians to do a volume check prior to specimen analysis. 2) Provided additional training to the aliquot accessioning staff to reaffirm the minimum volume requirements for testing. 3) Provided additional training to the refractometer operators to check aliquot volume prior to analysis. |
| BPTS: Incorrect Result | Edwin I. Hatch | A BPTS formulated as PCP positive was reported as “negative” by the HHS-certified laboratory (Laboratory Corporation of American - LabCorp). ADAMS Accession No.: ML14234A240 | The laboratory concluded that the incorrect test result was due to “a random isolated human performance error occurring during the pipetting of the specimen.” That is, the technologist aliquoted an inappropriate amount of sample during the extraction process. The laboratory reported that “the typical cause of this error is improper technique/use of the fixed volume pipette.” | 1) LabCorp retrained its extraction technologists to check the volume of urine aliquoted for the confirmation batch and to ensure consistent delivery of the internal standards in accordance with laboratory’s standard operating procedure. 2) The licensee reported that it would assess laboratory performance by submitting additional BPTSs to the laboratory for testing. |
| BPTS: Incorrect Result | South Texas Project | A BPTS formulated as “dilute and negative” was reported as “negative” by the HHS-certified laboratory (LabCorp). ADAMS Accession No.: ML14176A132 | The inconsistent test result was due to the laboratory (LabCorp) failing to complete validity testing per 10 CFR 26.163(a)(2) procedures (and as a result, specific gravity testing was not performed). The laboratory determined the error was due to inadequate testing of a software upgrade completed 18 days prior to the testing event (i.e., the specific gravity result was not included with the creatinine test result). | 1) LabCorp corrected the software bug that excluded the specific gravity test result. 2) The laboratory reviewed all specimens tested two weeks prior to the software updates and found all results reported were accurate (with the exception of the unsatisfactory test result, which resulted in this investigation). 3) The licensee decided not to use the laboratory for future Part 26 testing, based on this event as well as prior performance issues in 2007 and 2013. |

Table 3. Laboratory Testing Performance Issues¹⁴

| Issue | Facility | Description of Issue | Cause(s) of Issue | Corrective Action(s) |
|------------------------------|---------------------|--|---|---|
| BPTS: Incorrect Result | Vogtle Units 1-4 | <p>A BPTS formulated as phencyclidine (PCP) positive was reported as "negative" by the HHS-certified laboratory (LabCorp).</p> <p>ADAMS Accession No.: ML14353A055</p> | <p>Shortly after completing the PCP test on the specimen, the gas chromatograph (GC) / mass spectrometer (MS) instrument was taken out of service because the technologist could not achieve the daily auto-tune of the instrument. The laboratory determined that a crack in the GC/MS column caused leaking between the interface of the GC and MS.</p> | <p>LabCorp implemented the following changes to its standard operating procedures:</p> <ol style="list-style-type: none"> 1) Added a quality control (QC) specimen as the last sample of each confirmation batch 2) Extractors must complete a visual verification of the volumes sheet for each batch 3) Internal standard abundance criteria applied to samples (any sample with an internal standard that is not within 50-200% of the calibrator and quality controls will be repeated) 4) Added an upfront dilution of 1:5 for PCP when initial test result is equal to or greater than 100 (instituted because samples with high PCP concentrations must be re-extracted due to column overloading; this method already used for marijuana and cocaine confirmation assays) 5) Repeat testing of samples that initially test positive for PCP and confirm negative (holding the entire batch until the repeat is complete and is still negative). If repeat testing does not correlate, the whole batch will be repeated (in accordance with HHS Guidelines and already used for marijuana and cocaine). |

Section 2d. Cutoff Levels Used and Expanded Panel Testing

This section describes three initiatives, enabled by regulation, that permit licensees and other entities to strengthen the detection of drugs by lowering testing cutoff levels, testing for additional substances, or both.

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 may be detected through testing of a donor’s urine specimen.

- In CY 2014, four facilities 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.
- In addition, one facility used lower cutoff levels for all substances in the NRC-minimum testing panel when performing return to work testing.

Initiative 2: LOD testing. Section 26.163(a)(2) permits licensees and other entities to test for drugs in dilute specimens to 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 specimen is dilute (e.g., consumed a lot of water on a hot day), specimen dilution also is a method that some individuals 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 whether an individual had consumed a large quantity of fluid (i.e., a dilute specimen). In CY 2014:

- Ninety-two percent of facilities (69 of 75) implemented the voluntary LOD testing policy. Forty-one sites reported performing LOD testing on 834 dilute specimens. Eight individuals tested positive for a total of 10 substances (i.e., amphetamine (2), cocaine (1), marijuana (8), and methamphetamine (1)).
- Seven facilities reported LOD testing positive results on eight pre-access, one random, and one for-cause test.
- These data demonstrate that LOD testing has been effective in identifying undeterred substance-using individuals.

Initiative 3: Expanding the testing panel to include additional substances. 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 CY 2014:

- Nine facilities tested for one or more of the following substances: barbiturates, benzodiazepines, hydrocodone, hydromorphone, methadone, oxycodone, oxymorphone,

propoxyphene, and suboxone. Individuals tested positive for benzodiazepines (2), hydrocodone (2), hydromorphone (1), methadone (2), oxycodone (1), oxymorphone (1), and propoxyphene (1).

- Eight facilities conducted expanded panel testing in three different ways:
 - Four facilities tested for additional substances in all specimens tested (i.e., for all test categories).
 - Three facilities only tested for additional substances on follow-up testing.
 - One facility only tested for additional substances when ordered by the MRO.

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

- Some licensees and other entities may implement lower BAC cutoffs to confirm abstinence¹⁵ 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.

Section 2e. Program and System Management Issues

This section presents a variety of program and system management issues reported by licensees and other entities in the Annual Reporting Form for Drug and Alcohol Tests for CY 2014. 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 includes a wide variety of information including computer system upgrades, expanded drug testing panels, internal audit results, specimen collection procedural changes, program policy and procedure improvements, and noted program deficiencies.

¹⁵ As described in 10 CFR 26.31(c)(4), a follow-up test verifies an individual’s continued abstinence from substance abuse. This type of testing, required by 10 CFR 26.69, “Authorization with Potentially Disqualifying Fitness-for-Duty Information,” is one of several criteria that licensees are required to use to determine whether to grant or maintain authorization. A licensee may define what constitutes abstinence in its procedures.

Table 4. Program and System Management Issues

| Issue Topic | Description of Issue | Licensee/ Facility |
|-----------------------------|---|-----------------------|
| Applicant Subversion | While processing a positive random test for an applicant performed on 09/30/14, the individual admitted to subverting the pre-access test completed about two weeks prior (on 09/17/14). The donor had not been granted authorization when the positive random test was received (i.e., was still going through the badging process). The individual was permanently denied authorization because of the subversion attempt. [Note: 10 CFR 26.67 requires random D&A testing of individuals who have applied for but have yet to be granted authorization.] | Callaway |
| BPTSs | Changed BPTS supplier due to longstanding issues. No issues encountered with new BPTS supplier. | Arkansas Nuclear One |
| | Changed BPTS supplier based on operating experience and industry benchmarking. | Fermi 2 |
| | The HHS-certified laboratory rejected for testing a BPTS because of a fatal flaw (i.e., insufficient specimen quantity). The specimen (a single collection) leaked in transit from the BPTS supplier to the HHS-certified laboratory. The event did not affect the required number of BPTSs submitted in the quarter. | FitzPatrick |
| | Did not submit the required number of BPTSs in the second quarter of 2014. Corrective actions included instituting a monthly meeting to evaluate the number of samples submitted to the HHS-certified laboratory and to determine if additional samples need to be submitted in the quarter. | V.C. Summer 2 & 3 |
| Collection Sites | Improved FFD specimen collector training method by implementing the Systematic Approach to Training process. | Cooper |
| | Replaced evidential breath testing devices (Intoxilyzer 5000 EN) with Intoxilyzer 8000 units. The Intoxilyzer 8000 requires the specimen collector to enter the time an individual reported to work and then automatically calculates the need for confirmatory testing based on the test result and time in work status. | |
| | First Energy fleet (Beaver Valley, Davis Besse, and Perry) calibrated non-contact infrared temperature guns used in urine specimen collections when the temperature measurement strip on the collection container does not register a temperature. | First Energy (fleet) |
| | Wrote a condition report because specimen collectors did not maintain positive control of the donor specimens and chain of custody forms for a brief period of time during the collection process. | South Texas Project |
| | Wrote a condition report because a specimen collector did not complete the chain of custody form as required by procedure, which resulted in the HHS-certified laboratory rejecting the specimen for testing. | |
| | Provided remedial training to all FFD collectors and revised training materials in response to a Non-Cited Violation (NCV) for "Failure to Train FFD Urine Collectors on the In-Use Thermometer" (NRC inspection, April 2014). | Wolf Creek |

Table 4. Program and System Management Issues

| Issue Topic | Description of Issue | Licensee/ Facility |
|------------------------------------|--|-----------------------|
| Condition Reports | <p>Issued three condition reports on the FFD program:</p> <p>(1) Failure to enter D&A test results into PADS within 5-business days (corrective action: daily documentation of data entry).</p> <p>(2) Unescorted access not administratively withdrawn when D&A test results not received with 5-business days (resolution - daily tracking of outstanding D&A test results).</p> <p>(3) Failure to place an individual's badge on security clearance hold based on miscalculation of the 5-business day receipt of D&A test results (resolution - daily review of outstanding D&A test results verified by second checker).</p> | Wolf Creek |
| Expanded Drug Testing Panel | Dominion fleet (Kewaunee, Millstone, North Anna, and Surry) is preparing for a possible expansion of the drug testing panel for post-event and for-cause testing. | Dominion (fleet) |
| FFD Policy Violation | For-cause testing was performed on two non-licensed individuals due to a credible report regarding consumption of alcohol within 5 hours of work (i.e., the NRC resident witnessed the individuals off-site during lunch consuming what appeared to be a beer). Although not returning to the site, both individuals were still on the job and were sent back to the site and for-cause tested. Both individuals tested negative, but were released from duty that day and subsequently denied authorization for 14 days for violating the FFD policy. | Clinton |
| FFD Program Policies | <ul style="list-style-type: none"> Updated FFD policy to clarify and include expectations on use of illegal drugs and possession or dispensing of illegal substances on or off site (including but not limited to the use of marijuana). Created and distributed an FFD policy brochure throughout the site for better availability to employees and contractors. | Columbia |
| | Completely redesigned FFD policy to align more closely with Part 26. | Fort Calhoun |
| FFD Program Procedures | <ul style="list-style-type: none"> Instituted quarterly review of collection documentation to validate the accuracy of electronic database entries. Revised procedures to clarify notification process and expectations related to random pending list. | D.C. Cook |
| | <p>Entered a Security Operating Experience item into the corrective action program for evaluation in response to a Green NCV finding issued during an NRC inspection of another licensee for not conducting FFD testing at the earliest possible time that both the donor and the collector were available to complete the collection. This evaluation was conducted in conjunction with four other condition reports generated during 2014.</p> <ul style="list-style-type: none"> Issued two condition reports for failure to report for random FFD testing within the 2-hour procedural time limit. Issued two condition reports for improper notifications of personnel that had been selected for FFD testing. <p>The evaluation resulted in revisions to two FFD procedures. The Site Conduct Manual (Fitness for Duty) and Security procedure (FFD Drug and Alcohol Testing) were revised to strengthen guidance on notification of personnel selected for random testing, and to improve the timeliness of donors reporting to the collection site for testing after notification to appear for a random test.</p> | Fermi 2 |
| | Completely redesigned FFD procedures to align more closely with Part 26. | Fort Calhoun |

Table 4. Program and System Management Issues

| Issue Topic | Description of Issue | Licensee/ Facility |
|--|---|-----------------------|
| FFD Program Procedures (continued) | Revised FFD procedures to improve program efficiency. | Nuclear Fuel Services |
| | Reviewed and made enhancements to FFD procedures to improve program performance. | V.C. Summer Unit 1 |
| | Issued a condition report for FFD potential NRC minor violations of Part 26. Developed a matrix of Part 26 requirements to FFD procedures and revised procedures and desktops. | Wolf Creek |
| | Updated Xcel Energy fleet (Corporate Office, Monticello, and Prairie Island) FFD procedures to reference required specimen collector job aids and actions to address random selection predictability among FFD Program administration personnel. | Xcel Energy (fleet) |
| Follow-up Testing | An Access Authorization FFD Snapshot assessment identified that the follow-up testing program did not meet the recommended testing schedule on more than one occasion during the heavy in-processing period for the 2014 outage. A condition report was written and program enhancements were made to correct the deficiencies (the licensee's performance report did not describe the enhancements). | Indian Point |
| | Issued a condition report because an individual was not included in the follow-up testing program in the Security Screening Information System (SSIS). To address this issue, the site implemented a weekly comparison of the PADS active staff at the site in a follow-up testing program with the SSIS active follow-up list. | Wolf Creek |
| HHS-Certified Laboratory Testing | Restructured the contract with the HHS-certified laboratory. The new contract is direct with the laboratory instead of as a subcontract through the local hospital. The change increased efficiency in test results reporting to the MRO and reduced testing costs by 70 percent. | Nuclear Fuel Services |
| Internal Audit Results | Audit finding on protection of information that resulted in corrective actions that included staff training, interim control measures, and relocating records to a restricted access area with improved control measures. | INPO |
| | Identified three violations of very low safety significance (Green) that met NRC Enforcement Policy criteria for being dispositioned as NCVs. | Wolf Creek |
| | Quality Assurance audit identified three issues (procedure formatting errors; correction to training dates for an individual in the PADS database; document justification for two observed collections in the corrective action database). Recommendations included improving visibility of the Employee Assistance Program, deleting a form that duplicated tracking elements tracked by other processes, and making physical improvements to the access screening office areas. | |

Table 4. Program and System Management Issues

| Issue Topic | Description of Issue | Licensee/ Facility |
|---------------------|---|------------------------|
| LTF | <p>Exelon was unable to take administrative action against individuals with initial cocaine or marijuana positive test results from an LTF because 10 CFR 26.75(i) requires a confirmation rate by an HHS-certified laboratory of at least 85 percent.</p> <ul style="list-style-type: none"> • Eight specimens with initial positive cocaine results from an LTF, with a 75 percent confirmation rate (6 of 8). • Thirty-seven specimens with initial positive marijuana results from an LTF, with an 81 percent confirmation rate (30 of 37). <p>The Exelon fleet consists of Braidwood, Byron, Calvert Cliffs, Clinton, Corporate Office, Dresden, LaSalle, Limerick, Nine Mile Point, Peach Bottom, Quad Cities, R.E. Ginna, and Three Mile Island.</p> | Exelon (fleet) |
| LOD Testing | <p>Implemented LOD testing of dilute specimens permitted under 10 CFR 26.163(a)(2), as of March 1, 2014. Prior to March 1, 2014, six test results were reported as dilute by the HHS-certified laboratory. After March 1, 2014, 26 tests were reported as dilute by the HHS-certified laboratory and each specimen was tested to the LOD.</p> | Susquehanna |
| Process Improvement | <p>Communicated operating experience bulletins on access authorization and FFD to appropriate personnel through face-to-face meetings, fleet bulletins, and during leadership meetings.</p> | Seabrook |
| Random Testing | <p>In January 2014, a SSIS report was run to identify individuals not in the FFD random testing pool. This review identified that one individual was not included in the random testing pool. The information technology department identified and corrected an error in the interface between two business application systems -- the Access Authorization and FFD programs (SSIS and Plant Information System). Subsequent to this event, the "NOT in the DCCP FFD Random Testing Pool Report" has been run weekly, with no new instances of this error.</p> | Diablo Canyon |
| | <p>Duke Energy fleet (Corporate Office, Brunswick, Catawba, Crystal River, H.B. Robinson, McGuire, Oconee, and Shearon Harris) continued to manage nuclear workers in two separate security software systems. Consequently, workers who maintained unescorted access at facilities of both legacy fleets were included in the random pools for both legacy fleets. As a result, some workers may be subject to more frequent random testing because of inclusion in two separate random pools.</p> | Duke Energy (fleet) |
| | <p>In the third quarter of 2014, increased the random testing rate due to the discovery of beer cans on the construction site.</p> | V.C. Summer 2 & 3 |
| | <p>Increased the random testing rate at the C/V site in response to the number of illegal substance events in the Controlled Construction area. Also added random K-9 patrols inside and outside the Controlled Construction area.</p> | Vogtle 3 & 4 |
| | <p>Issued a condition report because random testing was not completed within 30 days. Implemented daily tracking to correct this issue.</p> <p>In response to a green NCV finding issued by the NRC during an inspection in April 2014 for "Failure to Test Donor, Off-site When Selected for Random, at Earliest Reasonable Opportunity," implemented a tracking method to identify when individuals selected for random testing returned to the site (by notifying the person's FFD Supervisor and FFD staff).</p> | Wolf Creek |

Table 4. Program and System Management Issues

| Issue Topic | Description of Issue | Licensee/ Facility |
|---|--|--|
| <p>Subpart K Construction Site C/V Program Oversight</p> | <ul style="list-style-type: none"> Fleet management oversight, direction and technical guidance for the FFD programs at the plant sites within the Southern Nuclear Company (SNC) fleet is provided from the SNC Corporate office. Management direction and responsibilities is provided by a Site FFD Supervisor at each SNC fleet plant site. 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 FFD/Access information database and in all associated technical areas and processes. The direct responsibility for the SNC fleet Medical Services and FFD Programs is assigned to and fulfilled by the Medical Services Manager at the Corporate office. The FFD program (including MROs) underwent a Nuclear Oversight Audit, with no findings issued. The FFD Program also underwent an NRC inspection. | <p>Corporate Office – Southern Nuclear</p> |
| <p>Urine Specimen Lost in Transit</p> | <p>One specimen was lost in transit to the HHS-certified laboratory. A second specimen was collected from the individual, with negative results.</p> | <p>St. Lucie</p> |

Table 5. Test Results by Test Category

| Test Category* | Number Tested | Number Tested Positive | Percent Positive |
|----------------|----------------|------------------------|------------------|
| Pre-Access | 92,368 | 762 | 0.82% |
| Random | 64,689 | 221 | 0.34% |
| For Cause | 694 | 83 | 11.96% |
| Post-Event | 897 | 13 | 1.45% |
| Follow-up | 7,942 | 54 | 0.68% |
| Total | 166,590 | 1,133 | 0.68% |

* "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 | | |
|---------------|--------------------|-----------------|------------------|----------------|-----------------|------------------|
| | Number Tested | Number Positive | Percent Positive | Number Tested | Number Positive | Percent Positive |
| Pre-Access | 9,545 | 27 | 0.28% | 82,823 | 735 | 0.89% |
| Random | 37,546 | 53 | 0.14% | 27,143 | 168 | 0.62% |
| For Cause | 215 | 23 | 10.70% | 479 | 60 | 12.53% |
| Post-Event | 241 | 1 | 0.41% | 656 | 12 | 1.83% |
| Follow-up | 3,382 | 14 | 0.41% | 4,560 | 40 | 0.68% |
| Total | 50,929 | 118 | 0.23% | 115,661 | 1,015 | 0.88% |

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

| Positive Test Result* | Licensee Employees | | C/Vs | | Total† | |
|-----------------------|--------------------|---------------|--------------|---------------|--------------|---------------|
| | Number | Percent | Number | Percent | Number | Percent |
| Marijuana | 31 | 26.1% | 531 | 49.5% | 562 | 47.2% |
| Alcohol | 62 | 52.1% | 193 | 18.0% | 255 | 21.4% |
| Refusal to Test | 6 | 5.0% | 118 | 11.0% | 124 | 10.4% |
| Amphetamines | 7 | 5.9% | 105 | 9.8% | 112 | 9.4% |
| Cocaine | 8 | 6.7% | 98 | 9.1% | 106 | 8.9% |
| Opiates | 5 | 4.2% | 17 | 1.6% | 22 | 1.9% |
| Other Drugs ‡ | 0 | 0.0% | 10 | 0.9% | 10 | 0.8% |
| PCP | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Total† | 119 | 100.0% | 1,072 | 100.0% | 1,191 | 100.0% |

* Positive test results include refusal to test results (i.e., adulterated and substituted validity test results, and subversion attempts where no specimen was tested). Subversion attempts associated with positive test results appear in this table under the associated substance(s) identified in those individuals. Section 2f presents information on the 187 subversion attempts identified in CY 2014.

‡ In CY 2014, two facilities reported that six individuals tested positive for a total of 10 substances not included in the NRC-minimum testing panel: benzodiazepines (2), hydrocodone (2), hydromorphone (1), methadone (2), oxycodone (1), oxymorphone (1), and propoxyphene (1).

† Totals in this table are higher than those reported in Table 5 and Table 6 because 48 individuals tested positive for more than one substance (i.e., 40 tested positive for 2 substances, 6 tested positive for 3 substances, and 2 tested positive for 4 substances).

Chart 1. Positive Test Results by Substance, Licensee Employees
(50,929 individuals tested)

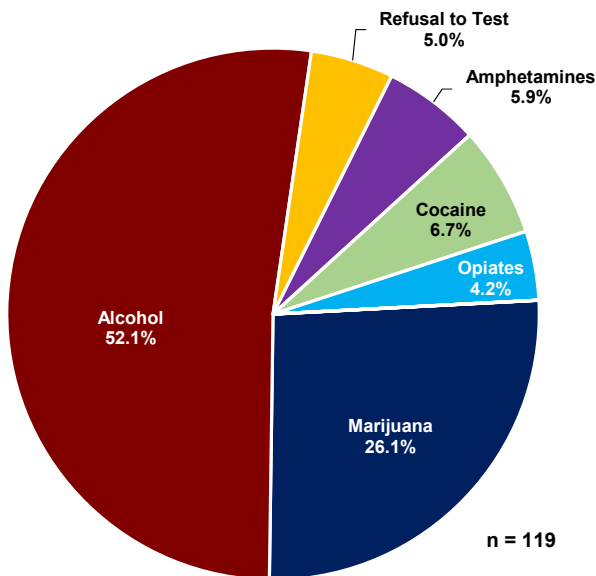


Chart 2. Positive Test Results by Substance, Contractors/Vendors
(115,661 individuals tested)

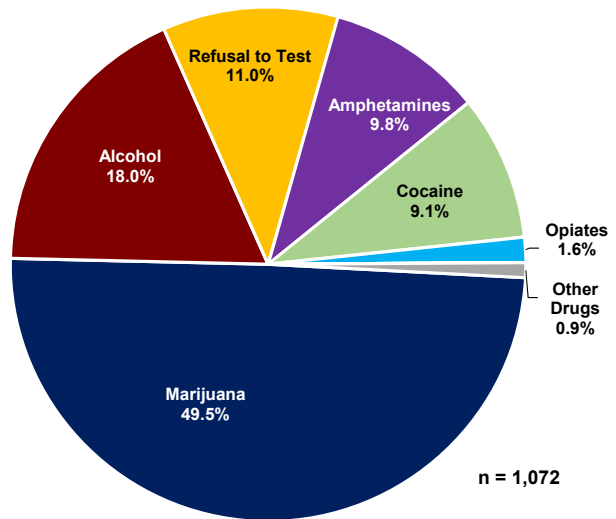


Table 8. Significant Fitness-for-Duty Events*

| Year | Licensed Reactor Operators | Supervisors | | FFD Program Personnel | Substances Found | Other Events [†] | Total |
|------|----------------------------|-------------------|-----|-----------------------|------------------|---------------------------|-----------|
| | | Licensee Employee | C/V | | | | |
| 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 |

* Table 8 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). Table 1 and Table 2 provide additional detail on each event in CY 2014. Table A-1 in the report appendix provides data on 24-hour event reports from 1990 through 2004.

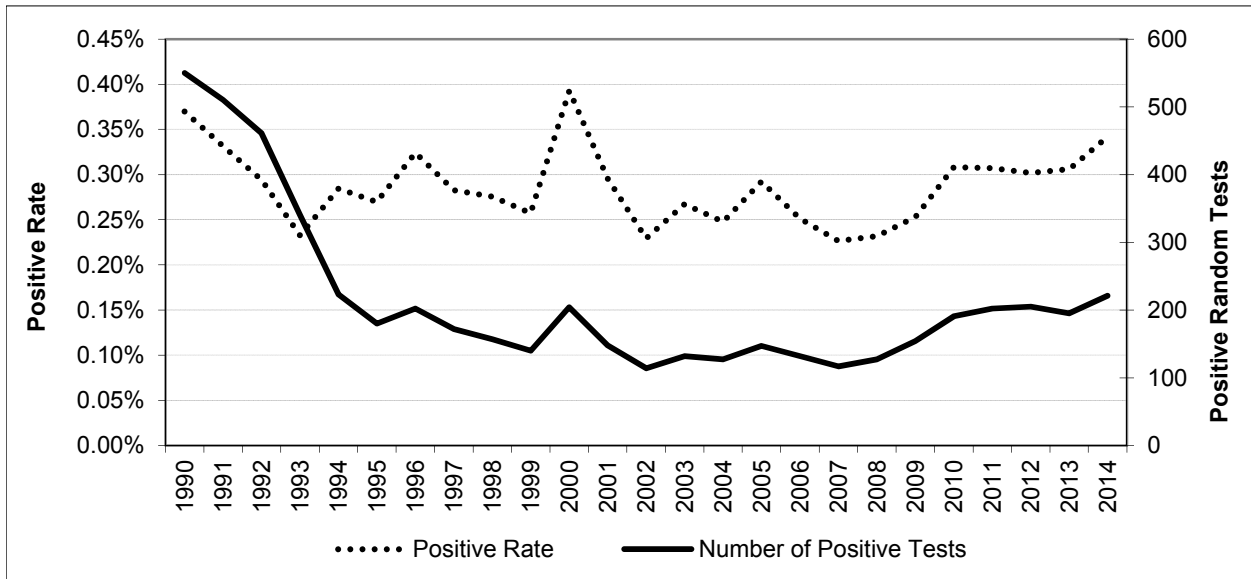
† In 2013, the NRC added the “Other Events” column to capture 24-hour reportable events not associated with an individual employee violation (e.g., programmatic failures or vulnerabilities such as HHS laboratory testing errors) and for events in which insufficient information existed in the 10 CFR 26.719(b) 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 9. Trends in Testing by Test Category

| Test Category | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009* | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Pre-Access | | | | | | | | | | | | |
| Number Tested | 72,988 | 76,119 | 79,005 | 79,980 | 81,932 | 87,468 | 95,878 | 96,543 | 103,848 | 101,438 | 89,187 | 92,368 |
| Number Positive | 757 | 737 | 648 | 747 | 668 | 664 | 677 | 677 | 741 | 766 | 653 | 762 |
| Percent Positive | 1.04% | 0.97% | 0.82% | 0.93% | 0.82% | 0.76% | 0.71% | 0.70% | 0.71% | 0.76% | 0.73% | 0.82% |
| Random | | | | | | | | | | | | |
| Number Tested | 49,402 | 51,239 | 50,286 | 52,557 | 51,665 | 54,759 | 60,877 | 62,008 | 65,778 | 67,943 | 63,678 | 64,689 |
| Number Positive | 132 | 127 | 147 | 132 | 117 | 127 | 154 | 191 | 202 | 205 | 195 | 221 |
| Percent Positive | 0.27% | 0.25% | 0.29% | 0.25% | 0.23% | 0.23% | 0.25% | 0.31% | 0.31% | 0.30% | 0.31% | 0.34% |
| For Cause | | | | | | | | | | | | |
| Number Tested | 637 | 701 | 671 | 716 | 720 | 797 | 547 | 549 | 856 | 724 | 627 | 694 |
| Number Positive | 123 | 134 | 105 | 104 | 81 | 94 | 108 | 47 | 73 | 86 | 84 | 83 |
| Percent Positive | 19.31% | 19.12% | 15.65% | 14.53% | 11.25% | 11.79% | 19.74% | 8.56% | 8.53% | 11.88% | 13.40% | 11.96% |
| Post-Event | | | | | | | | | | | | |
| Number Tested | 415 | 458 | 490 | 905 | 895 | 986 | 893 | 884 | 802 | 883 | 718 | 897 |
| Number Positive | 3 | 5 | 1 | 5 | 10 | 7 | 1 | 6 | 7 | 7 | 5 | 13 |
| Percent Positive | 0.72% | 1.09% | 0.20% | 0.55% | 1.12% | 0.71% | 0.11% | 0.68% | 0.87% | 0.79% | 0.70% | 1.45% |
| Follow-up | | | | | | | | | | | | |
| Number Tested | 3,142 | 3,752 | 4,057 | 4,766 | 4,991 | 5,756 | 6,252 | 6,657 | 7,302 | 8,147 | 7,487 | 7,942 |
| Number Positive | 42 | 31 | 31 | 37 | 31 | 44 | 53 | 60 | 57 | 50 | 70 | 54 |
| Percent Positive | 1.34% | 0.83% | 0.76% | 0.78% | 0.62% | 0.76% | 0.85% | 0.90% | 0.78% | 0.61% | 0.93% | 0.68% |
| TOTAL | | | | | | | | | | | | |
| Number Tested | 126,584 | 132,269 | 134,509 | 138,924 | 140,203 | 149,766 | 164,447 | 166,641 | 178,586 | 179,135 | 161,697 | 166,590 |
| Number Positive | 1,057 | 1,034 | 932 | 1,025 | 907 | 936 | 993 | 981 | 1,080 | 1,114 | 1,007 | 1,133 |
| Percent Positive | 0.84% | 0.78% | 0.69% | 0.74% | 0.65% | 0.62% | 0.60% | 0.59% | 0.60% | 0.62% | 0.62% | 0.68% |

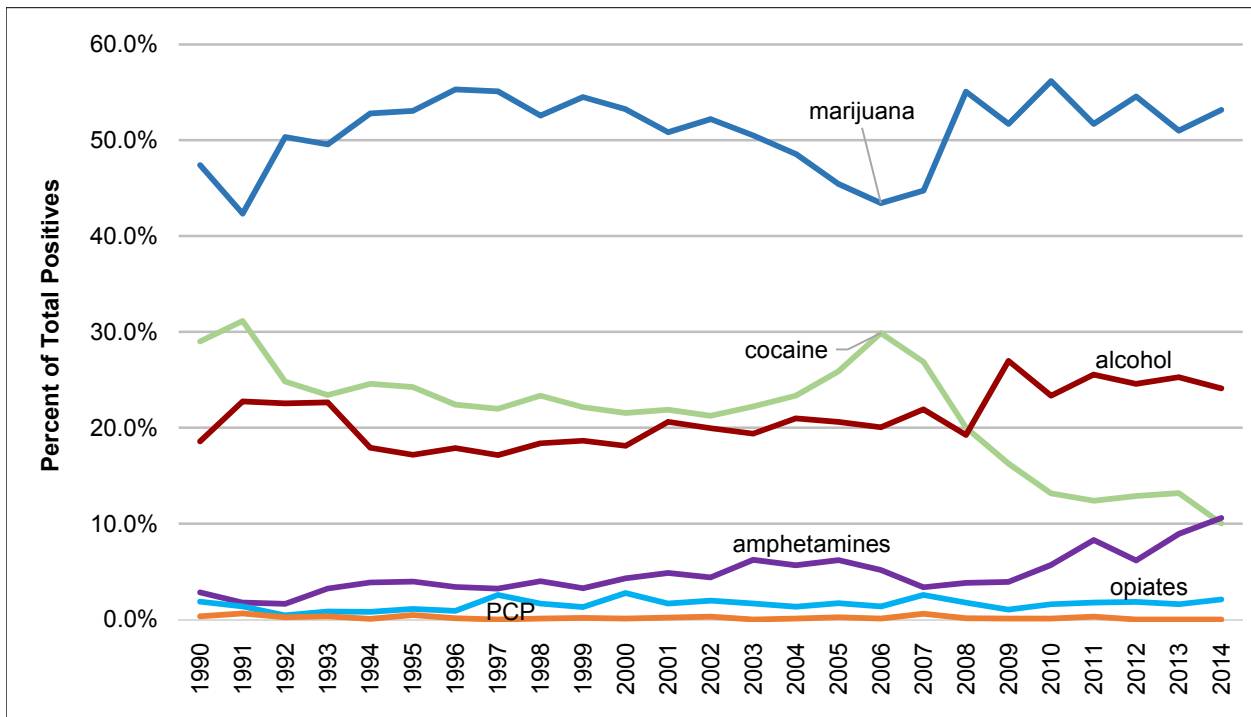
* By March 31, 2009, all sites were required to implement the changes in the 2008 Part 26 final rule. Refer to Table A-2 for data from 1990 through 2002.

Chart 3. 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 4. Trends in Substances* Identified, Percentage of Total Positives by Substance Tested



* Chart 4 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 5. Pre-Access Testing – Trends in Positive Rates by Employment Category*

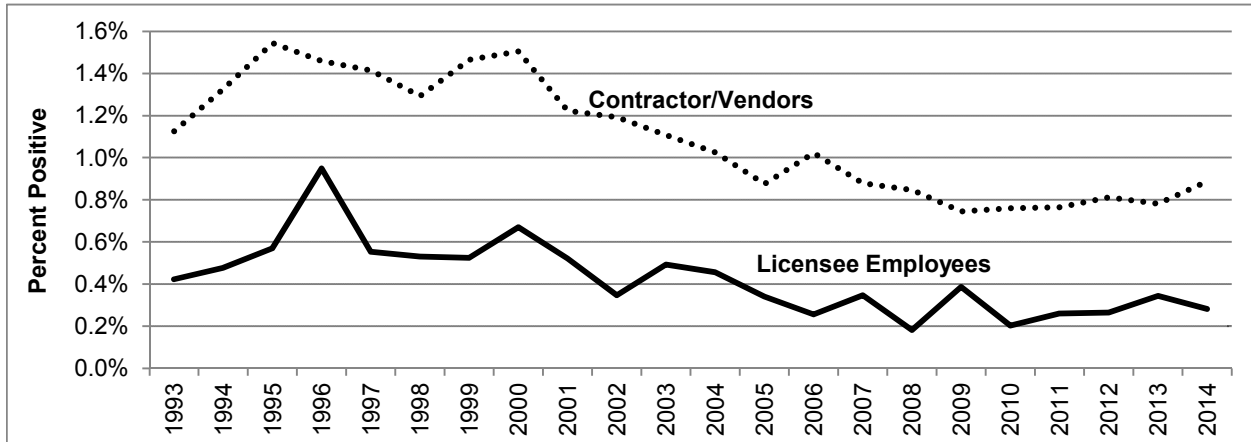


Chart 6. Random Testing – Trends in Positive Rates by Employment Category*

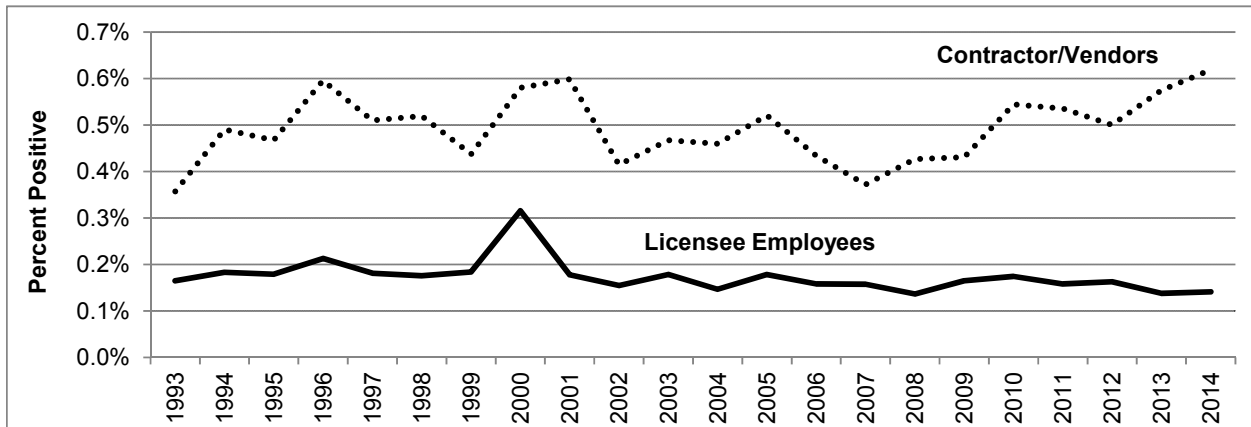
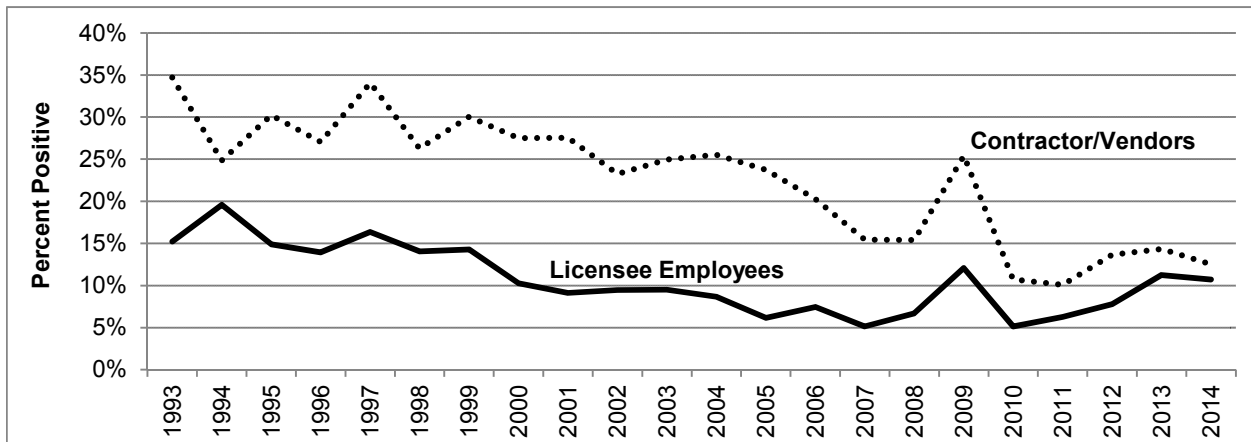


Chart 7. For-Cause Testing – Trends in Positive Rates by Employment Category*



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

Observations on Chart 5, Chart 6, and Chart 7

- The pre-access testing positive rate for licensee employees declined from 0.35 percent in CY 2013 to 0.28 percent in CY 2014 to 0.28 percent, and the positive rate for C/Vs increased from 0.78 percent to 0.89 percent. Both rates remained low by historical standards. (Chart 5 and Table A-5)
- The random testing positive rate for C/Vs increased in CY 2014 to its highest level since 2001, at 0.62 percent. By comparison, the positive rate for licensee employees at 0.14 percent was almost unchanged from 0.15 percent in CY 2013. Historically, random testing rates for licensee employees have been tightly bound between 0.14 percent and 0.21 percent, with one outlier year in CY 2000 at 0.32 percent. (Chart 6 and Table A-6)
- Since CY 2010, for-cause testing positive rates for licensee employees and C/Vs have been converging. The NRC staff believes this trend is associated with improved information collection from the e-reporting system. (Chart 7 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 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 the 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'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 <http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/>.

Table 10 through Table 13 and Chart 8 through Chart 10 provide 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 improved characterization of positive rates across the industry.

Table 10. Industry Positive Test Results for Pre-Access, Random, and For-Cause Testing by Employment Category, CY 2014

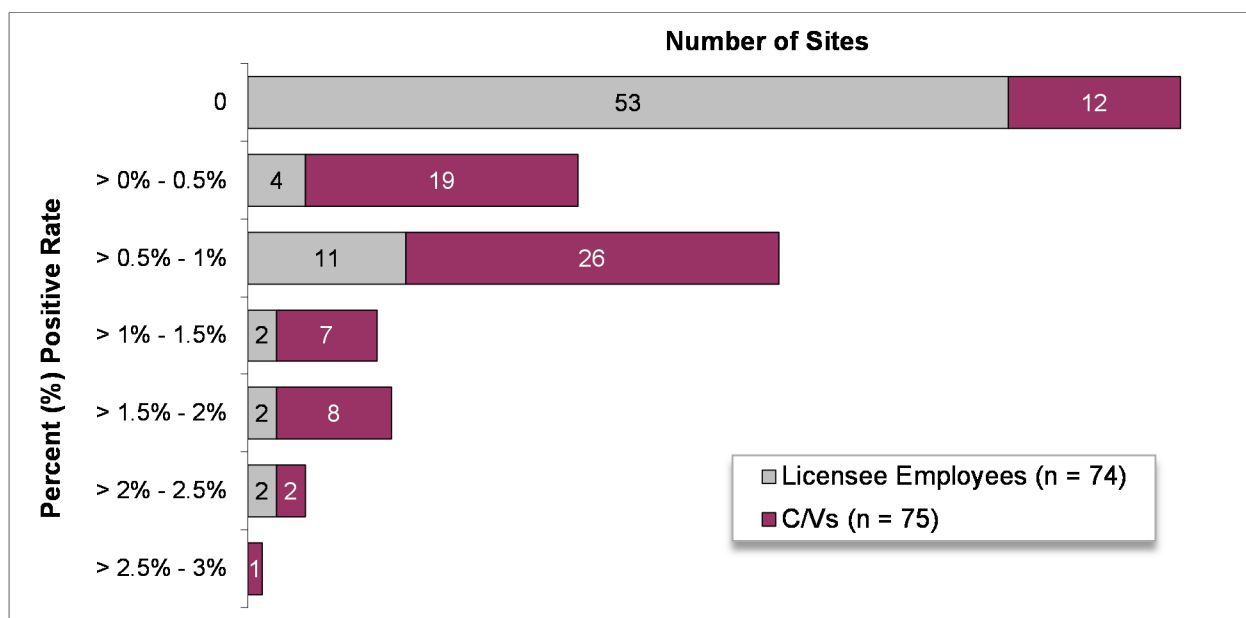
| Test and Employment Categories | Tests | Positive Tests | Sites Reporting Test Results | Industry % Positive Rate | % Positive Rate Range (sites) |
|--------------------------------|--------|----------------|------------------------------|--------------------------|-------------------------------|
| Pre-Access Testing | | | | | |
| Licensee Employees | 9,545 | 27 | 74 | 0.28 | 0 - 2.27 |
| Contractors/Vendors | 82,823 | 735 | 75 | 0.89 | 0 - 2.52 |
| Random Testing | | | | | |
| Licensee Employees | 37,546 | 53 | 74 | 0.14 | 0 - 1.23 |
| Contractors/Vendors | 27,143 | 168 | 75 | 0.62 | 0 - 1.81 |
| For-Cause Testing | | | | | |
| Licensee Employees | 215 | 23 | 60 | 10.70 | 0 - 100 |
| Contractors/Vendors | 479 | 60 | 55 | 12.53 | 0 - 100 |

Observations on Table 10

- Pre-access testing – C/Vs tested positive 3.2 times more often than licensee employees, based on a comparison of industry percent positive rates (i.e., 0.89 percent divided by 0.28 percent).
- Random testing – C/Vs tested positive 4.4 times more often than licensee employees, based on a comparison of industry percent positive rates.
- For-cause testing – C/Vs tested positive at a comparable industry positive rate to licensee employees.

Note, the number of sites reporting test results in Table 10 through Table 13 and Chart 8 through Chart 10 may vary by employment and test category. For example, in CY 2014, 75 sites maintained an FFD program, but only 60 performed at least one for-cause test on a licensee employee and 55 performed at least one for-cause test on a C/V.

Chart 8. Pre-Access Testing, Distribution of Site-Specific Positive Rates by Employment Category, CY 2014



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

Observations on Chart 8

Licensee employee applicants:

- Approximately 72 percent of sites conducting pre-access testing reported no positive results (53 of 74 sites).
- Of the 28 percent of sites reporting at least one positive test result (21 of 74 sites), 15 reported a positive rate of 1.0 percent or less, and 6 sites reported positive rates between 1.0 and 2.5 percent.
- All six site-specific positive rates above 1.0 percent were at operating power reactor sites, with the highest positive rate at 2.27 percent.

C/V applicants:

- Approximately 16 percent of sites conducting pre-access testing reported no positive results (12 of 75 sites).
- Of the 84 percent of sites reporting at least one pre-access testing positive result (63 of 75 sites), 45 sites reported positive rates of 1.0 percent or less, with 18 sites reporting positive rates greater than 1 percent up to 3 percent.
- Of the three site-specific positive rates above 2.0 percent, two were reported by the reactor construction sites, and one was reported by an operating power reactor site. The highest site-specific positive rate was 2.52 percent.
- In all but one percent positive rate range (i.e., > 2% - 2.5%), the number of sites with C/V positives exceeded sites with licensee employee positives.

**Table 11. Pre-Access Testing, Distribution of Site-Specific Positive Rates
by Employment Category, CY 2011 – CY 2014**

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

Observations on Table 11

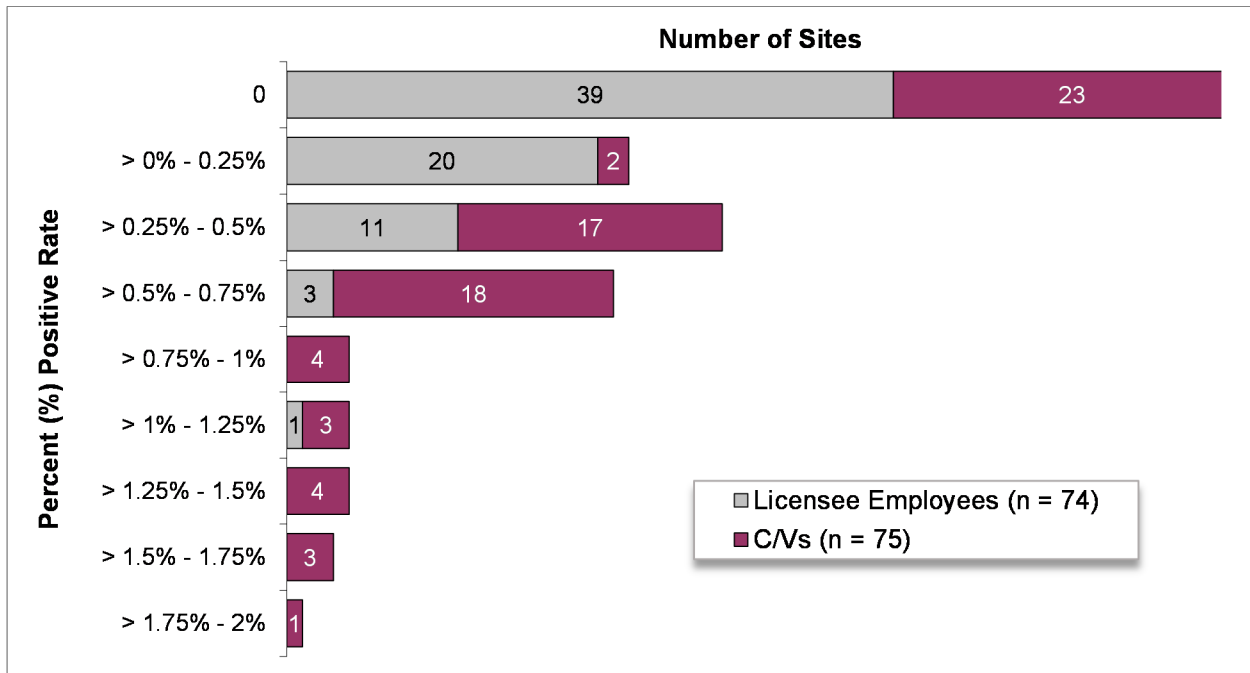
Licensee employee applicants:

- Fifty to 57 sites per year (i.e., 67 to 76 percent of sites) reported no pre-access testing positives for licensee employee applicants.
- Four to six sites per year reported positive rates between 1.0 percent and 2.0 percent.
- Only one site in 2012 and 2013 reported a positive rate between 3.5 percent and 4.0 percent. Both of these sites were operating power reactors that conducted a small number of tests (75 tested individuals in 2012, with three positive results; 26 tested individuals in 2013, with one positive result).

C/V applicants:

- Seven to 13 sites per year (i.e., 9 to 17 percent of sites) reported no pre-access testing positives for C/Vs. These data suggest that D&A testing programs do not deter substance-using C/Vs from applying for employment at regulated facilities.
- Eleven to 15 sites per year reported positive rates between 1.0 percent and 2.0 percent.
- Three to four sites per year from 2011 through 2014 reported positive pre-access testing rates between 2.0 percent and 3.0 percent. The reactor construction sites reported positive rates in this category each year.
- 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 9. Random Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014



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

Observations on Chart 9

Licensee employees:

- Approximately 53 percent of sites reported no random testing positives (39 of 74 sites). Of the 47 percent of sites reporting at least one positive (35 of 74 sites), all but one reported positive rates of 0.75 percent or less.
- The one site with a random testing rate between 1.0 and 1.25 percent was a decommissioning power reactor site with a positive rate of 1.23 percent (tested 162 individuals, with two positive results).

C/Vs:

- Approximately 31 percent of sites reported no random testing positives (23 of 75 sites). Of the 69 percent of sites reporting at least one positive test result (52 of 75 sites), 41 sites reported random testing rates of 1.0 percent or less, with 11 sites reporting positive rates between 1.0 percent to 2.25 percent.
- C/Vs tend to test positive at higher rates on random testing than licensee employees. Of the sites that conducted C/V random testing, 44 percent (33 of 75 sites) reported positive rates greater than 0.5 percent. By comparison, only 5 percent (4 of 74 sites) reported licensee employee positive rates greater than 0.5 percent.
- The one site with a random testing rate between 1.75 and 2.25 percent was a decommissioning power reactor site with a positive rate of 1.8 percent (tested 166 individuals, with three positive results).

**Table 12. Random Testing, Distribution of Site Specific Positive Rates
by Employment Category, CY 2011 – CY 2014**

| Positive Rate Range (%) | Number of Sites by Year | | | | | | | |
|---------------------------------------|-------------------------|------|------|------|---------------------|------|------|------|
| | Licensee Employees | | | | Contractors/Vendors | | | |
| | 2011 | 2012 | 2013 | 2014 | 2011 | 2012 | 2013 | 2014 |
| 0 | 34 | 33 | 40 | 39 | 24 | 25 | 32 | 23 |
| > 0 - 0.25 | 21 | 20 | 20 | 20 | 5 | 7 | 1 | 2 |
| > 0.25 - 0.50 | 17 | 19 | 11 | 11 | 19 | 19 | 9 | 17 |
| > 0.50 - 0.75 | 2 | 2 | 3 | 3 | 5 | 7 | 15 | 18 |
| > 0.75 - 1.00 | 1 | 1 | 1 | | 9 | 4 | 7 | 4 |
| > 1.00 - 1.25 | | | | 1 | 4 | 6 | 3 | 3 |
| > 1.25 - 1.50 | | | | | 4 | 3 | 8 | 4 |
| > 1.50 - 1.75 | | | | | 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 | 75 | 74 | 76 | 75 |

Observations on Table 12

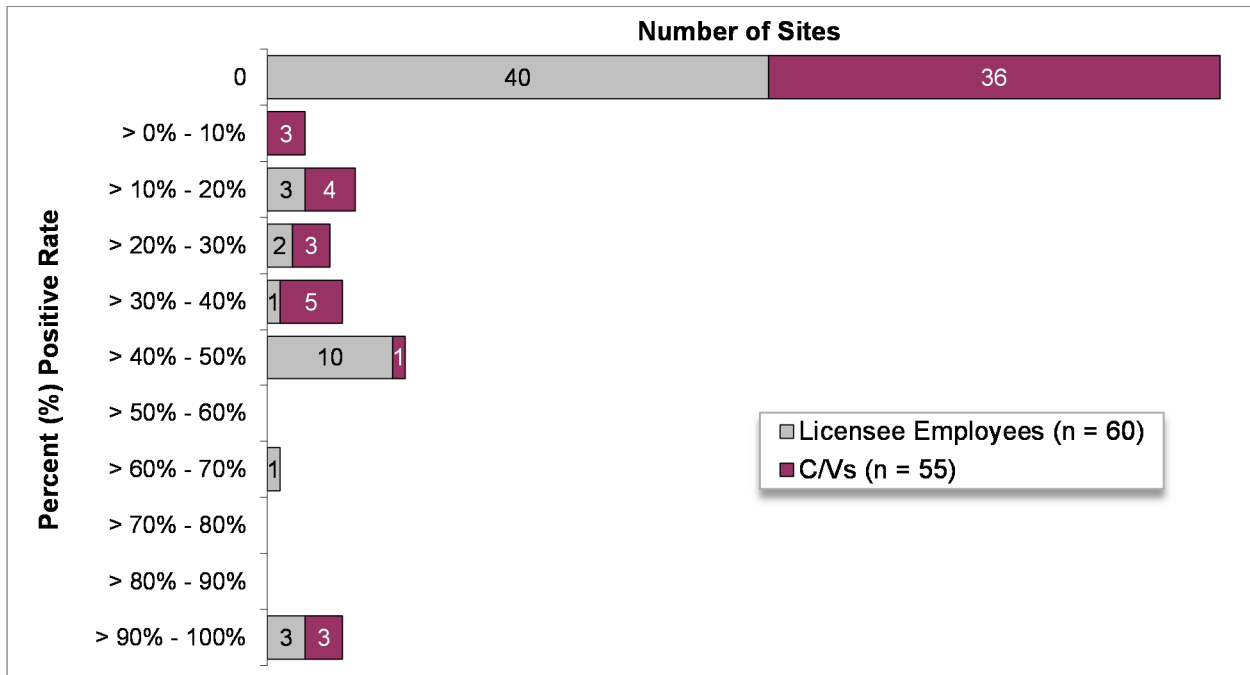
Licensee employees:

- Thirty-three to 40 sites per year (i.e., 44 to 53 percent of sites) reported no random testing positives for licensee employees.
- 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. This change is evident in the data after 2012.
- Only one site in the last 4 years reported a random testing positive rate greater than 1 percent.

C/Vs:

- Twenty-three to 32 sites per year (i.e., 31 to 42 percent of sites) reported no random testing positives for C/Vs.
- Have higher site-specific positive rates as compared to licensee employees, with 11 to 13 sites per year with positive rates greater than 1.00 percent to 2.25 percent (i.e., 17.3 percent of sites in 2011, 16.2 percent of sites in 2012, 15.8 percent of sites in 2013, and 14.6 percent of sites in 2014).

Chart 10. For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014



* Refer to Table 13 for the data summarized in this chart.

Observations on Chart 10

- In CY 2014, 215 licensee employees and 479 C/Vs were for-cause tested, with 23 positives reported for licensee employees and 60 positives for C/Vs. (Table 6)
- Unlike pre-access testing (Chart 8) and random testing (Chart 9), no differential in site-specific positive rates by employment category exists 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 13 for a comparison of site positive rates from 2011 through 2014).
- Licensee employees – 81 percent of sites (60 of 74 sites) conducted at least one for-cause test in 2014, with 33 percent of those sites reporting at least one positive (20 of 60 sites)
- C/Vs – 73 percent of sites (55 of 75 sites) conducted at least one for-cause test in 2014, with 35 percent of those sites reporting at least one positive (19 of 55 sites).
- A handful of sites reported for-cause testing positive rates greater than 50 percent, including four sites for licensee employees and three sites for C/Vs.
- In 2014, it appears that the behavioral observation programs were much more effective in detecting licensee employee impairment at the greater than 40 percent to 50 percent site-specific positive range, with 10 sites for licensee employees compared to one site for C/Vs. However, this differential appears to be an outlier, when compared to data from 2011 through 2013 (see Table 13). For example in 2013, six sites identified C/Vs at this positive rate range and compared to three sites that identified licensee employees.

**Table 13. For-Cause Testing, Distribution of Site Specific Positive Rates
by Employment Category, CY 2011 – CY 2014**

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

Observations on Table 13

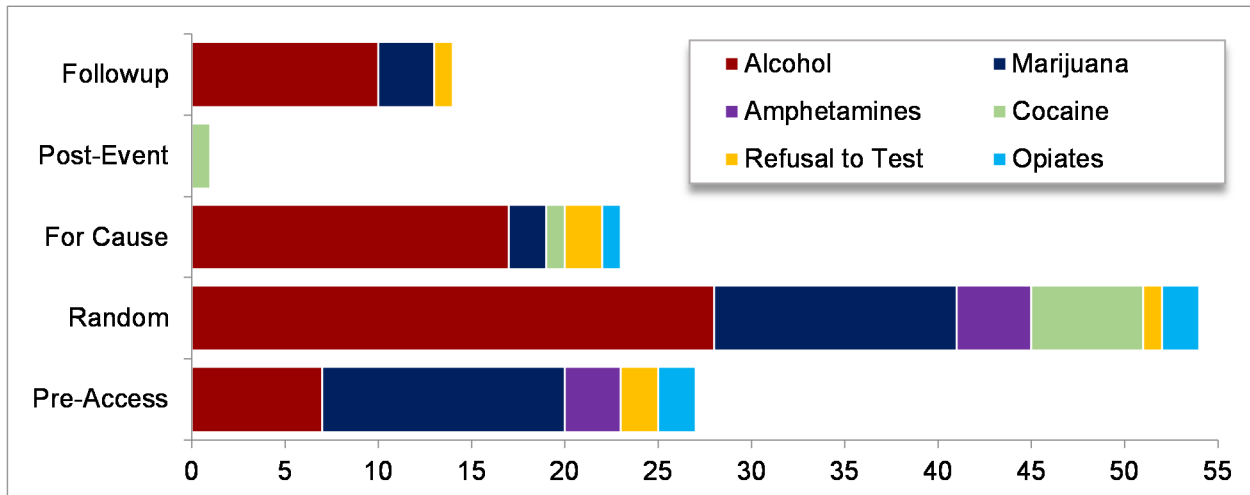
Licensee employees:

- A significant percentage of for-cause tests performed by sites each year on licensee employees resulted in negative results (66.7 to 78.2 percent of sites per year that performed at least one for-cause reported no positive results).
- Between 14.5 and 29.1 percent of sites per year with at least one positive for-cause test for a licensee employee, reported in the positive rate range of greater than 0 to 50 percent.
- A small percentage of sites per year (1.8 to 7.3 percent) reported an annual positive rate for licensee employees between 90 and 100 percent.

C/Vs:

- A smaller, but still significant percentage of for-cause tests performed by sites on C/Vs resulted in negative results (46.8 to 65.5 percent of sites per year that performed at least one for-cause test reported no positive results), as compared to licensee employee rates.
- Between 29.1 and 44.1 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.
- A small percentage of sites per year (5.5 to 14.5 percent) reported an annual positive rate for C/Vs between 90 and 100 percent.

Chart 11. Licensee Employees, Positive Results by Substance and Test Category



Observations on Chart 11

- In CY 2014, licensees and other entities reported that 112 licensee employees tested positive and six refused to take an NRC-required test. One of the 112 individuals tested positive for two substances on a random test.
- Random testing was the most effective method of identifying substance-using individuals in the licensee employee category, accounting for 44.9 percent of positive results (53 of 118 licensee D&A testing violations). Random testing also was the most effective testing measure for identifying cocaine use in licensee employees, identifying six of the eight instances in CY 2014.
- Pre-access and for-cause testing identified comparable percentages of licensee employees with a D&A testing violation at 22.9 percent and 19.5 percent, respectively. Follow-up testing identified 11.9 percent of licensee employees with a D&A testing violation, and post-event testing identified one individual that tested positive for cocaine.
- Alcohol was the most identified substance in licensee employees (62 positives, or 54.9 percent of the 113 total positives in CY 2014). A smaller number of positive test results were reported for marijuana (31), cocaine (8), amphetamines (7), and opiates (5).

Chart 12. Contractors/Vendors, Substances Detected (Including Testing Refusals) by Test Category

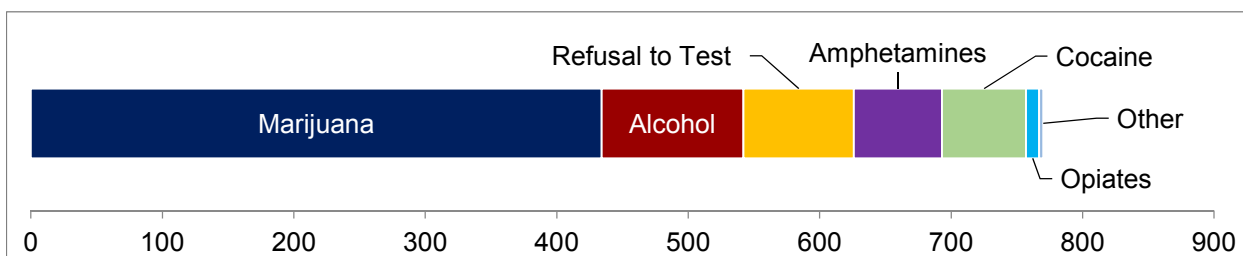


Observations on Chart 12

- In 2014, licensees and other entities reported that 1,015 C/Vs tested positive or refused to take an NRC-required test. (Table 6) These 1,015 C/Vs tested positive for 954 substances and 118 refused to test.
- Pre-access testing identified 71.8 percent of substances (770 of 1,072 results) and random testing identified 180 results (16.8 percent). The remaining 12.4 percent of substances were identified by for cause (69), post-event (12), and follow-up (41) tests.

Chart 13 and Chart 14 illustrate the substances identified in C/Vs with a D&A testing violation in CY 2014. The C/V testing data have been divided into two charts to improve the presentation of results (i.e., pre-access testing in Chart 13 and the results for the remaining test categories in Chart 14).

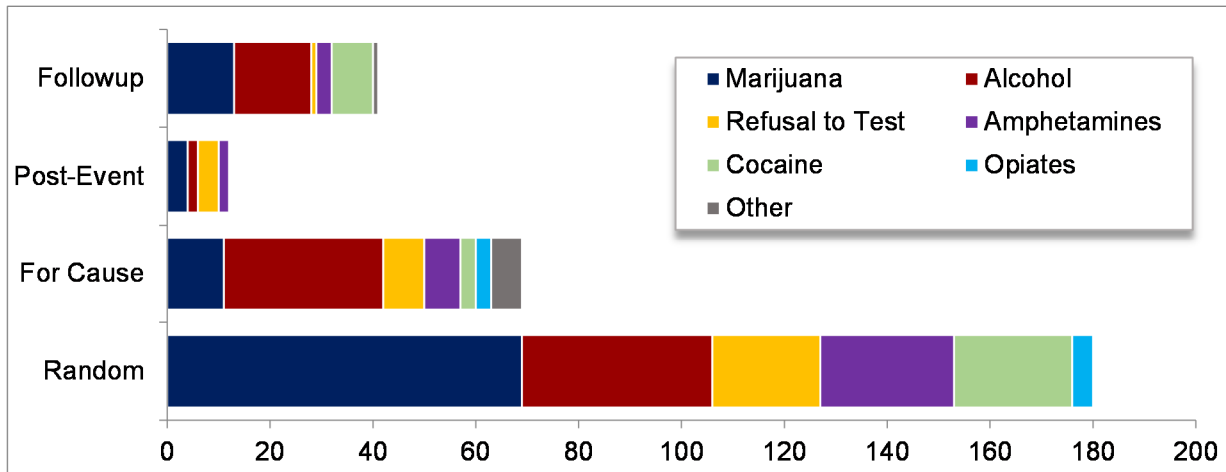
Chart 13. Contractors/Vendors, Pre-Access Positive Results by Substance



Observations on Chart 13

- In CY 2014, licensees and other entities reported pre-access D&A testing violations for 735 C/Vs. (Table 6) These C/Vs tested positive for 686 substances and 84 refused to test. Twenty-nine (29) individuals tested positive for more than one substance.
- Two substances, marijuana (434) and alcohol (108), accounted for 79 percent of substances identified (542 of 686). The remaining 144 substances consisted of amphetamines (67), cocaine (64), opiates (10), and other drugs (benzodiazepines (1), methadone (1), propoxyphene (1)).

Chart 14. Contractors/Vendors, Positive Results by Substance and Test Category*



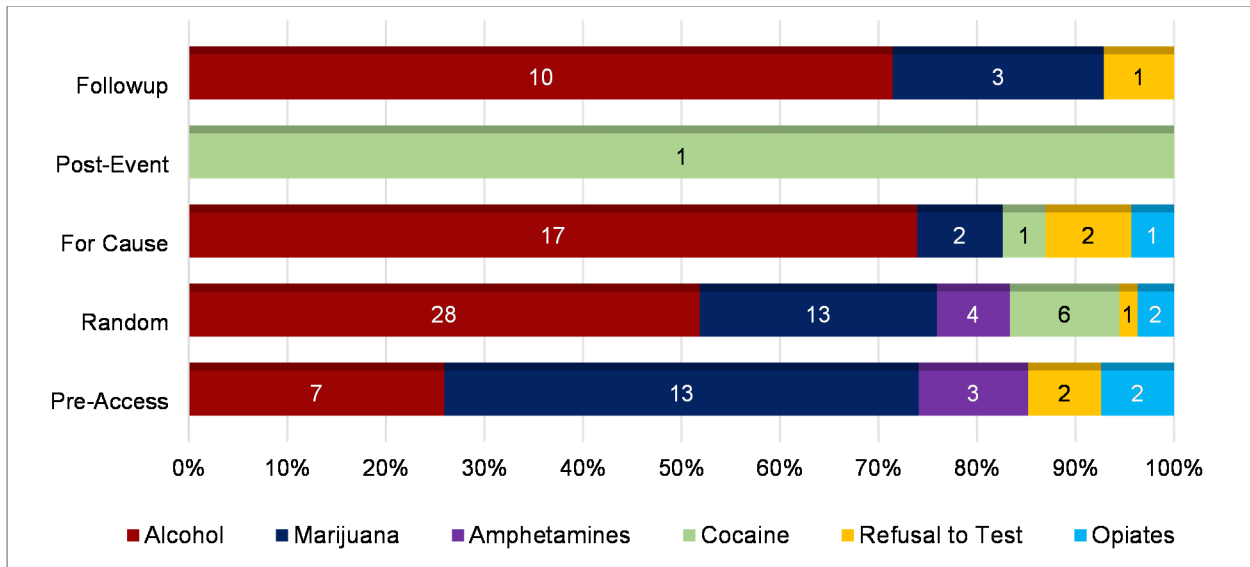
* See Chart 13 for pre-access testing results.

Observations on Chart 14

- In CY 2014, licensees and other entities reported for all test categories, except pre-access testing, that 280 C/Vs (Table 6) tested positive for 268 substances and 34 refused to test. Some individuals tested positive for more than one substance. The breakdown of substances and refusals to test by test category was: random (180), for cause (69), post-event (12), and follow-up (41).
- Two substances, marijuana (97) and alcohol (85) accounted for 68 percent of substances identified (182 of 268). The remaining 86 substances identified included: amphetamines (38), cocaine (34), opiates (7), and other drugs (benzodiazepines (1), hydrocodone (2), hydromorphone (1), methadone (1), oxycodone (1), oxymorphone (1)).
- Marijuana was the most detected substance in random testing, and alcohol was the most detected substance in for-cause testing.
- Eighteen individuals tested positive for more than one substance (random (11), for cause (6), post-event (1), follow-up (1)).

Chart 15 and Chart 16 highlight the percentage of positive results associated with each substance by test category for licensee employees and contractors/vendors, respectively. These charts provide an easy 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. To identify the number of results associated with each substance, consult the numerical value in each bar chart segment.

Chart 15. Licensee Employees, Percentage of Positive Results by Substance and Test Category

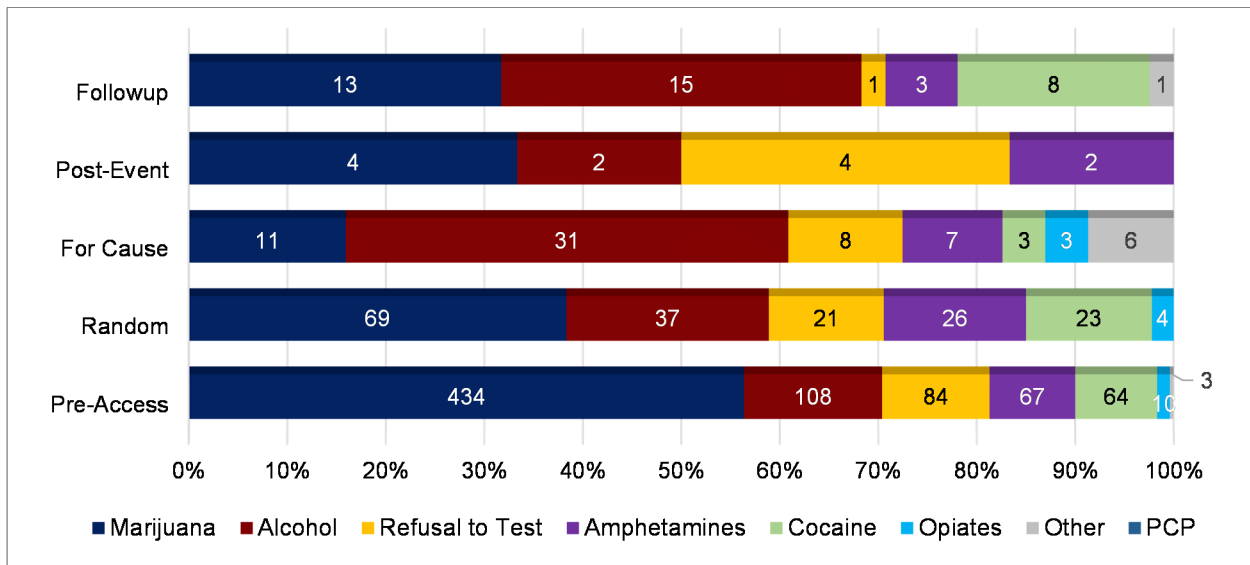


* Refer to Table A-8 in the report appendix for additional information on percentages.

Observations on Chart 15

- Marijuana and alcohol accounted for 74.1 percent (20 of 27 results for pre-access testing) to 92.9 percent (13 of 14 results for follow-up testing) in each testing category, except post-event (the only positive test result in this category was for cocaine).
- Alcohol was the most prevalently identified substance in four testing categories: random (28 of 54 results or 51.9 percent), for cause (17 of 23 results or 73.9 percent), and follow-up (10 of 14 results or 71.4 percent).
- Marijuana was the most prevalently identified substance in pre-access testing, accounting for 13 of 27 results (48.1 percent).
- Cocaine was primarily identified by random testing (6 results), with for-cause and post-event testing each identifying one individual.
- Amphetamines were identified by two test categories: pre-access (3 of 27 results) and random (4 of 54 results).
- Refusals to test accounted for a small number of testing violations (one or two) in each test category, except post-event.

Chart 16. Contractors/Vendors, Percentage of Positive Results by Substance and Test Category

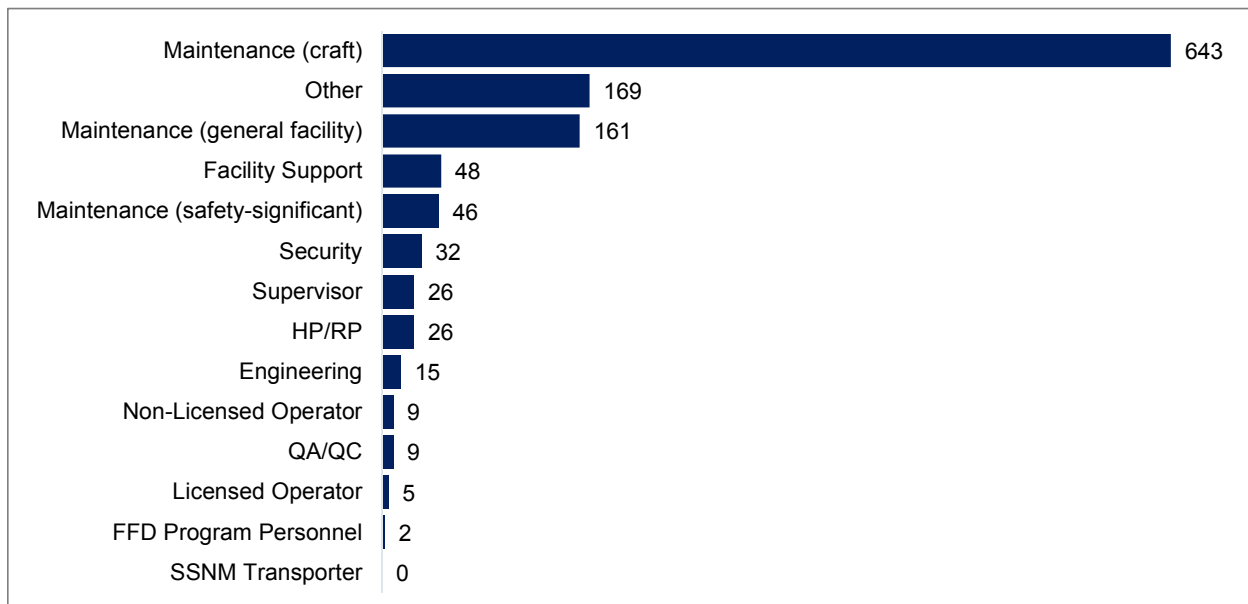


* Refer to Table A-9 in the report appendix for additional information on percentages.

Observations on Chart 16

- The number of substances (including refusals to test) that licensees and other entities reported for the 1,015 C/Vs with a D&A testing violation in CY 2014 (Table 6) is as follows: pre-access (770), random (180), for cause (69), post-event (12), and follow-up (41).
- Marijuana and alcohol accounted for at least 50 percent (post-event) up to 70 percent (pre-access) of substances detected in C/Vs. Marijuana accounted for 80.7 percent substances identified in C/Vs (770 of 954 results), and alcohol accounted for 20.2 percent of substances (193 of 954 results).
- Alcohol accounted for approximately 45 percent of for-cause testing positives (31 of 69 results). This suggests that alcohol use may be more identifiably through behavioral observation than impairment from other substances.
- Refusals to test constituted between 2.4 percent up to 33.3 percent of D&A testing violations.
- Amphetamines positives ranged from 7.3 percent of positives (follow-up testing) to 16.7 percent of positives (post-event testing).
- Three test categories identified a small number of “other” drugs:
 - pre-access (3): benzodiazepines (1), methadone (1), propoxyphene (1)
 - for-cause (6): hydrocodone (2), hydromorphone (1), methadone (1), oxycodone (1), oxymorphone (1)
 - follow-up (1): benzodiazepines (1)

Chart 17. Total Substances Identified by Labor Category



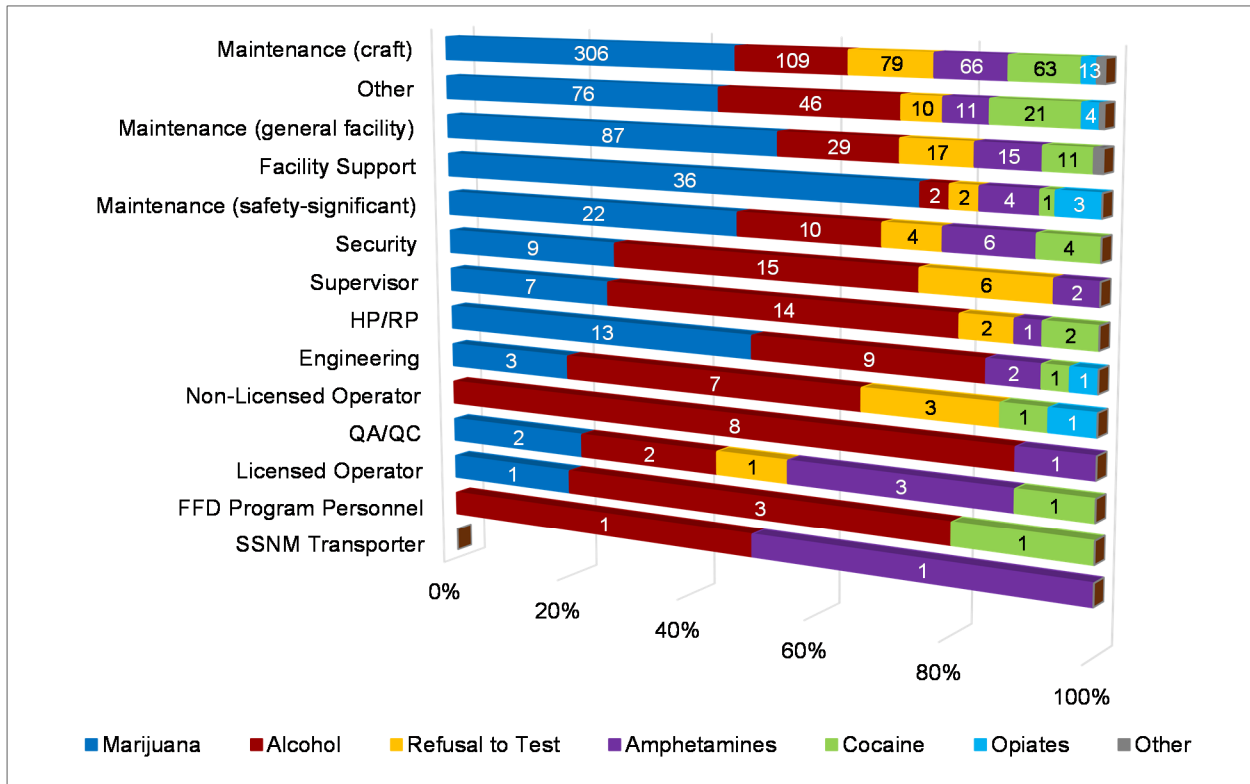
HP/RP Health Physics/Radiation Protection
 QA/QC Quality Assurance/Quality Control

Observation on Chart 17

- Three labor categories (maintenance (craft) = 643; other = 169; maintenance (general facility) = 161) accounted for 81.7 percent of substances identified (including refusals to test) in CY 2014 (973 of 1,191).
- Examples of “other” labor category descriptions reported by licensees and other entities included: administrative clerk, cafeteria worker, carpenter, custodial, data technician, intern, contract laborer, elevator technician, HVAC, janitorial, licensing, painter, support staff, scheduler, technician, and training instructor. Use of the “other” labor category primarily reflected maintenance or clerical type activities.
- To improve the clarity of labor category reporting associated with maintenance activities and to reduce use of the “Other” labor category, the NRC replaced “Maintenance (craft)” with the following three categories in the Single Positive Test Form (version 1.6.0):
 - “Maintenance (safety-significant)” for maintenance or surveillance on safety- or security-related structures, systems, and components (SSCs) such as crane, gantry, and lift operators.
 - “Maintenance (general facility)” for maintenance activities not performed on safety- or security significant SSCs such as cleaners, painters, roofers, scaffolders.
 - “Facility support” for activities and positions associated with delivery, equipment room attendant, warehousing, stocking, janitorial services, cafeteria, administrative assistances, and landscaping.

Note: significant use of the “maintenance (craft)” reporting category is still reflected in the CY 2014 data because the majority of sites already had provided information using the previous Single Positive Test Form (version 1.5.0).

Chart 18. Substances Identified by Labor Category



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

Observations on Chart 18

- The top four labor categories demonstrate fairly consistent substance use patterns (maintenance (craft), other, maintenance (general facility), facility support), with marijuana and alcohol comprising the top two substances identified, followed by refusal to test, amphetamines, cocaine, opiates, and other drugs.
- Five licensed operators tested positive (alcohol (3), cocaine (1), marijuana (1)). Also, note that Chart 18 does not capture four additional FFD violations reported for licensed operators in Table 1. One operator tested positive for alcohol below the NRC cutoff (i.e., not a positive result under Part 26, but still a violation of the licensee’s FFD policy); two operators violated the FFD policy of the licensee offsite (unrelated to testing results); and the 10 CFR 26.719 report received for one licensed operator did not provide detail on the FFD violation.
- A small number of drugs not included in the NRC-required testing panel (i.e., other drugs), were detected in the following three labor categories:
 - maintenance (craft): benzodiazepines (2), hydrocodone (1), methadone (1), oxycodone (1), oxymorphone (1), propoxyphene (1)
 - maintenance (general facility): hydrocodone (1), hydromorphone (1)
 - other: methadone (1)

Chart 19. Alcohol Positives by Blood Alcohol Concentration Level and Test Category

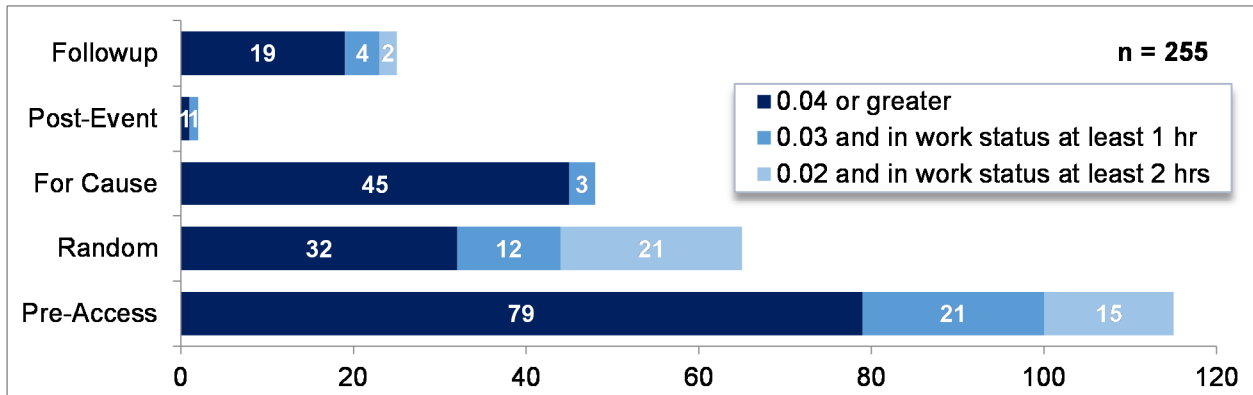
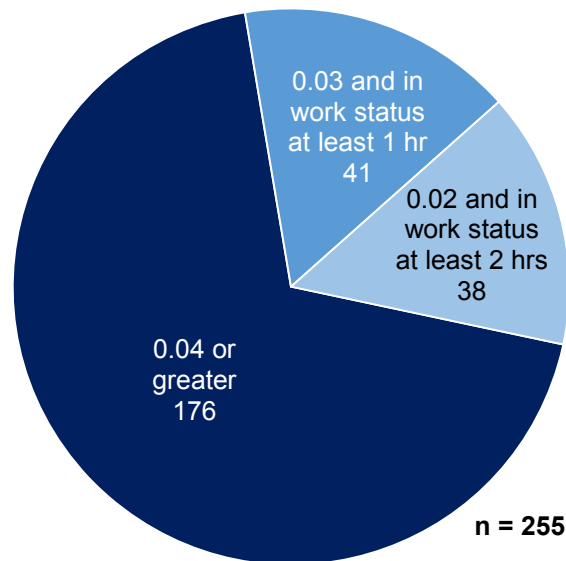


Chart 20. Alcohol Positives by Blood Alcohol Concentration Level



Observations on Chart 19 and Chart 20

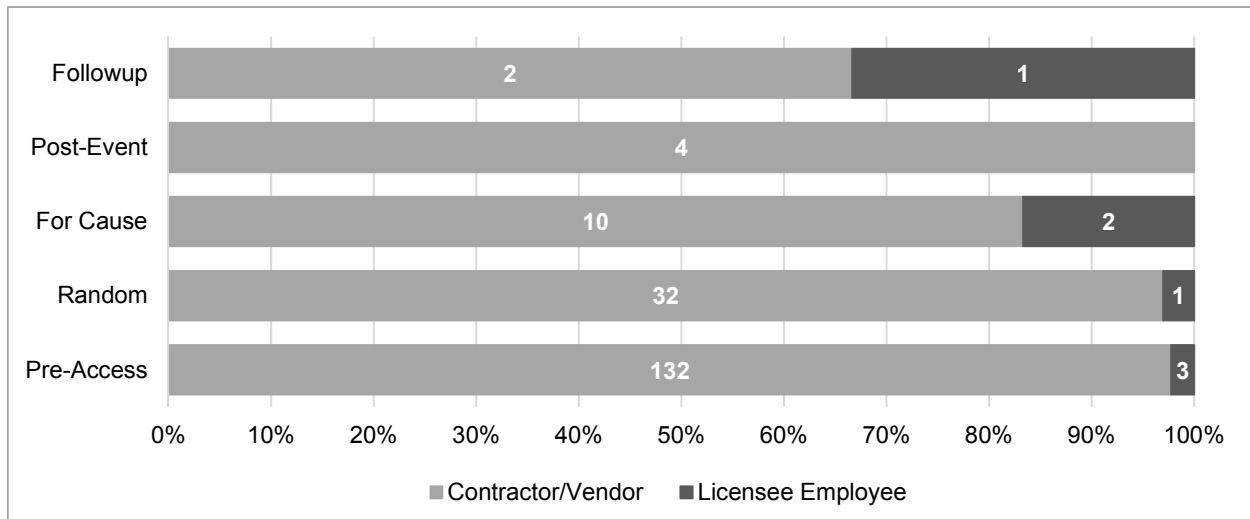
- Chart 19 displays that pre-access testing identified the most alcohol positives at 115 (45 percent), while random testing identified 65 positives (26 percent), for-cause testing identified 48 positives (19 percent), follow-up testing identified 25 positives (10 percent), and post-event identified two (2) positives (less than 1 percent).
- Chart 20 highlights that 79 of the 252 alcohol positives (31 percent) 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 19 demonstrates that the time-dependent BAC alcohol levels accounted for a:
 - 50 percent increase in detection on random testing (33 of 65 results)
 - 33 percent increase in detection on follow-up testing (6 of 24 results)
 - 31 percent increase in detection on pre-access testing (36 of 115 results).

Section 2f. Subversion Attempts

This section presents information on subversion attempts observed in CY 2014. 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 21 and Chart 22 illustrate the relative contribution of licensee employees and C/Vs to subversion attempts, as identified by test category and labor category, respectively.

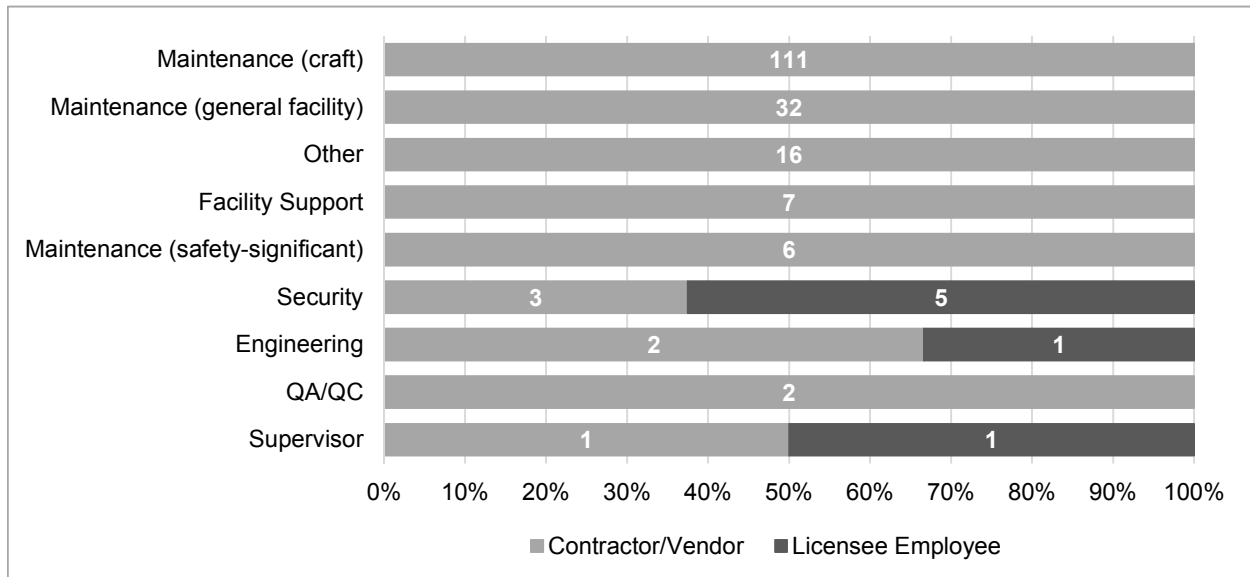
Chart 21. Subversion Attempts by Test and Employment Categories



Observations on Chart 21

- Chart 21 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, for the follow-up test category (three) subversions were identified, two by C/Vs and one by a licensee employee. The data are charted in a 100 percent horizontal bar chart to convey relative percentages between employment categories. This means that for follow-up testing, 66 percent of the subversion attempts were associated with C/Vs and 33 percent were associated with licensee employees.
- Approximately 72 percent (135 of 187) of subversion attempts occurred during pre-access testing, with C/Vs accounting for all but three of these attempts.

Chart 22. Subversion Attempts by Labor* and Employment Categories



* Chart 22 only includes labor categories with reported subversion attempts.

Observations on Chart 22

- Chart 22 presents the number of subversion attempts identified by labor category, and within each labor category by employment category.
- Of the 187 subversion attempts in CY 2014, 180 were committed by C/Vs and 7 by licensee employees.
- Eighty-three percent of subversion attempts (156 of 187) were committed by individuals in labor categories associated with maintenance activities: maintenance (craft) (111), maintenance (general facility) (32), facility support (7), and maintenance (safety-significant) (6).
- Licensee employees exceeded C/Vs in the number of subversion attempts in the security labor category, with five of the seven subversions committed by licensee employees in CY 2014.

Figure 1 presents a “road map” to the detection of subversion attempts in CY 2014. 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 64 percent of subversion attempts in CY 2014 (120 of 187).
- A specimen was not tested in 64 percent of subversion attempts (120 of 187) (e.g., no specimen was provided, the collection was stopped). Due to the high number of subversions without specimen testing (i.e., 120 of 882 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 nine of 187 subversion attempts were identified solely by testing at an HHS-certified laboratory (i.e., the specimen provided by the donor appeared normal during the specimen collection process). These results included invalid test results on initial collection where the donor refused to provide a second specimen or the second specimen provided testing positive for a drug, and adulterated and substituted validity test results.
- Diligent and well-trained specimen collectors following the collection procedures in Subpart E of 10 CFR Part 26, verified in many cases by laboratory testing, proved instrumental in identifying the majority of individuals attempting to subvert the testing process.

New to CY 2014, Table 14 presents a variety of trending information on subversion attempts from CY 2011 through CY 2014. 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 14

- From CY 2011 through CY 2014, subversion attempts comprised 18.3 to 21.2 percent of drug testing violations each year (accounting for 128 of 818 individuals with a drug testing violation in 2011; and 187 of 882 individuals with a drug testing violation in 2014).
- Subversion attempts amongst sites is prevalent, with 53.7 to 65.5 percent of sites each year from CY 2011 through CY 2014 reporting at least one attempt (36 to 45 sites per year).
- C/Vs accounted for 94.5 to 96.6 percent of subversion attempts (or 121 to 180 attempts per year), from CY 2011 through CY 2014.
- Between 72.2 and 76.7 percent of subversion attempts (93 to 135 per year from CY 2011 through CY 2014) occurred during pre-access testing.

Figure 1. Subversion Attempts – Road Map to Detection

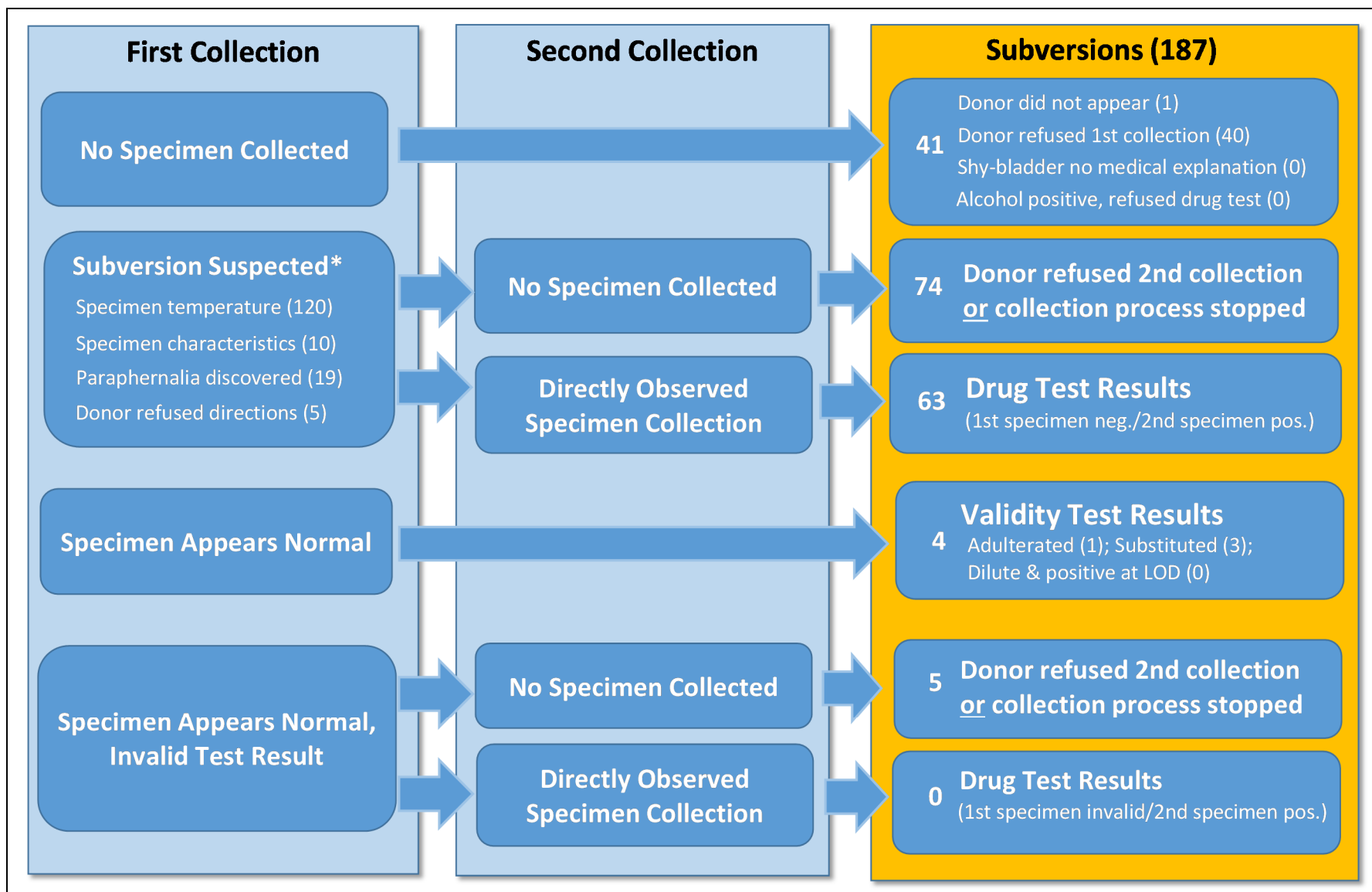


Table 14. Subversion Attempts Road Map Trends, CY 2011 – CY 2014

| Subversion Attempt Description (E-reported data) | | 2011 | 2012 | 2013 | 2014 |
|--|---|----------------------------|------------------------------|----------------------------|------------------------------|
| No first specimen | | 14 | 40 | 25 | 41 |
| First specimen (subversion attempt suspected) | No second specimen | 67 | 57 | 73 | 74 |
| | Second specimen collected under direct observation is drug positive | 38 | 50 | 39 | 63 |
| First specimen (validity test result) – adulterated, substituted, or dilute positive at LOD testing | | 5 | 4 | 4 | 4 |
| First specimen (invalid test result) | No second specimen | 2 | 3 | 3 | 5 |
| | Second specimen collected under direct observation is drug positive | 2 | 5 | 1 | 0 |
| Total Subversion Attempts (e-reported) | | 128 | 159 | 145 | 187 |
| Additional Subversion Attempt Information (E-reported data) | | | | | |
| Percentage of total subversion attempts reflected in e-reported data | | 89.5% (128 of 143) | 89.8% (159 of 177) | 97.9% (145 of 148) | 100% (187 of 187) |
| 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) |
| Subversion attempts – percentage of drug testing violations | | 18.3% (128 of 698) | 20.4% (159 of 780) | 19.3% (145 of 750) | 21.2% (187 of 882) |
| 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) |
| Percentage of subversion attempts identified at pre-access testing | | 72.7% (93 of 128) | 76.7% (122 of 159) | 75.8% (110 of 145) | 72.2% (135 of 187) |
| Percentage of subversion attempts by C/Vs | | 94.5% (121 of 128) | 96.2% (153 of 159) | 96.6% (140 of 145) | 96.3% (180 of 187) |
| 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) |
| Percentage of sites e-reporting | | 80.3% (61 of 76) | 88.2% (67 of 76) | 93.4% (71 of 76) | 100% (75 of 75) |

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 CY 2013).

| CY 2013 Report | | Current Report (CY 2014) | | Changes Made |
|-----------------|--|--------------------------|--|--|
| Table/Chart No. | Table/Chart Title | Table/Chart No. | Table/Chart Title | |
| Chart 4 | Trends in Substances* Identified | Chart 4 | Trends in Substances* Identified, Percentage of Total Positives by Substance Tested | <ul style="list-style-type: none"> Updated chart title Updated chart type to improve presentation of trending by substance (changed from horizontal stacked bar chart to a line chart) Displayed results as a percentage of total positives, instead of as the number of positives by substance |
| Chart 5 | Trends in Positive Pre-Access Testing Rates by Employment Category | Chart 5 | Pre-Access Testing – Trends in Positive Rates by Employment Category | <ul style="list-style-type: none"> Updated chart title Included 2014 data |
| Chart 6 | Trends in Positive Random Test Rates by Employment Category | Chart 6 | Random Testing – Trends in Positive Rates by Employment Category | <ul style="list-style-type: none"> Updated chart title Included 2014 data |
| Chart 7 | Trends in Positive For-Cause Testing Rates by Employment Category | Chart 7 | For-Cause Testing – Trends in Positive Rates by Employment Category | <ul style="list-style-type: none"> Updated chart title Included 2014 data |
| Chart 8 | Comparison of Pre-Access Testing Positive Rate Ranges by Employment Category and Number of Sites | Chart 8 | Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014 | <ul style="list-style-type: none"> Updated chart title Updated chart type to consolidate data and improve presentation of trends (changed from vertical clustered bar chart to horizontal stacked bar chart) |

| CY 2013 Report | | Current Report (CY 2014) | | Changes Made |
|---------------------|--|--------------------------|---|--|
| Table/ Chart No. | Table/Chart Title | Table/ Chart No. | Table/Chart Title | |
| Chart 9 | Comparison of Random Testing Positive Rate Ranges by Employment Category and Number of Sites | Chart 9 | Random Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014 | <ul style="list-style-type: none"> Updated chart title Updated chart type to consolidate data and improve presentation of trends (changed from vertical clustered bar chart to horizontal stacked bar chart) |
| Chart 10 | Comparison of For-Cause Testing Positive Rate Ranges by Employment Category and Number of Sites | Chart 10 | For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2014 | <ul style="list-style-type: none"> Updated chart title Updated chart type to consolidate data and improve presentation of trends (changed from vertical clustered bar chart to horizontal stacked bar chart) |
| Chart 11 | Licensee Employees, Positive Results by Substance and Reason for Test (E-Reported Data) | Chart 11 | Licensee Employees, Positive Results by Substance and Test Category | <ul style="list-style-type: none"> Updated chart title |
| Chart 12 | Contractors/Vendors, Substances Detected (Including Testing Refusals) by Reason for Test (E-Reported Data) | Chart 12 | Contractors/Vendors, Substances Detected (Including Testing Refusals) by Test Category | <ul style="list-style-type: none"> Updated chart title |
| Chart 13 | Contractors/Vendors, Pre-Access Positive Results by Substance (E-Reported Data) | Chart 13 | Contractors/Vendors, Pre-Access Positive Results by Substance | <ul style="list-style-type: none"> Updated chart title |
| Chart 14 | Contractors/Vendors, Positive Results by Substance and Reason for Test (E-Reported Data) | Chart 14 | Contractors/Vendors, Positive Results by Substance and Test Category | <ul style="list-style-type: none"> Updated chart title |
| Chart 15 | Licensee Employees, Percentage of Positive Tests by Substance and Reason for Test (E-Reported Data) | Chart 15 | Licensee Employees, Percentage of Positive Results by Substance and Test Category | <ul style="list-style-type: none"> Updated chart title To improve the clarity of presentation, changed chart type from a 100% stacked area chart to a 100% stacked horizontal bar chart. |

| CY 2013 Report | | Current Report (CY 2014) | | Changes Made |
|-----------------|---|--------------------------|---|--|
| Table/Chart No. | Table/Chart Title | Table/Chart No. | Table/Chart Title | |
| Chart 16 | Contractors/Vendors, Percentage of Positive Results by Substance and Reason for Test* (E-Reported Data) | Chart 16 | Contractors/Vendors, Percentage of Positive Results by Substance and Test Category* | <ul style="list-style-type: none"> Updated chart title To improve the clarity of presentation, changed chart type from a 100% stacked area chart to a 100% stacked horizontal bar chart. |
| Chart 17 | Positive Results by Substance and Employment Category (E-Reported Data) | N/A | N/A | <ul style="list-style-type: none"> Chart no longer needed because all sites e-reporting (data included in Chart 1 and Chart 2) |
| Chart 18 | Positive Results by Labor Category (E-Reported Data) | Chart 17 | Total Substances Identified by Labor Category | <ul style="list-style-type: none"> Renumbered chart Updated chart title Change chart type improve clarity of presentation (from pie to horizontal bar chart) |
| Chart 19 | Individual Pie Charts Displaying Test Results for Top Four Labor Categories (E-Reported Data) | Chart 18 | Substances Identified by Labor Category | <ul style="list-style-type: none"> Renumbered chart Updated chart title Replaced individual pie charts with a horizontal bar chart to improve clarity of presentation |
| Chart 20 | Individual Pie Charts Displaying Test Results for Remaining Six Labor Categories (E-Reported Data) | N/A | N/A | <ul style="list-style-type: none"> Charts no longer needed due to changes to Chart 18 in the current report |
| Chart 21 | Alcohol Positives by BAC Level and Reason for Test (E-Reported Data) | Chart 19 | Alcohol Positives by BAC Level and Test Category | <ul style="list-style-type: none"> Renumbered chart Updated chart title |
| Chart 22 | Alcohol Positives by BAC Level (E-Reported Data) | Chart 20 | Alcohol Positives by BAC Level | <ul style="list-style-type: none"> Renumbered chart Updated chart title |

| CY 2013 Report | | Current Report (CY 2014) | | Changes Made |
|---------------------|---|--------------------------|--|--|
| Table/ Chart No. | Table/Chart Title | Table/ Chart No. | Table/Chart Title | |
| Chart 23 | Subversion Attempts by Reason for Test and Employment Category (E-Reported Data) | Chart 21 | Subversion Attempts by Test and Employment Categories | <ul style="list-style-type: none"> • Renumbered chart • Updated chart title • Updated chart type from stacked bar to a 100% stacked bar to convey relative percentages of subversion attempts by employment category in a clearer way |
| Chart 24 | Subversion Attempts by Labor Category and Employment Category (E-Reported Data) | Chart 22 | Subversion Attempts by Labor and Employment Categories | <ul style="list-style-type: none"> • Renumbered chart • Updated chart title • Updated chart type from stacked bar to a 100% stacked bar to convey relative percentages of subversion attempts by employment category in a clearer way |
| Figure 1 | Subversion Attempts -Road Map to Detection (E-Reported Data) | Figure 1 | Subversion Attempts - Road Map to Detection | <ul style="list-style-type: none"> • Updated figure title |
| Table 1 | 24-Hour Reportable Events Resulting from Individual Employee Violations | Table 1 | 24-Hour Reportable Events – Individuals with Significant FFD Policy Violations | <ul style="list-style-type: none"> • Updated table title • Updated table column “Substance” to “Substance/FFD Violation” to more accurately reflect data reported |
| Table 2 | 24-Hour Reportable Events Results from Substances Discovered in the Protected Area, Laboratory Testing, and Programmatic Failures or Discovered Vulnerabilities | Table 2 | 24-Hour Reportable Events – Programmatic Failures or Vulnerabilities | <ul style="list-style-type: none"> • Updated table title to improve clarity |
| Table 3 | Laboratory Testing Performance Issues | Table 3 | Laboratory Testing Performance Issues | <ul style="list-style-type: none"> • Revised column header “Performance Issue Summary” to “Description of Issue” |

| CY 2013 Report | | Current Report (CY 2014) | | Changes Made |
|-----------------|---|--------------------------|--|--|
| Table/Chart No. | Table/Chart Title | Table/Chart No. | Table/Chart Title | |
| Table 4 | Program and System Management Issues | Table 4 | Program and System Management Issues | <ul style="list-style-type: none"> Revised column header "Program and System Management Issue Description" to "Description of Issue" |
| Table 7 | Positive Test Results by Substance and Employment Category (All Test Types, Including Testing Refusals) | Table 7 | Substances Identified by Employment Category for All Test Categories | <ul style="list-style-type: none"> Updated table title to improve clarity |
| Table 8 | Significant Fitness-for-Duty Events | Table 8 | Significant Fitness-for-Duty Events | <ul style="list-style-type: none"> Changed column header "Reactor Operators" to "Licensed Reactor Operators" |
| Table 9 | Trends in Testing by Test Type | Table 9 | Trends in Testing by Test Category | <ul style="list-style-type: none"> Updated table title to improve clarity |
| Table 10 | Industry Positive Test Results for Pre-Access, Random, and For-Cause Testing by Employment Category | Table 10 | Industry Positive Test Results for Pre-Access, Random, and For-Cause Testing by Employment Category, CY 2014 | <ul style="list-style-type: none"> Updated table title to add the year of the test results |
| Table 11 | Test Results for Each Test Category (E-Reported Data) | N/A | NA | <ul style="list-style-type: none"> Table no longer needed because all sites e-reported in CY 2014 (see Table 5 in report) |
| Table A-1 | Significant Fitness-for-Duty Events (1990-2003) | Table A-1 | Significant Fitness-for-Duty Events (1990-2004) | <ul style="list-style-type: none"> Updated chart title Changed column header "Reactor Operators" to "Licensed Reactor Operators" |
| Table A-2 | Trends in Testing by Test Type (1990-2001) | Table A-2 | Trends in Testing by Test Category (1990-2002) | <ul style="list-style-type: none"> Updated chart title |
| Table A-4 | Trends in Positive Testing Rates (All Test Types) by Employment Category (1993-2013) | Table A-4 | Trends in Positive Testing Rates (All Test Types) by Employment Category (1993-2014) | <ul style="list-style-type: none"> Updated chart title |
| Table A-5 | Trends in Positive Pre-Access Testing Rates by Employment Category (1993-2013) | Table A-5 | Trends in Positive Pre-Access Testing Rates by Employment Category (1993-2014) | <ul style="list-style-type: none"> Updated chart title |
| Table A-6 | Trends in Positive Random Testing Rates by Employment Category (1993-2013) | Table A-6 | Trends in Positive Random Testing Rates by Employment Category (1993-2014) | <ul style="list-style-type: none"> Updated chart title |

| CY 2013 Report | | Current Report (CY 2014) | | Changes Made |
|-----------------|---|--------------------------|---|--|
| Table/Chart No. | Table/Chart Title | Table/Chart No. | Table/Chart Title | |
| Table A-7 | Trends in Positive For-Cause Testing Rates by Employment Category (1993-2013) | Table A-7 | Trends in Positive For-Cause Testing Rates by Employment Category (1993-2014) | <ul style="list-style-type: none"> Updated chart title |
| Table A-8 | Distribution of Pre-Access Testing Positive Rate Ranges by Employment Category and Number of Sites | N/A | N/A | Table no longer needed. Consolidated information in a new table to present site specific trends across years (Table 11) |
| Table A-9 | Distribution of Random Testing Positive Rate Ranges by Employment Category and Number of Sites | N/A | N/A | Table no longer needed. Consolidated information in a new table to present site specific trends across years (Table 12) |
| Table A-10 | Distribution of For-Cause Testing Positive Rate Ranges by Employment Category and Number of Sites | N/A | N/A | Table no longer needed. Consolidated information in a new table to present site specific trends across years (Table 13) |
| Table A-11 | Licensee Employees, Percentage of Positive Tests by Substance and Reason for Testing (E-Reported Data) | Table A-8 | Licensee Employees, Percentage of Positive Results by Substance and Testing Category | <ul style="list-style-type: none"> Renumbered chart Updated chart title |
| Table A-12 | Contractors/Vendors, Percentage of Positive Tests by Substance and Reason for Testing (E-Reported Data) | Table A-9 | Contractors/Vendors, Percentage of Positive Results by Substance and Testing Category | <ul style="list-style-type: none"> Renumbered chart Updated chart title |
| Table A-13 | Subversion Attempts by Reason for Test and Employment Category (E-Reported Data) | N/A | N/A | <ul style="list-style-type: none"> Appendix table no longer needed because the revised Chart 21 in the current includes the numerical values. |
| Table A-14 | Subversion Attempts by Labor Category and Employment Category (E-Reported Data) | N/A | N/A | <ul style="list-style-type: none"> Appendix table no longer needed because the revised Chart 22 in the current includes the numerical values. |

The following table presents information on new tables and charts included in the CY 2014 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 |
|-----------------|--|---|
| Table 11 | Pre-Access Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2011 – CY 2014 | New table created to present site-specific positive testing rates across years. Prior reports only presented current year data. |
| Table 12 | Random Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2011 – CY 2014 | New table created to present site-specific positive testing rates across years. Prior reports only presented current year data. |
| Table 13 | For-Cause Testing, Distribution of Site Specific Positive Rates by Employment Category, CY 2011 – CY 2014 | New table created to present site-specific positive testing rates across years. Prior reports only presented current year data. |
| Table 14 | Subversion Attempts Road Map Trends, CY 2011 – CY 2014 | New table created to present e-reported subversion attempt data across years. |
| Table A-10 | Substances Identified by Labor Category, CY 2014 | New appendix table to provide underlying data graphed in Chart 18. |

Note: The NRC staff issued revision 1 to this summary report to correct a small number of typographical and punctuation errors, a few incorrect references to tables or charts, and several rounding errors (e.g., 18.3 instead of 18.4). The NRC staff also improved the accuracy, consistency, or clarity of some descriptions and footnotes included in this report.

SECTION 3, HISTORICAL INFORMATION

LIST OF APPENDIX TABLES

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Table A-1. Significant Fitness-for-Duty Events* (1990–2004)

| Year | Licensed Reactor Operators | Supervisors | | FFD Program Personnel | Substances Found | 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 |

* This table presents 24-hour reportable events made under 10 CFR 26.73 (the 2008 Part 26 final rule relocated the reporting requirements to 10 CFR 26.719).

Table A-2. Trends in Testing by Test Category (1990–2002)

| Test Category | 1990 | 1991 | 1992 | 1993 | 1994* | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Pre-Access | | | | | | | | | | | | | |
| Number 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 |
| Number Positive | 1,548 | 983 | 1,110 | 952 | 977 | 1,122 | 1,132 | 1,096 | 822 | 934 | 965 | 720 | 805 |
| 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% |
| Random | | | | | | | | | | | | | |
| Number 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 |
| Number Positive | 550 | 510 | 461 | 341 | 223 | 180 | 202 | 172 | 157 | 140 | 204 | 148 | 114 |
| 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% |
| For Cause | | | | | | | | | | | | | |
| Number Tested | 664 | 572 | 552 | 599 | 521 | 576 | 621 | 531 | 455 | 506 | 609 | 506 | 617 |
| Number Positive | 212 | 167 | 175 | 163 | 119 | 138 | 136 | 144 | 97 | 120 | 132 | 99 | 110 |
| 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% |
| Post-Event | | | | | | | | | | | | | |
| Number Tested | 68 | 155 | 144 | 152 | 237 | 187 | 227 | 191 | 265 | 230 | 274 | 224 | 455 |
| Number Positive | 2 | 0 | 3 | 0 | 3 | 1 | 2 | 5 | 3 | 0 | 6 | 2 | 2 |
| 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% |
| Follow-up | | | | | | | | | | | | | |
| Number 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 |
| Number Positive | 65 | 62 | 69 | 56 | 50 | 35 | 40 | 31 | 43 | 30 | 49 | 35 | 21 |
| 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% |
| TOTAL | | | | | | | | | | | | | |
| Number 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 |
| Number 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 |
| 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% |

* 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 |

* 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 (All Test Types)* by Employment Category (1993–2014)

| Year | Licensee Employees | | | Contractors/Vendors | | |
|------|--------------------|-----------------|------------------|---------------------|-----------------|------------------|
| | Total Tests | Number Positive | Percent Positive | Total Tests | Number Positive | Percent Positive |
| 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% |

* This table includes results for pre-access, random, for cause, post-event, and follow-up testing. Test results for the years 1990 through 1992 were not readily available to NRC staff for inclusion in this table, or in Table A-5 through Table A-7.

**Table A-5. Trends in Positive Pre-Access Testing Rates by Employment Category
(1993–2014)**

| Year | Licensee Employees | | | Contractors/Vendors | | |
|------|--------------------|-----------------|------------------|---------------------|-----------------|------------------|
| | Total Tests | Number Positive | Percent Positive | Total Tests | Number Positive | Percent Positive |
| 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% |

**Table A-6. Trends in Positive Random Testing Rates by Employment Category
(1993–2014)**

| Year | Licensee Employees | | | Contractors/Vendors | | |
|-------|--------------------|-----------------|------------------|---------------------|-----------------|------------------|
| | Total Tests | Number Positive | Percent Positive | Total Tests | Number Positive | Percent Positive |
| 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% |

* 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. Trends in Positive For-Cause Testing Rates by Employment Category
(1993–2014)**

| Year | Licensee Employees | | | Contractors/Vendors | | |
|------|--------------------|-----------------|------------------|---------------------|-----------------|------------------|
| | Total Tests | Number Positive | Percent Positive | Total Tests | Number Positive | Percent Positive |
| 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% |

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

| Substance | Test Category | | | | |
|-----------------|---------------|----------|-----------|------------|-----------|
| | Pre-Access | Random | For Cause | Post-Event | Follow-up |
| Alcohol | 25.9% | 51.9% | 73.9% | - | 71.4% |
| Marijuana | 48.1% | 24.1% | 8.7% | - | 21.4% |
| Amphetamines | 11.1% | 7.4% | - | - | - |
| Cocaine | - | 11.1% | 4.3% | 100.0% | - |
| Refusal to Test | 7.4% | 1.9% | 8.7% | - | 7.1% |
| Opiates | 7.4% | 3.7% | 4.3% | - | - |
| PCP | - | - | - | - | - |
| Other Drugs | - | - | - | - | - |
| Total* | 100% | 100% | 100% | 100% | 100% |
| | (n = 27) | (n = 54) | (n = 23) | (n = 1) | (n = 14) |

* The parenthetical "Total" for each Reason for Test column represents the number of occurrences.

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

| Substance | Test Category | | | | |
|-----------------|---------------|-----------|-----------|------------|-----------|
| | Pre-Access | Random | For Cause | Post-Event | Follow-up |
| Marijuana | 56.4% | 38.3% | 15.9% | 33.3% | 31.7% |
| Alcohol | 14.0% | 20.6% | 44.9% | 16.7% | 36.6% |
| Refusal to Test | 10.9% | 11.7% | 11.6% | 33.3% | 2.4% |
| Amphetamines | 8.7% | 14.4% | 10.1% | 16.7% | 7.3% |
| Cocaine | 8.3% | 12.8% | 4.3% | - | 19.5% |
| Opiates | 1.3% | 2.2% | 4.3% | - | - |
| Other Drugs | 0.4% | - | 8.7% | - | 2.4% |
| PCP | - | - | - | - | - |
| Total* | 100% | 100% | 100% | 100% | 100% |
| | (n = 770) | (n = 180) | (n = 69) | (n = 12) | (n = 41) |

* The parenthetical "Total" for each Reason for Test column represents the number of occurrences.

Table A-10. Substances Identified by Labor Category, CY 2014

| Substance | Maintenance (craft) | Other | Maintenance (general facility) | Facility Support | Maintenance (safety-significant) | Security | Supervisor | HP/RP | Engineering | Non-Licensed Operator | QA/QC | Licensed Operator | FFD Program Personnel | SSNM Transporter | Total |
|-----------------|---------------------|------------|--------------------------------|------------------|----------------------------------|-----------|------------|-----------|-------------|-----------------------|----------|-------------------|-----------------------|------------------|--------------|
| Marijuana | 306 | 76 | 87 | 36 | 22 | 9 | 7 | 13 | 3 | 0 | 2 | 1 | 0 | 0 | 562 |
| Alcohol | 109 | 46 | 29 | 2 | 10 | 15 | 14 | 9 | 7 | 8 | 2 | 3 | 1 | 0 | 255 |
| Refusal to Test | 79 | 10 | 17 | 2 | 4 | 6 | 2 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 124 |
| Amphetamines | 66 | 11 | 15 | 4 | 6 | 2 | 1 | 2 | 0 | 1 | 3 | 0 | 1 | 0 | 112 |
| Cocaine | 63 | 21 | 11 | 1 | 4 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 106 |
| Opiates | 13 | 4 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 22 |
| Other | 7 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| PCP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 643 | 169 | 161 | 48 | 46 | 32 | 26 | 26 | 15 | 9 | 9 | 5 | 2 | 0 | 1,191 |