Fitness for Duty in the Nuclear Power Industry

Annual Summary of Program Performance Reports CY 1994

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ABSTRACT

This report summarizes the data from the semiannual reports on fitness-for-duty programs submitted to the NRC by utilities for two reporting periods: January 1 through June 30, 1994, and July 1 through December 31, 1994. During 1994, licensees reported that they had conducted 163,241 tests for the presence of illegal drugs and alcohol. Of these tests, 1,372 (.84%) were confirmed positive.

Positive test results varied by category of test and category of worker. The majority of positive test results (977) were obtained through pre-access testing.

Of tests conducted on workers having access to the protected area, there were 223 positive tests from random testing and 122 positive tests from for-cause testing. Follow-up testing of workers who had previously tested positive resulted in 50 positive tests. For-cause testing resulted in the highest percentage of positive tests; about 16 percent of for-cause tests were positive. This compares with a positive test rate of 1.22 percent of pre-access tests and .28 percent of random tests. The positive test rate for badged workers (including only random, for-cause, and follow-up test results) was .48 percent.

Positive test rates also varied by category of worker. When all types of tests are combined (pre-access, random, for-cause, and follow-up testing), short-term contractor personnel had the highest positive test rate at 1.22 percent. Licensee employees and long-term contractors had lower combined positive test rates (.33% and .49%, respectively).

Of the substances tested, marijuana was responsible for the highest percentage of positive test results (52.07%), followed by cocaine (24.25%) and alcohol (17.45%).

Several factors, including licensee initiatives and changes in NRC regulations regarding testing, had an impact on the positive test rate across test categories for 1994. These factors included the NRC's reduction in the mandatory random testing rate from 100 percent to 50 percent, and initiatives by licensees such as lowered marijuana screening cutoff levels and possible improvement in their ability to detect subversion of the testing process. This positive test rate across test categories for 1994 cannot be directly compared to positive test rates across test categories from previous years, without taking these factors into account.

TABLE OF CONTENTS

<i>Section</i>	<i>Page</i>
ABSTRACT	iii
EXECUTIVE SUMMARY	ix
ACKNOWLEDGMENTS	xi
INTRODUCTION.....	1
1 OVERALL TEST RESULTS	3
2 TEST RESULTS FOR EACH WORKER CATEGORY	5
3 TEST RESULTS FOR DRUGS AND ALCOHOL.....	9
3.1 Positive test results for each substance type.....	9
3.2 Positive test results for each substance and worker category	9
3.3 10 CFR 26.73 reports concerning licensed operators, supervisors, and substances found in protected areas.....	10
3.4 Lower screening levels.....	12
3.5 Additional drugs.....	13
4 TEST RESULTS BY REGION.....	15
4.1 Positive test results for each test category by region	15
4.2 Positive test results for each worker category by region	15
4.3 Positive test results by substance for each region.....	16
5 TRENDS IN THE FIRST FIVE YEARS OF RULE IMPLEMENTATION	19
5.1 Comparison of positive test rates overall and for each test type.....	19
5.2 Comparison of positive test rates for each worker category	21
5.3 Comparison of positive tests by substance	22
5.4 Comparison of positive test rates for each region	23

Table of Contents, Continued

<i>Section</i>	<i>Page</i>
6 LESSONS LEARNED AND MANAGEMENT INITIATIVES	25
6.1 Certified laboratories	25
6.2 Random testing	25
6.3 Collection, screening, and on-site testing	25
6.4 Training	26
6.5 Procedures	26
6.6 Program management and systems	26
6.7 Worker welfare and rehabilitation	27
6.8 Blind performance testing	27
6.9 Subversion prevention programs	27
APPENDIX A: TECHNICAL BACKGROUND	A-1
APPENDIX B: SUPPORTING DATA	B-1
APPENDIX C: COMPILATION OF LESSONS LEARNED	C-1
APPENDIX D: ENLARGED FIGURES	D-1

LIST OF TABLES

Table

Page

1	Definition of test categories	3
2	Test results for each test category during 1994	3
3	Test results for each test category and worker category during 1994	5
4	Positive test results for licensed operators	12
5	Positive test results for supervisors	12
6	Test results for additional drugs	13
A-1	Reporting units and operating utilities by NRC region	A-3
A-2	Maximum screening and confirmation levels required by 10 CFR Part 26	A-4
A-3	Reporting unit contacts by region	A-6
B-1	Test results by NUMARC form test category	B-2
B-2	Test results for licensee employees and contractor personnel	B-3
B-3	Test results for long-term and short-term contractor personnel	B-4
B-4	Number of confirmed positives by substance	B-5
B-5	Confirmed positive test results by substance for each worker category	B-5
B-6	Test results for additional drugs by NRC region	B-6
B-7	Tests by region	B-7
B-8	Test results by region and by substance	B-7
B-9	Test results by region and by worker category	B-8
B-10	Test results by region and by test category	B-9
B-11	Positive test rates for badged workers at 100% and 60% random test rate	B-10

LIST OF FIGURES

Figure

Page

1	Comparison of results during 1994 for each test category	4
2	Percent of positive tests during 1994 for each test category	4
3	Distribution of tests conducted during 1994 for each worker category	6
4	Comparison of positive test rates for each worker category during 1994	6
5	Confirmed positive test results during 1994 for each substance category.....	9
6	Distribution of positive test results for each substance by worker category	10
7	Distribution of positive test results for each worker category by substance	11
8	Confirmed positive test rates for marijuana by screen level	13
9	Random positive test rates by each NRC region during 1994.....	15
10	Confirmed positive test rates for each worker category by NRC region during 1994.....	15
11	Distribution of tests conducted for each worker category by NRC region.....	16
12	Distribution of positive test results by substance for each NRC region during 1994	17
13	Comparison of tests conducted for each test category for 1990 through 1994	19
14	Comparison of actual and adjusted overall positive test rates for 1990 through 1994	20
15	Comparison of confirmed positive test rates for each test category	21
16	Comparison of random positive test rates by worker category	22
17	Distribution of positive test results for each substance for 1990 through 1994	23
18	Comparison of random positive test rates for each NRC region for 1991 through 1994.....	24
A-1	Geographic location of NRC regions I-IV	A-5

EXECUTIVE SUMMARY

On June 7, 1989, the NRC published a final rule, 10 CFR Part 26: Fitness-for-Duty Programs, in the *Federal Register* (54 FR 24468). It required that each licensee authorized to operate or construct a nuclear power reactor implement a Fitness-for-Duty (FFD) program for all personnel having unescorted access to the protected area of its plant. This rule became effective for these licensees on July 7, 1989, with an implementation date of January 3, 1990.

Two changes to 10 CFR Part 26 became effective after the publication of Volume IV of this report. The first of these, as published in the June 3, 1993, *Federal Register* (58 FR 31467), expanded the scope of the FFD rule to include licensees authorized to possess or transport Strategic Special Nuclear Materials. Program performance data from these licensees are not included in this volume. The second change, published in the January 5, 1994 *Federal Register* (59 FR 502), reduced the requirement for random testing under 10 CFR Part 26 from 100 percent to 50 percent. This change has had an impact on the program performances described in this report. It also has had an impact on the overall positive rate from all types of tests. Because random testing results in a low positive test rate, reducing the proportion of random tests in the total pool of tests increases the overall positive test rate. In addition to this change in NRC regulations regarding testing, initiatives by licensees such as lowered marijuana screening cutoff levels and possible improvement in their ability to detect subversion of the testing process have had an impact on the positive test rate across test categories for 1994. The positive test rate across test categories for 1994 cannot be directly compared to similar positive test rates from previous years without taking these factors into account. Rates for specific types of tests are still compared across years.

A central element of the required FFD program is the drug and alcohol testing program. As required by 10 CFR 26.71(d), NRC licensees submit data every six months which summarize the results of their drug and alcohol testing programs. This report summarizes the data from the semiannual reports on FFD programs submitted to the NRC by utilities for two reporting periods: January 1, 1994, through June 30, 1994, and July 1, 1994, through December 31, 1994. During both reporting periods, 48 utilities with 81 reporting units provided data.

During the period January 1, 1994, through December 31, 1994, licensees reported that they had conducted 163,241 tests for the presence of illegal drugs and alcohol. Of these tests, 1,372 (.84%) were confirmed positive.

Positive test rates varied by the type of test conducted and the type of worker tested. The majority of positive test results (977) were obtained through pre-access testing.

Of tests conducted on workers having access to the protected area, there were 223 positive tests from random testing and 122 positive tests from for-cause testing. For-cause testing resulted in the highest percentage of positive tests; about 16 percent of for-cause tests were positive. The positive test rates for pre-access and random testing were 1.22 percent and .28 percent, respectively. Short-term contractor personnel had the highest overall positive test rate (1.22%) followed by long-term contractors (.49%) and licensee employees (.33%). The positive test rate for badged workers (including only random, for-cause, and follow-up test results) was .48 percent.

Positive test rates and substances identified varied by the four NRC administrative regions. Licensees in Region I had the lowest overall positive test rate (.80%), while licensees in other regions had positive test rates ranging from .82 percent to .91 percent. Marijuana accounted for the largest percentage of positive test results in all regions.

A comparison of positive test results from 1994 with those of 1993 showed that the pre-access and random test rates for 1994 had increased somewhat.

Several licensees provided detailed accounts of lessons learned during both reporting periods. A brief summary of the reported lessons learned and management initiatives is presented in Section 6 of this report, and a complete compilation is provided in Appendix C.

The NRC welcomes suggestions concerning the content of this report. Comments should be forwarded to:

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INTRODUCTION

The U.S. Nuclear Regulatory Commission (NRC) continues to be concerned about the potential impact on the health and safety of the public from fitness-for-duty (FFD) problems among personnel with unescorted access to the protected areas of commercial nuclear power plants. In response to trends of increased drug use nationwide, and with the cooperation and support of the industry, the NRC published a final rule on June 7, 1989, 10 CFR Part 26: Fitness-for-Duty Programs, in the *Federal Register* (54 FR 24468). It requires each licensee authorized to operate or construct a nuclear power reactor to implement an FFD program for all personnel having unescorted access to the protected area of its plant. This rule became effective on July 7, 1989, with an implementation date of January 3, 1990. Two changes to 10 CFR Part 26 became effective since the publication of Volume 4 of this report. The first of these, as published in the June 3, 1993, *Federal Register* (58 FR 31467), expanded the scope of the FFD rule to include Strategic Special Nuclear Materials licensees. Program performance data from these licensees are not included in this volume. The second change, published in the January 5, 1994 *Federal Register* (59 FR 502), reduced the requirement for random testing under 10 CFR Part 26 from 100 percent to 50 percent. This change has had an impact on the programs described in this report.

A central element of the required FFD program is the drug testing program. This element is designed to deter and detect the use of illegal drugs and the misuse of alcohol and other legal drugs. Because of the importance of this element, the NRC requires that power reactor licensees provide semiannual reports on the results of their drug testing programs. These reports, which pertain to confirmed positive test results, provide the NRC with information on the effectiveness of individual licensee drug testing programs and of the NRC FFD program as a whole. The reports are also of use to the industry as it attempts to improve and refine FFD programs.

The reduction of the random test rate authorized by the NRC to begin on January 1, 1994, has had an impact on the overall positive rate from all types of tests. Because random testing results in a low positive test rate, reducing the proportion of random tests in the total pool of tests increases the overall positive test rate. Furthermore, initiatives by licensees to lower marijuana screening cutoff levels and improve their ability to detect subversion of the testing process has resulted in increased positive test results in 1994. Hence, the positive test rate across test categories for 1994 cannot be directly compared to overall positive test rates for previous years without taking these factors into account. Rates for specific types of tests are still compared across years.

This is the fifth volume of NUREG/CR-5758 and is based on the semiannual program performance reports for the period of January 1 through December 31, 1994. Volumes 1, 2, 3 and 4 of NUREG/CR-5758 were published in 1991, 1992, 1993, and 1994, respectively. The information contained in this report was supplied by all current commercial power reactor licensees in the United States. In 1994, 48 utilities submitted 81 reports, representing 72 nuclear power plant sites and 9 corporate offices.

This report presents overall test results (Section 1), test results for each worker category (Section 2), test results for drugs and alcohol (Section 3), test results by region (Section 4), trends during the first five years of rule implementation (Section 5), and a summary of lessons learned and management activities (Section 6). A detailed description of the technical background for the FFD program performance reports is provided in Appendix A. Appendix B contains detailed 1994 testing results by each category of test, worker, substance, and region. The compilation of lessons learned and management initiatives reported by licensees is provided in Appendix C and may be of particular use to the industry.

SECTION 1: OVERALL TEST RESULTS

This section contains information on drug and alcohol test results for each category of test required by 10 CFR Part 26. The results in this section and throughout this report were obtained during the January 1 through December 31, 1994, calendar year (CY). The test results are reported in four categories: pre-access, random, for-cause, and follow-up. The definitions of these categories are given in Table 1 and Appendix A of this report.

The number of tests performed, and the number of confirmed positive test results, are reported in Table 2. A total of 163,241 tests were reported in 81 Fitness-for-Duty (FFD) program performance reports provided by 48 utilities. The overall confirmed positive rate was .84 percent across all categories of tests administered during 1994*. In absolute numbers, 1,372 workers or applicants tested positive for drugs or alcohol or both.

Pre-access testing identified 977 applicants or workers as having positive test results, whereas only 395 tests of workers with unescorted access to the protected area were found to be positive for illegal drugs or alcohol. This number indicates a positive test rate of .48 percent for workers with unescorted access to the protected area. Of those workers, 223 were identified as having positive test results for drugs or alcohol based on random tests, and 122 were identified as positive based on for-cause tests. Follow-up testing resulted in 50 positive test results.

TEST CATEGORY	NUMBER OF TESTS	POSITIVE TESTS	PERCENT POSITIVE
Pre-Access	80,217	977	1.22%
Random	78,391	223	0.28%
For-Cause	758	122	16.09%
Follow-up	3,875	50	1.29%
TOTAL	163,241	1,372	0.84%

Table 2
Test results for each test category during 1994

Figure 1 provides a graphic representation of the numbers in Table 2. The majority of tests in 1994 were conducted for pre-access and random testing, which accounted for 80,217 and 78,391 tests, respectively. When combined, these two types of tests accounted for 97.16 percent of all tests reported. With regard to positive test results, pre-access testing accounted for the majority of all positive tests (977 or 71.21%), followed by random testing (223 or 16.25%) and for-cause testing (50 or 3.64%).

Figure 2 shows the percentage of confirmed positive tests for each test category. The percentage for each category was calculated by summing the number of

TEST	DEFINITION [†]
Pre-Access	Pre-access testing is performed prior to granting unescorted access to the protected area of a nuclear power plant. In some cases, this category includes pre-employment tests in lieu of a pre-access test (see Appendix A).
Random	Random testing refers to a system of unannounced and unpredictable drug testing administered in a statistically random manner so that all persons within a group have an equal probability of selection.
For-Cause	For-cause testing combines the results of tests based on behavioral observation programs, credible information that an individual is abusing drugs or alcohol, or on a reasonable suspicion that drugs or alcohol may have been involved in a specific event (i.e., post-accident).
Follow-Up	Follow-up testing refers to chemical testing at unannounced intervals to ensure that a worker who has previously had a confirmed positive test result is maintaining abstinence from the abuse of drugs or alcohol.

Table 1
Definitions of test categories

* This overall positive test rate should not be directly compared to overall positive test rates in previous years due to a number of factors, including the change in the requirements for random testing during 1994. See Section 5.1 for a full discussion.

[†] These definitions are based on the definitions given in Section 26.3 in 10 CFR Part 26 and on explanations of the FFD data form provided by the Nuclear Utilities Management and Research Council (NUMARC), now the Nuclear Energy Institute. In some cases, categories from the reporting form were combined to accurately reflect the categories covered in the rule. Categories of testing not included in 10 CFR Part 26 were combined as "Other." For a full discussion of the categories and separate results of all test categories reported, see Appendix A, Technical Background, and Appendix B, Supporting Data.

Figure 1
Comparison of results during 1994 for each test category

positive tests in each test category and dividing that sum by the total number of tests conducted in the category. For-cause testing resulted in the highest percentage of positive tests (16.09%). This category included two types of tests: observed behavior and post-accident tests. Observed behavior tests accounted for 521 tests and 119 positive test results, or a positive test rate of 22.84 percent. This result was expected because observed behavior tests as reported by licensees are based on referrals by supervisors or coworkers trained in behavioral observation techniques, or on credible information indicating inappropriate drug and alcohol use. Post-accident tests were also included in the for-cause testing category, accounting for 237 tests and 3 positive results for a positive test rate of 1.27 percent.

Figure 2
Percent of positive tests during 1994 for each test category

Of the pre-access tests, 1.22 percent were positive. Positive test rates for random and follow-up testing were .28 percent and 1.29 percent, respectively.

In addition to the four categories of tests that licensees are required to report under 10 CFR Part 26, some licensees also reported results from other types of tests under the category "other." Licensees varied in their use of other tests, but some examples of these types of tests included periodic tests, annual physical examinations, and submittals of recollected employee specimens for non-random testing at Medical Review Officer (MRO) request. During 1994, the "other" test category included a total of 2,125 tests and 22 positive test results (a 1.04% positive test rate). Because 10 CFR Part 26 does not require licensees to report results from other types of tests, these results are included only in Appendix B of this report and are not reflected in the test results described in the body of this report.

Summary of major findings

- Drug and alcohol use in violation of 10 CFR Part 26 was confirmed in .84 percent of the total number of tests administered in 1994.
- Most of the positive tests were among workers who never attained unescorted access to the protected area. Nonetheless, 395 tests on workers with unescorted access to the protected area were found to be positive for illegal drugs or alcohol, a .48 percent positive test rate.

SECTION 2: TEST RESULTS FOR EACH WORKER CATEGORY

This section examines CY 1994 test results for three categories of workers: licensee employees, long-term contractors, and short-term contractors. The basis for the distinction among workers is provided in Appendix A.

In 1994, a total of 65,850 tests of licensee employees were conducted under the Fitness-for-Duty (FFD) rule. Likewise, 5,115 tests of long-term contractors and 92,276 tests of short-term contractors were also conducted during this same time period. Table 3 provides test results for each test type and worker category. For licensee employees the majority (79.72%) of all tests were random; in contrast, for short-term contractors the majority (74.31%) were for pre-access tests. Long-term contractors were subject to roughly 2.5 times as many random tests (3,619) as pre-access tests (1,396). These differences indicate that licensee employees and many long-term contractors usually experience one pre-

access test and then remain under a random testing program. In contrast, short-term contractors, due to the nature of their work, may experience many pre-access tests at a number of sites but spend less time than licensee employees or long-term contractors under a random testing program. Figure 3 shows these differences in percentages.

For-cause testing and follow-up testing together account for 4.71 percent of the tests taken by licensee employees and slightly over 1 percent (1.30%) of the tests taken by contractor personnel.

Figure 4 compares positive test results for licensee employees, long-term contractors, and short-term contractors. The percentage of positive tests was highest among short-term contractors for all test types except for for-cause testing.

TEST CATEGORY	LICENSEE EMPLOYEES	LONG-TERM CONTRACTORS	SHORT-TERM CONTRACTORS	TOTAL
Pre-Access				
Number Tested	10,254	1,396	68,567	80,217
Number Positive	49	12	916	977
Percent Positive	0.48%	0.86%	1.34%	1.22%
Random				
Number Tested	52,493	3,619	22,279	78,391
Number Positive	96	7	120	223
Percent Positive	0.18%	0.19%	0.54%	0.28%
For-Cause				
Number Tested	357	15	386	758
Number Positive	41	5	76	122
Percent Positive	11.48%	33.33%	19.69%	16.09%
Follow-Up				
Number Tested	2,746	85	1,044	3,875
Number Positive	33	1	16	50
Percent Positive	1.20%	1.18%	1.53%	1.29%
TOTAL*				
Number Tested	65,850	5,115	92,276	163,241
Number Positive	219	25	1,128	1,372
Percent Positive	0.33%	0.49%	1.22%	0.84%

Table 3
Test results for each test category and worker category during 1994

* Test results in the category "Other" are not included.

Figure 3
Distribution of tests conducted during 1994 for each worker category

In pre-access testing, 1.34 percent of all pre-access tests performed on short-term contractors were positive, compared with .48 percent for licensee employees, and .86 percent for long-term contractors. Because of the large number of pre-access tests experienced by short-term contractors, and the relatively high percentage of positive test results they produced, positive pre-access test results of short-term contractors (916) accounted for two-thirds (66.76%) of the total number of positive test results (1,372) in all testing categories (see Table 3).

Random testing also produced different percentages of positive results across categories of workers. Although licensee employees were subject to over twice as many random tests (52,493 tests) as were short-term contractors (22,279 tests), licensees had fewer positive test results than short-term contractors (96 positive random tests for licensee employees compared with 120 for short-term contractors). Thus, despite the comparatively small number of short-term contractors who were subject to random tests, short-term contractors had three times the rate of random positive test results found for licensee employees (.54% and .18% respectively; see Figure 4).

Long-term contractors had the highest positive test rate for for-cause tests (a 33.33% positive test rate). Although this percentage appears high, in absolute numbers long-term contractors had only 5 positive for-cause tests, compared with 41 positive tests for licensee employees and 76 positive tests for short-term contractors.

Follow-up testing was used primarily for licensee employees (2,746 tests) and less frequently for long- and short-term contractors (85 and 1,044 tests, respectively), relative to the total number of tests for each worker category. The use of follow-up testing for contractors indicates that some contractors are receiving an opportunity to participate in treatment and to return to work in the nuclear power industry. In 1994, licensee employees had 33 positive tests, short-term contractors had

16 positive tests, and long-term contractors had only one positive test result for follow-up testing. Short-term contractors had a somewhat higher average percent positive rate of 1.53 percent, compared to average percent positive rates of 1.20 percent and 1.18 percent for licensee employees and long-term contractors, respectively.

Figure 4
Comparison of positive test rates for each worker category during 1994

Summary of major findings

- The majority of tests for licensee employees (approximately 80%) were performed under the random testing program.
- The majority of tests for short-term contractors (approximately 74%) were performed under the pre-access testing program.
- Positive pre-access test results of short-term contractors accounted for two-thirds of all positive test results in 1994.
- Short-term contractors had the highest positive test rates for all test types except for for-cause tests.
- Licensee employees and long-term contractors had similar positive test rates for follow-up testing. Short-term contractors had slightly higher positive test rates for follow-up testing.

SECTION 3: TEST RESULTS FOR DRUGS AND ALCOHOL

This section reports the number of confirmed positive test results for each type of substance. Section 3.1 examines the number of confirmed positive test results for each of the six substances specified by the rule: marijuana, cocaine, opiates, amphetamines, phencyclidine, and alcohol. Section 3.2 discusses the incidence of these substances by worker category. Section 3.3 discusses significant Fitness-for-Duty (FFD) events reported in accordance with 10 CFR 26.73. These events include confirmed positive tests for operators and supervisors with unescorted access as well as instances of substances found in the protected areas of nuclear power plants. Section 3.4 reports the results from tests using screening levels lower than those required by the rule. Section 3.5 reports the results for those licensees testing for additional drugs.

3.1 Positive test results for each substance type

This section describes positive test results during CY 1994 for the five illegal drugs specified in 10 CFR Part 26 and for alcohol. The total number of confirmed positive test results for substances (1,400) differs from the total number of confirmed positive results that were reported by test category in the previous sections. Three factors contribute to this difference: positive tests for drugs not specified in the rule are not included in this section; multiple-drug use by a person results in one positive test but more than one detected substance; and the number of refusals to test or attempts to subvert the testing process are recorded for statistical analysis as a positive test result but do not identify substances as positive.

Figure 5 shows the percentage of positive test results for each category of illegal drug and for alcohol. Of the total number of confirmed positive tests, the highest percentage was for marijuana, 52.79 percent, followed by cocaine, with 24.57 percent of the total, and alcohol, with 17.93 percent. Opiates, amphetamines, and phencyclidine combined accounted for approximately 5 percent of all positive test results. Table B-4 of Appendix B provides more detailed results by substance.

3.2 Positive test results for each substance and worker category

This section reports on positive test results for each substance and worker category. Figure 6 shows the proportions of positive test results for each type of substance by worker category. This figure shows notable differences

for marijuana, cocaine, and alcohol. The most marked differences by worker category were found for alcohol. While alcohol accounted for 17.93 percent of overall confirmed positive test results, almost one-third (31.74%) of the positive test results for licensee employees were for alcohol. In contrast, alcohol represented less than one-sixth of the positive test results for long-term contractors (16.13%) and short-term contractors (15.18%).

Short-term contractors experienced a large number of positive test results for marijuana. Marijuana accounted for approximately 56 percent of the confirmed positive test results for short-term contractors (55.88%) compared with slightly over 39 percent (39.13%) for licensee employees and slightly under 42 percent (41.94%) for long-term contractors.

The proportion of confirmed positive test results for cocaine was roughly similar for licensee employees (24.78%) and short-term contractors (24.21%). Long-term contractors experienced the highest proportion of positive test results for cocaine (35.48%). Although this percentage

Figure 5
Confirmed positive test results during 1994 for each substance category (n=1400)

appears high, in absolute numbers long-term contractors had only 11 positive test results for cocaine compared with 57 positive tests for licensee employees and 276 positive tests for short-term contractors (see Table B-5).

The low overall incidence of positive test results for the remaining substances (opiates, amphetamines, and phencyclidine) does not allow for a reliable comparison by worker category.

Figure 6
Distribution of positive test results for each substance by worker category

Another way to examine differences among worker categories is to look at the incidence of positive tests for each substance. Figure 7 shows the incidence of particular substances for each worker category. For each of the substances, except opiates, short-term contractors have the highest number of positive test results, followed by licensee employees and long-term contractors, respectively. For opiates, licensee employees have the highest number of positive test results. Of the 740 confirmed positive test results for marijuana, short-term contractors were responsible for 637 positive tests (86.08%) compared with 90 positive tests for licensee employees (12.16%) and 13 positive tests for long-term contractors (1.76%).

Licensees also report for statistical analysis instances of refusal to test and attempts to subvert the testing process as confirmed positive tests. There was a total of 41 instances of refusal to test in 1994. Because refusals to test do not involve positive tests for specific substances, their numbers have not been used in calculating the percentages of positive test results in this section. Nonetheless, it is interesting to point out that short-term contractors had over seven times the number of refusals to test than licensee employees (36 and 5, respectively), while long-term contractors had no instances of refusals to test during 1994.

In conclusion, comparisons of worker categories show differences in the relative proportion of positive test results for specific substances. Licensee employees show a higher proportion of positive test results for alcohol than do the other two worker categories. Short-term contractors have a higher proportion of positive test results for marijuana than do the other worker categories.

3.3 10 CFR 26.73 reports concerning licensed operators, supervisors, and substances found in protected areas

Subsection 73 of 10 CFR Part 26 requires reporting units to provide the NRC with information on significant FFD events, such as events involving licensed operators and supervisors, and on controlled substances found in the protected area of the plant. Reportable events include positive test results for licensed operators, licensee supervisors, and contractor supervisors. They may also include events that do not actually involve testing a collected specimen, such as some attempted subversions of the testing process, but that are required to be reported by 10 CFR 26.73 because they are considered significant.

This section describes the results from these reports for 1994. During 1994 there were 7 reports involving licensed operators, 11 reports involving licensee employee supervisors, and 11 reports involving contractor supervisors. There was one report of a controlled substance found in a site under construction and one report of a FFD program staff member forging the calibration records of an intoximeter.

3.3.1 Licensed operators and licensee and contractor supervisors

The reported events for licensed operators and supervisors include random, for-cause, and follow-up tests, but typically do not include pre-access tests. However, in

Figure 7
Distribution of positive test results for each worker category by substance

1994 one pre-access test was reported as a significant FFD event. It is also important to note that the number of positive test results for these groups of workers is very small, 29 positives (2.11%) out of all positive test results reported in Section 1 of this report. Although this small number does not provide a representative sample of workers, it does provide a picture of the types of substances identified among two important types of badged workers across test types.

Table 4 shows positive test results for licensed operators. Of the approximately 5,000 licensed operators in the nuclear power industry, 7 (.14%) tested positive for drugs or alcohol. Of these reported events, 4 (57.14%) were the result of random testing, 1 (14.29%) was the result of for-cause testing, and 2 (28.57%) were the result of other situations. These other situations included a positive test result following a self-referral (follow-up test) and a licensed operator who tested positive for a return-to-duty test.

With regard to the type of substance identified, alcohol accounted for most of the positive test results with 4 (57.14%). Cocaine accounted for an additional 2 (28.57%).

Table 5 shows the events reported for licensee and contractor supervisors. Of the 22 reported events, 15 (68.14%) were from random testing, 5 (22.73%) resulted from for-cause testing, and 1 (11.55%) was from follow-up testing and 1 was from pre-access testing.

Of the 22 positive test results, alcohol accounted for 9 (40.91%), marijuana accounted for 6 (27.27%), cocaine accounted for 6 (27.27%), and amphetamines accounted for 1 (4.55%).

When the results for licensed operators and supervisors are combined, 16 (55.17%) of the positive test results were attributed to drugs and 13 (44.83%) were attributed to alcohol.

A comparison of these event reports with those of 1993 shows no essential change in the absolute numbers of positive test results for licensed operators (7 in 1994 compared with 8 in 1993). However, since most tests for licensed operators occur under random testing programs, it is worth noting that while the number of random tests dropped significantly from 1993 to 1994 due to the reduction in the random test rate, the number of random test positives remained at 4 during both years. Therefore, the proportion of random test positives to random tests for licensed operators, while remaining relatively small, increased in 1994. Event reports for licensee supervisors decreased from 25 events in 1993 to 11 in 1994. Event reports for contract supervisors decreased from 16 in 1993 to 11 in 1994. The number of reportable events is not large enough to allow determination of whether these decreases are the result of real changes or random variations.

3.3.2 Other reportable events

There were two event reports submitted for incidents which did not involve positive test results. One reporting unit found marijuana in a site under construction and another reported an incident involving FFD personnel.

Because significant FFD events are not limited to the examples of events that are provided in 10 CFR 26.73, licensees are expected to report other unusual situations that may impact their FFD program. In that regard, many

licensees, as intended by the rule, provide information on FFD incidents that involve personnel who are responsible for administering the testing program. These events can include testing positive for drugs or alcohol, subverting the testing process, or any other actions that could compromise either the trustworthiness of FFD program personnel or the testing results.

In 1994, there was one event report concerning FFD personnel. One reporting unit reported that calibration records of an intoximeter had been forged by an FFD staff member. This is in contrast to 1992 and 1993, when there were no event reports concerning FFD personnel. By comparison, there were five reports involving FFD personnel in 1991 and one in 1990. While the actual number of reported cases involving administrative personnel over the past four years is small, the potential consequences to the credibility of a FFD program from even one such case are substantial.

3.4 Lower screening levels

The FFD rule provides licensees with the flexibility to use lower, more stringent screening and confirmation cutoff levels than those specified in the rule. Table A-2 in Appendix A shows the current maximum screening and confirmation levels permitted by the rule.

As found in the previous four years of rule implementation, marijuana was the most common substance for which lower screening cutoff levels were used during 1994. In the first six months of 1994, 37 of the 81 reporting units reported using levels lower than the NRC level of 100 nanograms per milliliter (ng/ml). In the second six-month period, the number of reporting units using lower marijuana screening cutoff levels jumped to 47. During 1993 and the first six months of 1994, 33 reporting units used a screening level of 50 ng/ml and 4 used 20 ng/ml. It was during the second six month period of 1994 that these numbers increased, as 42 reporting units used a screening level of 50 ng/ml and 5 used 20 ng/ml.

	Random	For- Cause	Follow- Up	Other	Total
Marijuana	1				1
Cocaine				2	2
Alcohol	3	1			4
Refusal to Test					0
Total	4	1	0	2	7

Table 4
Positive test results for licensed operators

Figure 8 compares the positive test rates found using these three different screening cutoff levels for marijuana. These rates were calculated by summing the number of positive test results for marijuana detected at each cutoff level and dividing the sum by the number of tests performed using that screening cutoff level. As shown in Figure 8, licensees using lower screening cutoff levels had a higher percentage of confirmed positive test results. At 20 ng/ml and 50 ng/ml, results averaged approximately 5 tests out of 1,000, or .54 percent and .53 percent, respectively. At 100 ng/ml, that percentage was just over 3 tests out of 1,000, or .35 percent.

The increase in the number of reporting units using lower screening cutoff levels for marijuana may be explained in part by the change in the Department of Health and Human Services (HHS) guidelines (June 9, 1994; 59 FR 29908) and the demonstrated effectiveness of lower cutoff levels compared to using the NRC level of 100 ng/ml.

Another way to examine the effects of using lower screening cutoff levels for marijuana is to compare the number of positive test results for marijuana using lower levels with the number of positive test results that licensees reported they would have found using the NRC screening level of 100 ng/ml. Three of the reporting units using a

Type of Test						
	Random	For- Cause	Pre- Access	Follow- Up	Other	Total
Licensee Supervisors						
Marijuana	3					3
Cocaine				1		1
Alcohol	4	3				7
Total	7	3	0	1	0	11
Contractor Supervisors						
Marijuana	2		1			3
Cocaine	5					5
Alcohol		2				2
Ampheta- mines	1					1
Total	8	2	1	0	0	11
Total for All Supervisors	15	5	1	1	0	22

Table 5
Positive test results for supervisors

Figure 8
Confirmed positive test rates for marijuana by screen level

screening level of 20 ng/ml reported the estimated results that would have been found using the NRC screening level. These reporting units had 64 positive test results for marijuana using a screening level of 20 ng/ml. At 100 ng/ml, these reporting units estimated they would have found only 17 of these positive test results.

Thirty-five of the reporting units using a screening level of 50 ng/ml also reported the estimated results that would have been found using the NRC screening level. These reporting units had 395 positive test results for marijuana using a screening level of 50 ng/ml. This compares to an estimated 271 positive test results that would have been found at 100 ng/ml.

These data continue to support findings from previous years that the use of a screening cutoff level of 20 ng/ml or 50 ng/ml for marijuana, rather than 100 ng/ml, results in a higher percentage of confirmed positive test results for that drug.

3.5 Additional drugs

During 1994, 14 of the 81 reporting units in the first six months and 11 in the second six months tested for a broader panel of drugs than the five required by the rule. During the first six-month period, all 14 of the reporting units tested for benzodiazepines and barbiturates, 6 tested for methaqualone, 4 tested for methadone, and 2 tested for propoxyphene. During the second six months, 11 reporting units tested for barbiturates and benzodiazepines, and of these 11, 3 tested for methaqualone, 3 tested for methadone, and 2 tested for propoxyphene. The number of reporting units testing for each additional drug, the total number of such tests performed by all reporting units during the year, and the number of confirmed positive test results are listed in Table 6. A total of 3 confirmed positive test results for the additional drugs were reported, including 1 positive for barbiturates and 2 positive for benzodiazepines.

Summary of major findings

- Marijuana was the drug most often detected, accounting for approximately 53 percent (52.79%) of all positive tests.
- Cocaine and alcohol accounted for significant proportions (24.57% and 17.93%, respectively) of all positive tests.
- Comparisons of positive test results for particular substances among the worker categories showed licensee employees to have a relatively higher proportion of positive test results for alcohol than that found in other worker categories. Short-term contractors had a higher proportion of marijuana positives than that found for the other worker categories.
- The number of significant events reported by utilities under 10 CFR 26.73 showed an overall decrease from

	NUMBER OF REPORTING UNITS [†]	NUMBER OF TESTS PERFORMED	NUMBER OF CONFIRMED POSITIVES
Barbiturates	14 - 11	30,665	1
Benzodiazepines	14 - 11	30,665	2
Methaqualone	6 - 3	15,010	0
Methadone	4 - 3	8,747	0
Propoxyphene	2	3,944	0

Table 6
Test results for additional drugs

* The number of reporting units that used lower marijuana screening cutoff levels (20 ng/ml or 50 ng/ml) increased from the first six month reporting period, while the number of reporting units using the maximum screening cutoff level (100 ng/ml) decreased.

[†] The number of reporting units that tested for additional drugs decreased from the first six-month reporting period to the second six-month period.

49 events in 1993 to 29 events in 1994. The number of positive test results in event reports involving licensee supervisors decreased from 25 events in 1993 to 11 events in 1994. The number of positive test results for licensed operators and contract supervisors essentially remained unchanged during 1994.

- Licensees using a marijuana screening cutoff level of 20 or 50 ng/ml had 150 percent of the positive test rate for marijuana of those licensees using a cutoff level of 100 ng/ml. Most notable, licensees using a 20 ng/ml screening cutoff reported that only 17 of 64 positive test results would have been found using a 100 ng/ml screening cutoff, a 376% increase.
- Benzodiazepines and barbiturates continue to be the most common additional drugs for which reporting units tested. However, the number of reporting units testing for these additional drugs has decreased from 20 in 1993 to 11 in the second half of 1994.

SECTION 4: TEST RESULTS BY REGION

This section summarizes CY 1994 information on testing programs for licensees in each of the four NRC administrative regions (identified in Appendix A). This information includes overall positive rates by region and regional comparisons by type of substance. Prior to 1994, five administrative regions existed and testing program data were reported for each region. Region IV now comprises licensees previously in both Region IV and Region V.

4.1 Positive test results for each test category by region

This section discusses the positive test results by test category for each region. Table B-10 in Appendix B provides test results by test category and overall for licensees in each of the NRC regions. Region IV had the highest overall positive test rate of .91 percent, while the other regions' overall positive test rates ranged from .80 percent in Region I, to .85 percent in Region III. Appendix B provides detailed results by region in Tables B-6 through B-10.

Positive test rates by test type were also found to differ by region for some test categories. Figure 9 provides random test results by region. Licensees in Region III had the lowest random positive test rate at .23 percent, and Region IV and Region II had very similar results, at .24 percent and .27 percent, respectively. Licensees in Region I had the highest random positive test rate at .37 percent. Positive test rates for pre-access testing ranged from 1.09 percent in Region I to 1.40 percent in Region IV. These results roughly correlate with overall test rates for each of the regions, with higher pre-access rates linked to higher overall positive test rates (see Table B-10). Follow-up

Figure 9
Random positive test rates by each NRC region during 1994

positive test rates ranged from .87 percent in Region IV to 1.72 percent in Region III (this difference is not meaningful because of the low number of follow-up tests).

The most marked regional differences occurred for for-cause testing. For-cause positive test rates ranged from 11.42 percent in Region I to 27.19 percent in Region IV. Because of the small number of positive tests in this testing category, variations in the for-cause positive test rate should be interpreted with care. However, these results may also reflect differences among the four regions in the types of events and behavior that trigger for-cause testing.

4.2 Positive test results for each worker category by region

This section discusses, and Figure 10 shows, the 1994 positive test rates for each worker category by region. Of the three worker categories, short-term contractors had the highest positive test rate in every region. Licensee employees had the lowest positive test rate in every region except for Region II, where the long-term contractor employee positive test rate was the lowest.

Figure 10
Confirmed positive test rates for each worker category by NRC region during 1994

Figure 11
Distribution of tests conducted for each worker category by NRC region

Positive test rates for licensee employees remained low in 1994. The licensee employee positive test rate ranged from .31 percent in Region IV to .35 percent in all other regions.

The long-term contractor positive test rate varied by region in 1994, ranging from .24 percent in Region II to .88 percent in Region III. Differences between regional positive test rates for long-term contractors should be interpreted cautiously. The data in Table B-9 of Appendix B indicates that the number of positive tests for long-term contractors is relatively small, and fluctuations in these numbers from one region to another has an exaggerated effect on the positive test rate.

The overall regional positive test rates mirrored the results found for short-term contractor positive test rates. As demonstrated in previous years, the region with the highest short-term contractor positive test rate also had the highest overall regional positive test rate (see Table B-10 of Appendix B). Likewise, the region with the second highest short-term contractor positive test rate had the second highest overall regional positive test rate, and so on. This close relationship between short-term contractor positive rates and overall regional positive rates is not surprising. Short-term contractors accounted for between 52 and 58 percent of the total tests conducted in each region (see Figure 11).

The incidence of plant outages, and the resulting pre-access tests of short-term contractors in each region, is one possible explanation for at least part of the variation in the regional positive test rates. As reported in Volumes I and II of NUREG/CR-5758, it appears that positive test rates for contractors, and particularly for short-term contractors, are substantially higher during outage periods than during

periods of normal operation. Although we do not provide an evaluation of the effects of outages in this report, regional variations in the number of outages during 1994 may have caused part of the variation among the regions' short-term contractor positive test rates, which in turn would have resulted in part of the variance in the regional positive test rates.

4.3 Positive test results by substance for each region

The percentage of total positive test results accounted for by substance showed some variation by region. Figure 12 summarizes these data by region for each substance. Marijuana accounted for the highest percentage of confirmed positive test results in each region, ranging from 47.14 percent in Region III to 61.10 percent in Region II.

Cocaine and alcohol accounted for either the second or third most frequently detected substances in three of the four regions. Cocaine accounted for the second largest share of positive test results in Regions I, II, and III. Alcohol was the second most frequently detected substance in Region III, followed by cocaine, and third most frequently detected substance in Regions I, II, and IV.

The percentage of positive test results accounted for by cocaine ranged from 18.21 percent in Region IV to 30.22 percent in Region I. Alcohol-related positive test results ranged from 12.59 percent in Region II to 26.26 percent in Region III.

Amphetamines represented a substantially smaller percentage of positive test results than did marijuana or cocaine. In previous years, amphetamines accounted for a larger percentage of test results in Region V than in any of

Figure 12
Distribution of positive test results by substance for each NRC region during 1994

the other regions. With the consolidation of Region IV and V licensees, the new Region IV produced the highest percentages of test results for amphetamines. Opiates and phencyclidine also account for very few positive test results by region.

Summary of major findings

- The positive test rate for short-term contractors continued to strongly influence the overall positive test rate for each region. Higher short-term contractor positive test rates are related to higher overall regional positive test rates.
- Marijuana accounted for the greatest percentage of positive test results in all regions.
- Cocaine and alcohol accounted for either the second or third most frequently detected substance in three of the four regions.

SECTION 5: TRENDS IN THE FIRST FIVE YEARS OF RULE IMPLEMENTATION

Because 1994 was the NRC Fitness-for-Duty (FFD) rule's fifth year of implementation, overall trends in the program performance data are evident. In many instances, 1994 program performance results continue the trends found in the first four years of rule implementation. But in a few instances, noted below, those trends did not continue.

This section compares outcomes for 1994 with those of previous years by test type, worker category, region, and confirmed positive test results for specific substances. It also discusses trends over the five-year period of rule implementation.

5.1 Comparison of positive test rates overall and for each test type

This section compares the overall positive test rate, results for employees with unescorted access to protected areas, and results for each testing category over the five years of rule implementation.

The overall positive test rate in 1994 was .84 percent, an increase from the 1993, 1992, and 1991 positive test rates (.62%, .68%, and .66%, respectively); yet it is lower than the 1990 rate of .87 percent. The trend through 1993 indicates that, following the first year of rule implementation, the overall positive rate has been relatively stable. In 1994, the overall positive test rate increased, and a substantial portion of this increase (and increases in the overall test rate by worker category and region) can be accounted for by several

factors. The first factor is the reduction in the mandatory random test rate from 100 percent to 50 percent. Although some licensees did not provide data on their random test rate, most tested at a rate lower than 100 percent, and a small number continued to test all individuals or at least some worker categories at a 100 percent rate. Figure 13 compares the numbers of tests conducted for each test category in each of the five years. It illustrates that due to the reduced mandatory random test rate, the number of random tests conducted in 1994 was noticeably smaller than those during 1990 through 1993. This is expected to increase the proportion of positive test results in 1994 due to the lower positive rate for random tests. See the sidebar on page 17 for a discussion of the effect of the reduced random test rate on the overall positive test rate.

Other factors also may account for some of the increase in the positive test rate in 1994. Due to the decreased number of random tests being performed, individuals may not have been as strongly deterred from using illegal substances. Another factor that may have had an impact on the positive rate were initiatives by licensees, such as lowered marijuana screening cutoff levels below 100 ng/ml and increased efforts to detect subversion of the testing process.

A third factor that accounts for a substantial part of the increase in the overall positive test rate in 1994 is the pre-access positive test rate. As Figure 13 illustrates,

Figure 13
Comparison of tests conducted for each test category for 1990 through 1994

The effect of the number of random tests on the overall positive test rate

The overall positive test rate in 1994 was .84 percent, an increase from the 1993, 1992 and 1991 positive test rates (.62%, .68%, and .66%, respectively) yet lower than the 1990 rate of .87 percent. A substantial part of this increase and increases by worker category and region can be accounted for by the reduction in the mandatory random test rate from 100 percent to 50 percent. An analysis of the data for seventy-plus reporting units that provided information on random test rates indicates that the average random testing rate across all worker categories was approximately 60 percent in 1994, resulting in 68,241 fewer random tests when compared to 1993.* While random tests historically make up the majority of all tests,

Figure 14
Comparison of actual and adjusted overall positive test rates for 1990 through 1994

random test positives make up a much smaller proportion of all positives. Therefore, a significant reduction in the number of random tests, as experienced in 1994, would be expected to result in a smaller number of total tests, but a smaller proportionate reduction in the number of total positive test results. As a result, the ratio of positive test results to total tests would be expected to increase, as it has in 1994.

To further illustrate how a substantially reduced number of random tests results in a higher overall positive test rate, estimated positive test rates were computed for 1990 through 1993 assuming application of a 60 percent random test rate.[†] The 60 percent random test rate was used to provide a means of comparison to 1994 results. As Figure 14 illustrates, had an overall random test rate of 60 percent been applied in previous years as it was in 1994, the resulting fewer random tests would have produced noticeably higher overall positive test rates every year since rule implementation. The same effect would be evident if the overall positive test rate was examined by worker category and by region.

pre-access tests accounted for a greater share of the total number of tests in 1994 and were nearly equal in number to those conducted for random testing. Therefore, the overall positive test rate is heavily influenced by the percentage of pre-access positives, which increased in 1994. The positive test rate is substantially lower when only test results for badged employees (random, for-cause, and follow-up tests) are considered. The positive test rate for badged workers was .48 percent in 1994, compared with .37 percent in 1993 when the random testing rate was approximately 100 percent. As with the overall positive test rate, the positive test rate for only badged workers increased from the 1993 level in part because of the reduction in the mandatory random test rate from 100 percent to 50 percent. If the 1993 positive test rate for badged workers was adjusted to estimate results under the 1994 random test rate (60%), it would be approximately .45 percent (see Table B-11 in Appendix A). Therefore, the positive test results for only badged workers (random, for-cause, and follow-up tests) have been relatively stable when the effects of the decrease in the random testing rate are taken into account.

Figure 15 compares positive test rates by test category over the five-year period of rule implementation. The pre-access and random positive test rates exhibited increases in 1994 when compared with 1993. For-cause and follow-up positive test rates continued their downward trend in 1994, and were at their lowest levels since rule implementation.

The random positive test rate experienced an increase in 1994, reversing a four-year trend of steady decreases. The positive test rate for random testing rose in 1994 to a rate of

* Most licensees exceeded the 50% minimum rate by a small amount to ensure compliance (as they did when the minimum rate was 100%) and several have continued to test all workers or just short-term contractors at 100%.

[†] The estimated overall positive test rates were computed with the assumption that during 1990-1993 reporting units had performed random testing at a 100 percent rate. Therefore, the number of random tests were reduced to 60 percent of previous levels to approximate a 60 percent random test rate, and the number of random test positives were computed by applying the original random positive test rate to the new random test total. The recomputed number of random tests and test positives were added to the totals for other test categories, and the estimated overall positive test rates were computed for each year.

Figure 15
Comparison of confirmed positive test rates for each test category

.28 percent, an increase over 1993 (.23%), yet still lower than rates in 1990 through 1992. While the random positive test rate for licensee employees remained essentially unchanged from 1993, the positive rate for contractor personnel, particularly short-term contractors, increased substantially in 1994 (see Figure 16).

In fact, the random positive test rate for short-term contractors in 1994 was .54 percent, the highest since 1991. This upturn in the random positive test rate for 1994 could be the result of several factors. The increased random positive test rate in part reflects the increased number of licensees testing at 50 ng/ml (see Section 3.4). In addition, it may demonstrate that drug use and alcohol abuse among workers in the nuclear power industry has grown or that the nuclear power industry has become more effective in detecting and preventing attempts to subvert the testing process.

The pre-access positive test rate also increased in 1994, to its highest level since the first year of rule implementation. The 1994 pre-access positive test rate was 1.22 percent compared to 1.04 percent in 1993.

The for-cause positive test rate decreased from 21.7 percent in 1993 to 16.09 percent in 1994. This 1994 positive test rate was the lowest since rule implementation. As with declines in the positive rates in other test categories, this change could be the result of a number of factors. For example, it could result from expanding Continual Behavior Observation Training programs and a greater sensitivity on the part of managers to FFD problems that are not related to illegal drug use or alcohol abuse (e.g., fatigue), or it could be the result of the use of "designer drugs" that are not identified by current testing practices. It could also be the result of a combination of factors.

The follow-up positive test rate continued to decline in 1994. The 1994 positive test rate for follow-up testing was 1.29 percent compared with rates of 2.47 percent in 1990, 1.75 percent in 1991, 1.61 percent in 1992, and 1.35 percent in 1993. Again, the 1994 follow-up positive test rate was the lowest since the rule was implemented. The decline in the positive test rate for follow-up testing may be a good sign. In general, it indicates that employees previously testing positive for drugs or alcohol who later return to work are more successful at maintaining abstinence from drugs or alcohol. This may be partially due to the fact that some workers in the follow-up testing pool have been in the pool for a longer period of time and are less likely to relapse. A lower positive test rate for follow-up testing may also indicate that licensees have become more selective in the persons they refer to treatment and ultimately retain. Still another possible cause for this lower positive test rate is that those subject to follow-up testing in the program's early years were primarily chronic users who were not able to abstain from drug use and were eventually removed from the program. In subsequent years, FFD programs may be detecting occasional drug users who are more likely to be able to abstain from further drug use.

5.2 Comparison of positive test rates for each worker category

This section compares positive test rates for each worker category in each of the five years of rule implementation. As discussed in Section 5.1, comparison of 1994 overall positive test rates, even by worker category, is misleading due to the change in the random test rate and its impact on the overall positive test rate. Examining the random positive test rates for each worker category over the past five years, as presented in Figure 16, provides a more meaningful comparison of rates for badged workers across worker categories. The random positive test rates for all worker categories increased in 1994 when compared to 1993, yet remain lower than 1992 and years prior for licensee employees and long-term contractors. The 1994 short-term contractor random positive test rate (.54%) is higher than levels in 1992 and 1993 (.46% and

Figure 16
Comparison of random positive test rates by worker category

.39%, respectively) and experienced the greatest increase of all worker categories.

5.3 Comparison of positive tests by substance

This section compares the confirmed positive test results attributable to each substance for each of the five years of rule implementation (see Figure 17).

From 1990 to 1993, the total numbers of positive test results for each substance decreased or remained virtually the same, with the exception of an increase in the number of marijuana confirmed positives in 1993. This trend continued in 1994 as the number of positive test results declined slightly or remained essentially the same for each substance. Some of the decreases in the number of positive test results, however, can be explained by the reduced number of random tests conducted in 1994. Nonetheless, the distribution of positive test results for each substance is consistent with previous years. Marijuana, cocaine, and alcohol continue to be the substances most often detected. During 1994, the proportion of marijuana positives to all

positive test results increased somewhat, while the proportion of cocaine positives remained stable and the proportion of alcohol positives declined.

Marijuana accounted for 52.79 percent of positive test results, compared with 49.56 percent in 1993. The total number of marijuana positive test results dropped from 781 in 1993 to 739 in 1994.

An examination of positive test results for cocaine shows that the total number of positive test results decreased in 1994. There were 344 positive test results for cocaine in 1994, compared with 706 in 1990, 549 in 1991, 470 in 1992, and 369 in 1993. Cocaine accounted for 24.57 percent of confirmed positive tests in 1994, which is consistent with results from 1993 and 1992, yet still lower than the proportion of cocaine positive test results during the first two years of rule implementation.

The proportion of positive test results for alcohol (17.93%) in 1994 was the lowest since rule implementation and compared with 22.65% in 1993, as the total number of alcohol positives decreased from 357 to 251.

Opiate, amphetamine, and phencyclidine positives continue to make up a very small proportion of the total positive test results.

5.4 Comparison of positive test rates for each region

This section compares 1994 random positive test results by region with those of previous years. To avoid the pitfalls of using the overall positive test rate for comparison purposes (as discussed in Section 5.1), the random positive test rate is used here to identify trends since 1991 by region. Because minor variations can be expected to occur from year to year, and because the positive test results are relatively small in absolute numbers, results discussed in this section should be interpreted with care.

Figure 18 compares random positive test rates by region for four of the five years of rule implementation (1990 random positive test result data were not available in time for publication). Although Region IV and Region V were consolidated into a new, larger Region IV in 1994, Region V data are presented in Figure 18 for 1990-1993 for reference purposes. Consistent with the increase in the random positive test rate for all licensees, the regional random positive test rates increased in 1994. Random

positive test rates had gradually declined in four of the five regions during 1991-1993.

Summary of major findings

- The overall positive test rate was .84 percent in 1994. Although several factors probably contributed to this change, a substantial part of the increase in this rate is accounted for by the lowered minimum required random testing rate and resulting smaller numbers of random tests in 1994. An increase in the pre-access positive test rate also contributed to a substantial portion of the higher overall positive test rate.
- Compared with 1993, positive test rates in 1994 decreased for for-cause and follow-up testing. Positive test rates for for-cause and follow-up tests were the lowest since the rule was implemented.
- Positive test rates for pre-access and random tests increased in 1994, when compared to 1993. The pre-access positive test rate was the highest since 1990,

Figure 17
Distribution of positive test results for each substance for 1990 through 1994

Figure 18
Comparison of random positive test rates for
each NRC region for 1991 through 1994

while the random test rate increased from 1993, reversing a downward trend.

- Positive test rates increased in 1994 for all worker categories, reversing a prior downward trend.
- Random positive test rates in 1994 increased in the four regions, compared with 1993 rates.

SECTION 6: LESSONS LEARNED AND MANAGEMENT INITIATIVES

As part of the FFD performance reports, many reporting units included information about lessons learned and program initiatives that occurred during 1994. Reported initiatives often addressed specific problems or, in some cases, were implemented as part of continuous improvement efforts.

This section provides a brief overview of the problems noted, solutions suggested, and management initiatives that were identified in utility program performance reports during 1994. It is not intended to be a full summary of the reports, and readers may wish to review the many additional and useful suggestions in the full compilation of reported lessons learned provided in Appendix C. In addition to the material presented in this section, the NRC is aware of other actions by utilities that are either planned or in progress. These actions were not included in the 1994 program performance reports and thus were not analyzed in this report. The lessons learned fell into the following categories:

- Certified laboratories;
- Random testing;
- Collection, screening, and on-site testing;
- Training;
- Procedures;
- Program management and systems;
- Worker welfare and rehabilitation;
- Blind performance testing; and
- Subversion prevention programs.

In general, while utilities noted many of the same problems, solutions, and initiatives over the five-year period of rule implementation, there are some new issues that were reported in 1994.

This information is provided to assist utilities but does not necessarily reflect the opinion of the NRC. Table A-3 in Appendix A contains a list of FFD contact names and phone numbers for each of the reporting units.

6.1 Certified laboratories

Several Department of Health and Human Services-certified laboratories, under contract with licensees, took actions to improve their performance and address problems, including

- improving the laboratory process for validating the screening controls;

- correcting programmatic errors following a change in confirming laboratories, such as failure to report low specimen creatinine levels and failure to perform a test for 6-monoacetylmorphine (6-MAM) on samples containing morphine at a confirmatory level;
- revising laboratory test procedures to facilitate the reporting of 6-MAM tests in a more timely manner;
- implementing additional training and quality control steps to prevent additional unsatisfactory blind performance specimen test results; and
- referring to the Substance Abuse and Mental Health Services Administration (SAMHSA) for investigation of the discovery of adsorption of a marijuana metabolite by the caps of urine sample containers provided by a certified laboratory.

6.2 Random testing

Utilities took actions to ensure all individuals covered by the rule are included in the random testing pool at a minimum 50 percent nominal rate. Initiatives included

- implementing actions to correct failure to perform random testing when an access authorization computer system wasn't functional;
- instituting training and daily reports to prevent recurrences of coding and data entry errors that resulted in failure to include all eligible individuals in random testing pools;
- ensuring all badged employees are included in the random testing pool by establishing a computer program that compares names in the random selection database with currently badged individuals in the site security database;
- instituting a 100 percent random test rate among populations within operations that had demonstrated higher positive test rates; and
- ensuring that emergency response individuals who need unescorted access to the protected area are included in the random test pool.

6.3 Collection, screening, and on-site testing

Utilities reported a variety of activities designed to improve the effectiveness of the collection and on-site testing elements of their programs, including

- expanding/improving the on-site testing facility to permit processing of a greater volume during outage periods;
- stressing the importance of correct calibration of breath alcohol testing equipment and verifying the viability of urine testing reagents;
- increasing staff flexibility and cost savings by cross-training utility FFD employees as collection technicians; and
- recommending that the requirement for a second breath alcohol test after the first is negative be eliminated, based on proven reliability of the first test result.

6.4 Training

Several utilities made administrative and process modifications to FFD training programs that reflect similar efforts during previous years, including

- making Employee Assistance Program (EAP) information and medication report forms available on a site computer system;
- disseminating EAP information through pamphlets and company newsletters;
- increasing the frequency of hands-on training in the use of alcohol testing devices among infrequent test administrators to resolve instances of error;
- reviewing and revising FFD testing guidelines for supervisors;
- communicating to individuals that excessive drinking prior to a five-hour, pre-work abstinence can still result in a blood alcohol content (BAC) at or above .04 percent upon arrival at work;
- performing regular reviews and improvements to computer-based training;
- requiring that all licensee and contractor employees receive FFD supervisory training;
- sending the MRO to training conferences;
- recertifying collection personnel in specimen collection; and
- creating an FFD video library for meetings and personal use.

Initiatives related to Continual Behavior Observation (CBO) training included

- expanding CBO training to include a segment on workplace violence and a videotape on identification of aberrant behaviors;

- developing a self-study behavioral observation training guide for supervisors;
- improving procedures to ensure that newly approved off-site supervisors receive CBO training prior to their appointments; and
- expanding and strengthening CBO training.

6.5 Procedures

Utilities reported several initiatives relating to procedures, including

- revising screening and confirmation cut-offs for amphetamines from below NRC cutoff levels to levels mandated by the NRC (and HHS);
- clarifying procedures to ensure compliance with 10 CFR 26 by requiring that personnel who perform drug and alcohol testing receive background checks and psychological evaluations as required;
- cross-referencing FFD procedures with 10 CFR 26 to ensure clarity and compliance;
- eliminating methaqualone, barbiturates, and benzodiazepines from the drug panel;
- raising marijuana screening level from 20 to 50 ng/ml;
- instituting a mandatory referral to EAP following a positive test result for alcohol, and a 14-day suspension following positive drug tests;
- developing administrative improvements to ensure that individuals re-entering the workforce following a positive test result and rehabilitation are included in follow-up testing program and tested at appropriate intervals; and
- enhancing access authorization program controls to require verification of a drug testing date prior to granting unescorted access.

6.6 Program management and systems

Several utilities instituted actions related to FFD program administration and staffing in order to improve program effectiveness. These actions include

- considering implementation of a software program that would permit use of one database at multiple sites, track data, and facilitate improved efficiency in completing information and generating reports;
- enhancing the effectiveness of the FFD drug and alcohol program by placing it within Health Services and aligning it with an overall employee wellness program;

- instituting regular meetings between MROs, FFD staff, and certified laboratory staff to discuss issues such as appropriate actions upon detection of certain drugs, ethanol, adulterants, or low specific gravity/low creatinine levels;
- incorporating FFD contractor/vendor program requirements with Access Authorization Program information into one document for distribution to contractors/vendors;
- assigning a continual behavior observer to contractors/vendors prior to granting access;
- consolidating FFD and access authorization databases to improve efficiency;
- attending regional bi-annual meetings to explore industry practices, share problems, and benchmark best practices;
- clarifying roles of FFD personnel regarding specimen retesting and coordination with the certified lab;
- developing policies to address new Department of Transportation (DOT) testing requirements and integrate them with the current NRC FFD program; and
- integrating a bar-coding system in the database to eliminate operator error and reduce data entry time.

6.7 Worker welfare and rehabilitation

Activities and improvements related to worker rehabilitation programs included

- increasing accessibility to EAP information by making it available on a site computer system;
- improving documentation of medical decisions to restore unescorted access to individuals previously denied; and
- instituting mandatory referrals to EAP following positive alcohol and drug test results.

6.8 Blind performance testing

Several utilities reported actions to address unsatisfactory blind performance test specimens, including

- identifying discrepancies in test results of a blind performance specimen sent to the confirmatory laboratory;
- modifying a computer program and counseling personnel to prevent a recurrence of a failure to submit the required minimum of 10 percent blind test specimens per quarter; and

- suspending use of a certified laboratory following unsatisfactory blind test specimen results.

6.9 Subversion prevention programs

Some utilities also reported findings related to detecting and preventing subversion attempts, including

- determining very few positive test results following repeated specimen collection after original specimens were found to have low creatinine values;
- attributing very low incidence of low specific gravity and low creatinine test results to the practice of escorting individuals to the testing site without advance notice;
- determining that an individual who admitted use of marijuana two days prior to a random test had submitted a specimen that was negative yet low in creatinine;
- instituting use of a digital electronic refractometer to measure specific gravity levels, proving to be more precise than "dip sticks";
- identifying at least two instances of temperature abnormalities leading to identification of subversion; and
- performing an observed collection for a pre-access test, due to suspicious activity, resulting in a positive test result.

Following detection of a substituted specimen, one utility initiated several program enhancements, including

- providing a collection site within the protected area to diminish individuals' ability to attempt subversion of the testing process;
- minimizing notification times;
- enhancing supervisory FFD training to improve the ability to identify behaviors and other signs that persons may be attempting subversion of a test; and
- periodically reinforcing with collection site personnel the need to be alert for subversion attempts.

APPENDIX A: TECHNICAL BACKGROUND

APPENDIX A: TECHNICAL BACKGROUND

This appendix includes

- a description of the data used as the basis of this report;
- a list of the utilities and reporting units providing data for this report;
- additional detail on the definitions of test categories used in this report;
- names and telephone numbers of contacts who can provide additional information concerning semiannual program performance reports; and
- other relevant information (e.g., the substances required by 10 CFR Part 26).

Data Source

The data for this study are drawn from the semiannual reports on Fitness-for-Duty (FFD) program performance that were submitted in accordance with 10 CFR Part 26 by all NRC reporting units authorized to operate or construct a nuclear power reactor. During 1994, 48 utilities submitted 81 reports representing 72 nuclear power plant sites and 9 corporate offices.

Table A-1 lists each site reporting unit by NRC region. Each site reporting unit used a standardized data collection form developed by the Nuclear Management and Resources Council (NUMARC, now the Nuclear Energy Institute, or NEI) to fulfill 10 CFR 26.71(d) of the FFD rule. This part of the rule specifies that the data reported shall include the following:

- random testing rate;
- substances tested for and cutoff levels, including results of tests using lower cutoff levels and tests for other substances;
- workforce populations tested;
- numbers of tests and results by worker category and type of test (e.g., pre-access, random, for-cause, etc.);
- substances identified;
- summary of management actions; and
- a list of events reported.

The number of positive tests results and the number of specific substances identified are not expected to be equal. A total of 1,372 positive test results were reported, and a total of 1,400 substances were identified. There are several reasons for this difference:

- The number of refusals to test and some of the attempted subversions of the testing process are not included in the total of substances identified for the purposes of this report. A refusal to test is included on the reporting form

as a positive test result but does not identify a substance as positive; and

- Multiple-substance abuse is counted as one positive result for an individual but results in identifying more than one substance. A positive test for both marijuana and alcohol, for example, would be counted as two substances.

Testing Categories

The following testing categories were included in the analyses presented in this report. These definitions are based on the definitions given in 10 CFR 26.3 and on explanations of the FFD program performance data in the form provided to reporting units by NUMARC.

Pre-Access Testing

Pre-access testing is performed prior to granting unescorted access to the protected area of a nuclear power plant. In some cases, workers apply for access at the same time or shortly after their employment. In such cases, a worker's pre-employment test is accepted in lieu of a pre-access test and is recorded as such in the reporting form.

Random Testing

Random testing refers to a system of unannounced and unpredictable drug testing administered to a group in a statistically random manner so that all persons within that group have an equal probability of being selected for testing.

For-Cause Testing

For-cause testing includes tests based on behavioral observation programs, on credible information that a person is abusing drugs or alcohol, or on a reasonable suspicion that drugs or alcohol may have been involved in a specific event (i.e., post-accident).

Follow-Up Testing

Follow-up testing refers to chemical testing at unannounced intervals to ensure that a worker who previously had a confirmed positive test result is maintaining abstinence from the abuse of drugs or alcohol.

Tables B-1, B-2, and B-3 in Appendix B present the number of tests, the number of positive tests, and average percent positive for each of the test categories requested on the NUMARC form. Also included are test results for the "other" category. This category includes, for example,

REGION I	REGION II	REGION III	REGION IV
Beaver Valley Duquesne Light Company	Bellefonte Tennessee Valley Authority	Big Rock Point Consumers Power Company	Arkansas Nuclear One Entergy Operations, Inc.
Calvert Cliffs Baltimore Gas & Electric Company	Browns Ferry Tennessee Valley Authority	Braidwood Commonwealth Edison Company	Comanche Peak Texas Utilities Electric Company
FitzPatrick Power Authority of the State of New York	Brunswick Carolina Power & Light Company	Byron Commonwealth Edison Company	Cooper Nebraska Public Power District
GINNA Rochester Gas & Electric Corporation	Catawba Duke Power Company	Callaway Union Electric Company	Diablo Canyon Pacific Gas & Electric Company
Haddam Neck Northeast Nuclear Energy Company	Crystal River Florida Power Corporation	Clinton Illinois Power Company	Fort Calhoun Omaha Public Power District
Indian Point 1 & 2 Consolidated Edison Company of New York	Farley Southern Nuclear Operating Company	Cook Indiana Michigan Electric Company	Palo Verde Arizona Public Service Company
Indian Point 3 Power Authority of the State of New York	Grand Gulf Entergy Operations, Inc.	Davis Besse Toledo Edison Company	River Bend Entergy Operations, Inc.
Limerick PECO Energy Company	Harris Carolina Power & Light Company	Dresden Commonwealth Edison Company	San Onofre Southern California Edison Company
Maine Yankee Maine Yankee Atomic Power Company	Hatch Georgia Power Company	Duane Arnold IES Utilities, Inc.	South Texas Houston Lighting & Power Company
Millstone Northeast Nuclear Energy Company	McGuire Duke Power Company	Fermi Detroit Edison	Trojan Portland General Electric Company
Nine Mile Point Niagara Mohawk Power Corporation	North Anna Virginia Electric & Power Company	Kewaunee Wisconsin Public Service Corporation	WNP-2 Washington Public Power Supply System
Oyster Creek GPU Nuclear Corporation	Oconee Duke Power Company	LaSalle Commonwealth Edison Company	Waterford Entergy Operations, Inc.
Peach Bottom PECO Energy Company	Robinson Carolina Power & Light Company	Monticello Northern States Power Company	Wolf Creek Wolf Creek Nuclear Operating Company
Pilgrim Boston Edison Company	Sequoyah Tennessee Valley Authority	Palisades Consumers Power Company	
Salem/Hope Creek Public Service Electric & Gas Company	St. Lucie Florida Power & Light Company	Perry Cleveland Electric Illuminating Company	
Seabrook North Atlantic Energy	Summer South Carolina Electric & Gas Company	Point Beach Wisconsin Electric Power Company	
Susquehanna Pennsylvania Power & Light Company	Surry Virginia Electric & Power Company	Prairie Island Northern States Power Company	
Three Mile Island GPU Nuclear Corporation	Turkey Point Florida Power & Light Company	Quad Cities Commonwealth Edison Company	
Vermont Yankee Vermont Yankee	Vogtle Georgia Power Company	Zion Commonwealth Edison Company	
Yankee-Rowe Yankee Atomic Electric Company	Watts Bar Tennessee Valley Authority		

Table A-1
Reporting units and operating utilities by NRC region

results from the periodic testing conducted by some reporting units coincident with annual physicals or similar periodic events. Results reported in the NUMARC form's "other" category are not included in all sections of this report. Instructions accompanying the NUMARC form do not define what testing should be included in this category. Although some reporting units specified the exact nature of the "other" tests (e.g., return to work), most reporting units did not provide this information.

Worker Categories

Results were requested for three categories of workers in the NUMARC forms. The following categories were used:

Licensee employees

Licensee employees work for the utility and are covered by the FFD rule. This category includes both nuclear power plant workers and corporate or support staff. Utilities are permitted to report the results for corporate or support staff separately. Including corporate staff, there were an average of 1,062 licensee employees covered by the rule during 1994 at each reporting unit.

Long- and short-term contractors

The instructions accompanying the NUMARC form suggest that any contractor working for six months or less be considered short-term. Reporting units were not required by the rule to distinguish between long- and short-term contractors in the program performance reports, however. Reporting units that did not divide contractors into short- and long-term were instructed to report test results for all contractors under the short-term category. As a result, some long-term contractor test results may be reported under the short-term contractor category; however, no short-term contractor results should be recorded under the long-term category. Because reporting units varied in their definitions of long- and short-term contractors, any comparisons between rates of positive test results for the two groups should be interpreted carefully. Licensees reported an average of 65 long-term contractors and 418 short-term contractors covered by the rule during 1994 at each reporting unit.

Tables B-2 and B-3 in Appendix B present the number of tests, the number of positive tests, and average percent positive by each test category included in the NUMARC form for licensee employees and contractor employees (B-2) and for long- and short-term contractors (B-3) separately.

Drug Categories

The rule requires testing for six substances: alcohol, marijuana, cocaine, amphetamines, opiates, and

phencyclidine. Table A-2 shows the maximum screening levels and confirmation levels required by the rule; except for marijuana, these levels are consistent with those currently set by the Department of Health and Human Services (HHS).

Tables B-4 and B-5 in Appendix B present the number of positive test results and percent of all positives associated with each of these drug categories.

Reporting units are permitted to set cutoff levels lower than those specified in the NRC rule. Many reporting units chose to do so for at least one category of drug, as indicated by their program performance reports. Several reporting units using lower cutoff levels did not provide to the NRC an estimate of the number of positive test results that would have occurred under HHS guidelines in addition to reporting results for their own cutoff levels.

Additional Drugs

Some reporting units also tested for drugs other than the six substances required by the rule. Information on the number of reporting units testing for additional drugs is presented in Table B-6 by region. The table indicates that the additional drugs most often included in testing were barbiturates and benzodiazepines.

Regions

The NRC has four administrative regions, which are shown in Figure A-1. Prior to 1994 five regions existed, but in 1994 Region V was consolidated into Region IV. Tables B-7 and B-8 show the results of overall testing and testing for the six specific drugs by NRC region. Table B-9 shows results by worker category for each region.

Reporting Unit Contacts

Table A-3 provides a list of contact persons and phone numbers for each reporting unit by region. This

DRUG	SCREENING LEVEL	CONFIRMATION LEVEL
Marijuana	100 ng/ml	15 ng/ml
Cocaine	300 ng/ml	150 ng/ml
Opiates	300 ng/ml	300 ng/ml
Phencyclidine	25 ng/ml	25 ng/ml
Amphetamine	1,000 ng/ml	500 ng/ml
Alcohol	0.04%	0.04% BAC

Table A-2
Maximum screening and confirmation levels required by 10 CFR Part 26

information is provided to allow reporting units to contact others' sites to share information about lessons learned or other items that may be of interest in this report. The names of the contact persons listed in Table A-3 were obtained from the semiannual program performance reports submitted in the second six-month period of CY 1994. It is important to note that the persons listed in this table are not necessarily in a position to be responsible for the accuracy of the data submitted or the overall testing results that occurred at their site.

Figure A-1
Geographic location of NRC regions I-IV

REGION I	REGION II	REGION III	REGION IV
Beaver Valley John M. Maurer (412) 393-5238	Bellefonte Pamela C. Hamilton (615) 751-2024	Big Rock Point J.A. Smith (517) 788-7072	Arkansas Nuclear One Debbie Bogart (501) 858-3253
Calvert Cliffs F. Bruce Martenis (410) 234-6162	Browns Ferry Pamela C. Hamilton (615) 751-2024	Braidwood G.J. Toleski (708) 663-7544	Comanche Peak J.E. Brown (817) 897-8912
FitzPatrick Carol A. Soucy (315) 349-6412	Brunswick Fred Underwood (919) 546-6180	Byron G.J. Toleski (708) 663-7544	Cooper Deborah A. Dovel (402) 825-5698
Ginna Lynn I. Hauck (716) 771-2232	Catawba Lisa Stewart-White (803) 831-3881	Callaway Patricia Davis (314) 676-4300	Diablo Canyon William F. Ryan (805) 545-3329
Haddam Neck Gordon Hallberg (203) 665-3384	Crystal River Ronald S. Kline (813) 866-5277	Clinton Marsha Hiter (217) 935-8881	Fort Calhoun Darrell D. Roberts (402) 636-3039
Indian Point 1 & 2 J. Mark Drexel (914) 734-5418	Farley E.A. McDougal (205) 868-5707	Cook K.E. Burkett (616) 466-3339	Palo Verde Marry Maddix (602) 393-7465
Indian Point 3 Dale Plumer (914) 736-8195	Grand Gulf David Loyd (601) 437-2481	Davis Besse William O'Connor (419) 249-2366	River Bend William G. Durika (504) 381-4736
Limerick D.M. Sarley (215) 841-5703	Harris Fred Underwood (919) 546-6180	Dresden G.J. Toleski (708) 663-7544	San Onofre S.L. Blue (714) 368-2482
Maine Yankee Edward T. O'Neil (207) 798-4136	Hatch Dianne A. Coley (205) 877-7231	Duane Arnold Diane Engelhardt (319) 851-7280	South Texas J. Watt Hinson (512) 972-7296
Millstone Gordon R. Hollberg (203) 665-3384	McGuire Deana A. DeLoach (704) 875-5781	Fermi Joseph H. Korte (313) 586-1095	Trojan Richard A. Magnuson (503) 556-7221
Nine Mile Point Beth Menikheim (315) 349-4410	North Anna W.R. Runner, Jr. (804) 273-2735	Kewaunee Richard P. Pulec (414) 388-2560	WNP-2 D.W. Martin (509) 377-8628
Oyster Creek S.A. Babczak (201) 316-7011	Oconee Pauline D. Beatty (803) 885-3317	LaSalle G.J. Toleski (708) 663-7544	Waterford Joan O. Kieff (504) 739-6308
Peach Bottom D.M. Sarley (215) 841-5703	Robinson Fred Underwood (919) 546-6180	Monticello Craig S. Johnson (612) 330-7999	Wolf Creek Gary D. Burchart (316) 364-8831
Pilgrim Jacqueline E. Hess (617) 424-3478	Sequoyah Pamela C. Hamilton (615) 751-2024	Palisades J.A. Smith (517) 788-7072	
Salem/Hope Creek Ronald J. Mack (609) 339-5600	St. Lucie Arthur Cummings (407) 694-3573	Perry Joseph R. Slike (216) 280-5843	
Seabrook Bruce R. Seymour (603) 474-9521	Summer Harry O'Quinn (803) 345-4153	Point Beach B.K. Kopetsky (414) 755-6588	
Susquehanna Lisa M. Yupco (717) 542-3888	Surry W.R. Runner, Jr. (804) 273-2735	Prairie Island Craig S. Johnson (612) 330-7999	
Three Mile Island S.A. Babczak (201) 316-7011	Turkey Point Arthur Cummings (407) 694-3573	Quad Cities G.J. Toleski (708) 663-7544	
Vermont Yankee Greg Morgan (802) 258-5800	Vogtle Rush Bush (205) 868-5104	Zion G.J. Toleski (708) 663-7544	
Yankee-Rowe Peter R. Fowler (508) 779-6711	Watts Bar Pamela C. Hamilton (615) 751-2024		

Table A-3
Reporting unit contacts by region

APPENDIX B: SUPPORTING DATA

Table B-1**Test results by NUMARC form test category**

(January through December 1994)

TEST CATEGORY	FIRST SIX MONTHS	SECOND SIX MONTHS	YEAR
Pre-Access			
Number Tested	42,138	38,079	80,217
Number Positive	474	503	977
Percent Positive	1.12%	1.32%	1.22%
Random			
Number Tested	42,817	35,574	78,391
Number Positive	118	105	223
Percent Positive	0.28%	0.30%	0.28%
For-Cause			
<i>Observed Behavior</i>			
Number Tested	258	263	521
Number Positive	64	55	119
Percent Positive	24.81%	20.91%	22.84%
<i>Post-Accident</i>			
Number Tested	120	117	237
Number Positive	1	2	3
Percent Positive	0.83%	1.71%	1.27%
Follow-Up			
Number Tested	2,061	1,814	3,875
Number Positive	19	31	50
Percent Positive	0.92%	1.71%	1.29%
Other			
Number Tested	1,172	953	2,125
Number Positive	9	13	22
Percent Positive	0.77%	1.36%	1.04%
TOTAL*			
Number Tested	88,566	76,800	165,366
Number Positive	685	709	1,394
Percent Positive	0.77%	0.92%	0.84%

* These totals have been calculated using the category "Other"; however, this category has been purposely omitted from calculations for the totals and percentages throughout the body of this report.

Table B-2**Test results for licensee employees and contractor personnel**

(January through December 1994)

TEST CATEGORY	LICENSEE EMPLOYEES			CONTRACTORS (Long-Term/Short-Term)		
	First Six Months	Second Six Months	Year	First Six Months	Second Six Months	Year
Pre-Access						
Number Tested	5,550	4,704	10,254	36,588	33,375	69,963
Number Positive	27	22	49	447	481	928
Percent Positive	0.49%	0.47%	0.48%	1.22%	1.44%	1.33%
Random						
Number Tested	28,495	23,998	52,493	14,322	11,576	25,898
Number Positive	54	42	96	64	63	127
Percent Positive	0.19%	0.18%	0.18%	0.45%	0.54%	0.49%
For-Cause						
<i>Observed Behavior</i>						
Number Tested	96	103	199	162	160	322
Number Positive	23	16	39	41	39	80
Percent Positive	23.96%	15.53%	19.60%	25.31%	24.38%	24.84%
<i>Post-Accident</i>						
Number Tested	71	87	158	49	30	79
Number Positive	0	2	2	1	0	1
Percent Positive	0.00%	2.30%	1.27%	2.04%	0.00%	1.27%
Follow-Up						
Number Tested	1,408	1,338	2,746	653	476	1,129
Number Positive	11	22	33	8	9	17
Percent Positive	0.78%	1.64%	1.20%	1.23%	1.89%	1.51%
Other						
Number Tested	450	507	957	722	446	1,168
Number Positive	4	6	10	5	7	12
Percent Positive	0.89%	1.18%	1.04%	0.69%	1.57%	1.03%
TOTAL*						
Number Tested	36,070	30,737	66,807	52,496	46,063	98,559
Number Positive	119	110	229	566	599	1,165
Percent Positive	0.33%	0.36%	0.34%	1.08%	1.30%	1.18%

* These totals have been calculated using the category "Other"; however, this category has been purposely omitted from calculations for the totals and percentages throughout the body of this report.

Table B-3

Test results for long-term and short-term contractor personnel

(January through December 1994)

TEST CATEGORY	LONG-TERM CONTRACTORS			SHORT-TERM CONTRACTORS		
	First Six Months	Second Six Months	Year	First Six Months	Second Six Months	Year
Pre-Access						
Number Tested	632	764	1,396	35,956	32,611	68,567
Number Positive	4	8	12	443	473	916
Percent Positive	0.63%	1.05%	0.86%	1.23%	1.45%	1.34%
Random						
Number Tested	1,996	1,623	3,619	12,326	9,953	22,279
Number Positive	4	3	7	60	60	120
Percent Positive	0.20%	0.18%	0.19%	0.49%	0.60%	0.54%
For-Cause						
<i>Observed Behavior</i>						
Number Tested	7	7	14	155	153	308
Number Positive	2	3	5	39	36	75
Percent Positive	28.57%	42.86%	35.71%	25.16%	23.53%	24.35%
<i>Post-Accident</i>						
Number Tested	0	1	1	49	29	78
Number Positive	0	0	0	1	0	1
Percent Positive	0.00%	0.00%	0.00%	2.04%	0.00%	1.28%
Follow-Up						
Number Tested	47	38	85	606	438	1,044
Number Positive	0	1	1	8	8	16
Percent Positive	0.00%	2.63%	1.18%	1.32%	1.83%	1.53%
Other						
Number Tested	121	75	196	601	371	972
Number Positive	1	1	2	4	6	10
Percent Positive	0.83%	1.33%	1.02%	0.67%	1.62%	1.03%
TOTAL*						
Number Tested	2,803	2,508	5,311	49,693	43,555	93,248
Number Positive	11	16	27	555	583	1,138
Percent Positive	0.39%	0.64%	0.51%	1.12%	1.34%	1.22%

* These totals have been calculated using the category "Other"; however, this category has been purposely omitted from calculations for the totals and percentages throughout the body of this report.

Table B-4
Number of confirmed positives by substance
 (January through December 1994)

TYPE OF SUBSTANCE	FIRST SIX MONTHS		SECOND SIX MONTHS		TOTAL	
	Number	Percent	Number	Percent	Number	Percent
Marijuana	377	54.48%	362	51.13%	739	52.79%
Cocaine	169	24.42%	175	24.72%	344	24.57%
Opiates	6	0.87%	5	0.71%	11	0.79%
Amphetamines	22	3.18%	32	4.52%	54	3.86%
Phencyclidine	1	0.14%	0	0.00%	1	0.07%
Alcohol	117	16.91%	134	18.93%	251	17.93%
TOTAL*	692		708		1400	

Table B-5
Confirmed positive test results by substance for each worker category
 (January through December 1994)

TYPE OF SUBSTANCE	LICENSEE EMPLOYEES		LONG-TERM CONTRACTORS		SHORT-TERM CONTRACTORS	
	Number	Percent	Number	Percent	Number	Percent
Marijuana	90	39.13%	13	41.94%	637	55.88%
Cocaine	57	24.78%	11	35.48%	276	24.21%
Opiates	4	1.74%	1	3.23%	6	0.53%
Amphetamine	6	2.61%	1	3.23%	47	4.12%
Phencyclidine	0	0.00%	0	0.00%	1	0.09%
Alcohol	73	31.74%	5	16.13%	173	15.18%
TOTAL*	230		31		1140	

* The NUMARC form that utilities use to record the breakdown of confirmed positive tests for specific substances also includes a category for "Refusal to Test." Table B-4 and Table B-5 do not include refusal to test data; however, there was a total of 41 refusals to test during 1994. Thirty-five of these were attributed to short-term contractors and 6 were attributed to licensee employees.

Table B-6**Test results for additional drugs by NRC region**

(January through December 1994)

TYPE OF SUBSTANCE	REGION I	REGION II	REGION III	REGION IV	TOTAL
Barbiturates					
Number of Licensees Testing	2	2-4	1	6-7	11-14
Number of Tests Performed	3,961	6,003	805	19,896	30,665
Number of Positive Test Results	0	0	0	1	1
Percent Positive	0.00%	0.00%	0.00%	0.005%	0.003%
Benzodiazepines					
Number of Licensees Testing	2	2-4	1	6-7	11-14
Number of Tests Performed	3,961	6,003	805	19,896	30,665
Number of Positive Test Results	0	2	0	0	2
Percent Positive	0.00%	0.033%	0.00%	0.00%	0.007%
Propoxyphene					
Number of Licensees Testing	0	0	0	2	2
Number of Tests Performed	0	0	0	3,944	3,944
Number of Positive Test Results	0	0	0	0	0
Percent Positive	0.00%	0.00%	0.00%	0.00%	0.00%
Methadone					
Number of Licensees Testing	2	0	0	1-2	3-4
Number of Tests Performed	3,961	0	0	4,786	8,747
Number of Positive Test Results	0	0	0	0	0
Percent Positive	0.00%	0.00%	0.00%	0.00%	0.00%
Methaqualone					
Number of Licensees Testing	1	1-3	0	1-2	3-6
Number of Tests Performed	2,275	3,432	0	9,303	15,010
Number of Positive Test Results	0	0	0	0	0
Percent Positive	0.00%	0.00%	0.00%	0.00%	0.00%

Table B-7
Tests by region
 (January through December 1994)

TEST RESULTS	REGION I N=23*	REGION II N=23	REGION III N=22	REGION IV N=13
Total Tests	45,166	52,961	33,505	33,734
Total Positive Test Results [†]	361	436	293	304
Percent Positive	0.80%	0.82%	0.87%	0.90%

Table B-8
Test results by region and by substance
 (January through December 1994)

TYPE OF SUBSTANCE	REGION I N=23*		REGION II N=23		REGION III N=22		REGION IV N=13	
	No.	%	No.	%	No.	%	No.	%
Marijuana	176	48.35%	267	61.10%	140	47.14%	156	51.66%
Cocaine	110	30.22%	106	24.26%	73	24.58%	55	18.21%
Opiates	3	0.82%	5	1.14%	2	0.67%	1	0.33%
Amphetamine	1	0.27%	4	0.92%	4	1.35%	45	14.90%
Phencyclidine	1	0.27%	0	0.00%	0	0.00%	0	0.00%
Alcohol	73	20.05%	55	12.59%	78	26.26%	45	14.90%
TOTAL	364		437		297		302	

* N = number of reporting units.

† Total positive test results for specific substances are not expected to be the same.

Note: These numbers include testing results for "Other" tests.

Table B-9**Test results by region and by worker category**

(January through December 1994)

WORKER CATEGORY	REGION I N = 23*	REGION II N = 23	REGION III N = 22	REGION IV N = 13
Licensee Employees				
Number Tested	18,770	21,250	12,752	14,035
Number Positive	65	75	45	44
Percent Positive	0.35%	0.35%	0.35%	0.31%
Long-Term Contractors				
Number Tested	1,472	822	1,139	1,878
Number Positive	6	2	10	9
Percent Positive	0.41%	0.24%	0.88%	0.48%
Short-Term Contractors				
Number Tested	24,924	30,889	19,614	17,821
Number Positive	290	359	238	251
Percent Positive	1.16%	1.16%	1.21%	1.41%
TOTAL				
Number Tested	45,166	52,961	33,505	33,734
Number Positive	361	436	293	304
Percent Positive	0.80%	0.82%	0.87%	0.90%

* N = number of reporting units.

Note: These numbers include testing results for "Other" tests.

Table B-10**Test results by region and by test category**

(January through December 1994)

TEST CATEGORY	REGION I N = 23*	REGION II N = 23	REGION III N = 22	REGION IV N = 13
Pre-Access				
Number Tested	21,554	25,483	17,075	16,105
Number Positive	236	327	189	225
Percent Positive	1.09%	1.28%	1.11%	1.40%
Random				
Number Tested	21,623	26,055	14,611	16,102
Number Positive	80	71	34	38
Percent Positive	0.37%	0.27%	0.23%	0.24%
For-Cause				
Number Tested	254	135	255	114
Number Positive	29	21	41	31
Percent Positive	11.42%	15.56%	16.08%	27.19%
Follow-Up				
Number Tested	1,178	907	870	920
Number Positive	13	14	15	8
Percent Positive	1.10%	1.54%	1.72%	0.87%
Other				
Number Tested	557	381	694	493
Number Positive	3	3	14	2
Percent Positive	0.54%	0.79%	2.02%	0.41%
TOTAL[†]				
Number Tested	45,166	52,961	33,505	33,734
Number Positive	361	436	293	304
Percent Positive	0.80%	0.82%	0.87%	0.90%

* N = number of reporting units.

[†] These totals have been calculated using the category "Other"; however, this category has been purposely omitted from calculations for the totals and percentages throughout the body of this report.

Table B-11
Positive test rates for badged workers* at 100% and 60% random test rate

	100% Random Test Rate [†]	60% Random Test Rate [‡]
1990	0.54%	0.66%
1991	0.47%	0.55%
1992	0.44%	0.53%
1993	0.37%	0.45%
1994	--	0.48%

* Includes random, for-cause, and follow-up testing results.

† The 100% random test rate is the estimated rate based on the NRC's minimum random test rate requirement. Actual random test rates for 1990 through 1993 may have differed slightly.

‡ Under the assumption that 1990-1993 reporting units had performed random testing at a 100 percent rate, the number of random tests for 1990 through 1993 were reduced to 60 percent of previous levels to approximate a 60 percent random test rate. The number of random test positives were computed by applying the original random positive test rate to the new random test total. Because several licensees continued testing of some populations at rates higher than the required minimum 50% rate, the average random test rate across all populations and all licensees was approximately 60%. The recomputed number of random tests and test positives were added to the totals for the for-cause and follow-up test categories, and the estimated positive test rates for badged workers were computed for each

APPENDIX C: COMPILATION OF LESSONS LEARNED

APPENDIX C: COMPILATION OF LESSONS LEARNED

In addition to providing numeric testing results in their semiannual program performance reports, a number of reporting units included information on lessons learned and program initiatives. This appendix presents this information as submitted by the licensees. This information is intended to serve as a reference to other utilities who wish to improve their program or avoid common difficulties.

Of the 48 utilities with reporting units during 1994, 25 provided lessons learned.

Arizona Public Service Company

APS is continuing to improve training programs related to FFD and EAP. During 1994, initial and requalification training for Continual Behavior Observation (CBO) is presented by the EAP Counselor and FFD personnel. A video tape has been developed to assist attendees in identifying aberrant behaviors. A segment relating to workplace violence and threats of violence has been added to the CBO training. In addition, APS EAP personnel are presenting workshops relating specifically to workplace violence. APS is continuing its effort to strengthen employee awareness, not only in behaviors relating to drugs and alcohol, but also in all areas which may affect an individual's ability to perform in a reliable and trustworthy manner.

During this reporting period, FFD began reporting administratively to the Health Services Manager. The administrative move will enhance FFD's ability to further communicate the Drug and Alcohol Program through the APS Wellness Program.

Screening and confirmation cut-off levels for amphetamines were revised during the latter part of this reporting period. Screening cut-off levels were revised from a 300 ng/ml to 1000 ng/ml. Confirmation levels were revised from 300 ng/ml to 500 ng/ml.

FFD began utilizing the AUTO-ACAD system to ensure accuracy of the Random Pool in July. Initially, FFD utilized the Security AUTO-ACAD system concurrently with the Security Access Control-Badging database until all administrative concerns were addressed. In September, FFD began processing random selections utilizing the AUTO-ACAD system solely. The AUTO-ACAD system has proven to be accurate, and no individuals have dropped out of the random pool.

Boston Edison Company

Over the six months ending June 30, eleven specimens were found on integrity check to have creatinines less than 200 mgms per liter. All of the individuals were called for repeat specimen collection in an unannounced fashion. Eight

of the repeats were negative for drugs and had normal integrity checks. Three specimens again had low creatinines, although negative for drugs. These individuals were again called in an unannounced fashion, and another *observed* sample was obtained; all of these were negative for drugs.

Over the six months ending December 31, 36 specimens were found on integrity check to have creatinines less than 200 mgms per liter. All of the individuals were called for repeat specimen collection in an unannounced fashion. Twenty-eight (28) of the repeats were negative for drugs and had normal integrity checks. Eight (8) specimens again had low creatinines, although negative for drugs. These individuals were again called in an unannounced fashion, and another *observed* sample was obtained; all of these were negative for drugs.

Cleveland Electric Illumination

A redesigned, more informative pamphlet regarding the Company's Employee Assistance Program was distributed to employees. This information was also communicated in Company newsletters.

Although not required by 10 CFR Part 26 requirements, a voluntary notification was made to NRC Region III personnel on November 19, concerning an FFD testing issue. Results of the investigation into this matter indicated that technicians had failed to follow FFD procedures during the sample collection process. Extensive corrective actions have been taken to ensure all future testing is performed in accordance with FFD procedures.

Commonwealth Edison

On February 15, a contractor was granted unescorted access to the protected area without the necessary negative drug test results being entered into the security computer. Investigation by the station revealed the access control supervisor misread the computer screen that details access and FFD data. The supervisor was counseled on the importance of attention to detail when screening for final verification of access requirements. It was determined that the individual who was granted unescorted access was receiving an orientation that included a tour of the outage work areas. He did not perform any work during this time. The individual provided a negative drug screen on February 17.

Commonwealth Edison does not invoke temporary suspensions or other administrative actions for on-site presumptive positives for marijuana and cocaine. However, the confirmation rate for these two substances remains greater than 90 percent.

Commonwealth Edison requires a drug and alcohol test to be conducted when the odor of alcohol is confirmed by a supervisor. Access is suspended pending the results of the BAC and urinalysis test.

Consumers Power Company

A meeting was held with the Company's appointed MROs, FFD administration staff, and our NIDA Laboratory toxicology staff. Issues discussed included actions to take when test results indicate the use of opiates, amphetamines, ethanol, and adulterants; when to recollect upon notification of low specific gravity/low creatinine levels; and notice of proposed changes from the Department of Health and Human Services. The meeting was effective enough to result in a unanimous agreement to meet on an annual basis.

The annual FFD internal audit identified a recurring problem with the administration of alcohol testing devices. The problem is isolated to those individuals trained in the use of the devices for emergency purposes only. Consequently, the limited use of the devices promotes a higher level of error. Increased hands-on training has been established for the infrequent test administrators in order to eliminate the problem.

Detroit Edison

A total of two (2) Deviation Event Reports (DER) were written identifying deficiencies in the Fitness for Duty program this reporting period.

DER 94-0335 documents an individual in the follow-up testing program was not tested within the three month test interval. Individual was tested upon discovery. Personnel error in filing was identified as the root cause.

DER 94-0607 documents that certain newly appointed off site supervisors did not receive Continual Behavior Observation (CBOP) training prior to their new appointment. In all cases the supervisors did receive CBOP training within the required 180 days of their new assignment. The deficiency noted was due to a site-specific procedure. The root cause was poor communication between Fermi site organizations and off site organizations.

Entergy Operations

The training department is continuing work on the implementation of a computer-based training program for Fitness for Duty. Fitness for Duty is working with the Information Services Department to place on the site's computer system a Fitness for Duty Information Icon. Employee Assistance Program information and other Fitness for Duty information, such as Medication Report

Forms, would be available to site personnel under this icon.

Management is looking at a new computer software program "Heidi" that will enhance the random drug testing program. Heidi is a drug program manager that will allow Entergy to use one database at all four sites instead of three different systems that we currently use. Heidi is also a data tracking system that will give the sites the ability to compile information, do reports, and track statistics more easily. No decision has yet been made.

Arkansas Nuclear One

Fitness for Duty initiated a Condition Report on April 27 upon the discovery of three contract individuals being granted unescorted access for two days who were not eligible for random testing. During this period random testing was not performed. Arkansas Nuclear One conducted a work quality review of the three contractors during the time they were not eligible for random testing. The work review of all three individuals failed to reveal any abnormalities or concerns. One of the three individuals was a painter working under direct supervision of a foreman. The other two individuals worked for Combustion Engineering performing administrative activities in conjunction with a Non-Q Feedwater Condensate System study. As a result of the Condition Report, Access Authorization implemented corrective action to ensure compliance with 10 CFR 26 when the Access Authorization computer system was not functional.

On September 16, a review of FFD historical records revealed that an individual who had been placed on a follow-up testing program in October, 1990, had not been tested as recommended by the Employee Assistance Program (EAP) evaluator. To prevent recurrence of this condition, a checklist item was added to the re-entry work agreement to prompt FFD personnel to place the individual's name in the follow-up testing log. This was identified as a non-cited violation in Inspection Report 50-313/94-26; 50-368/94-26.

On November 10, a review of Access Authorization historical records revealed that an individual was granted initial unescorted access to the protected area with an expired drug test. 10 CFR 26.24 *Chemical and Alcohol Testing*, requires that an individual must be tested within 60 days of the initial granting of unescorted access. This individual was tested on October 30, 1990, and was granted unescorted access to the protected area on January 9, 1991, which was greater than the 60-day limit. During 1992 access authorization program controls were enhanced to require verification of the drug testing date prior to the granting of unescorted access to the protected area. Since completion of the program enhancement in 1992, no additional examples of this condition have been identified.

Due to the number of Entergy and contractor employees requiring FFD Supervisory Training, it was becoming difficult to ensure that all eligible employees attend training within the required time frames. In order to correct this, beginning on November 21, individuals being inprocessed began receiving FFD Supervisory Training. All other personnel granted unescorted access to the protected area, regardless of job function, that have not attended FFD Supervisory Training will receive this training the next time they attend requalification training. (See letter to NRC dated January 4, 1995, 0CAN019502.)

Waterford Generating Station

On June 14, a discrepancy was noticed in the reporting of a test result for a blind performance specimen sent to the confirmatory laboratory. An investigation was performed and documented in Waterford 3 letter W3F1-94-0128 to the NRC dated August 9.

Weaknesses were identified involving the calibration of an instrument used for testing breath alcohol concentration levels and the use of reagents for urine testing that had expired. These incidents were due to human error and actions were taken to discipline those involved. The attention to detail required in this program was stressed.

Florida Power Corporation

On October 13, notification was received from SmithKline Beecham Clinical Laboratories, the contracted HHS laboratory, confirming an unsatisfactory performance testing incident. The incident involved an expected fortified cocaine blind sample that was reported as "negative". After an investigation by the toxicology laboratory management, it was found that human error was the likely cause. Corrective action involving retraining and additional quality control steps were implemented.

Georgia Power

A change in the confirming laboratory from SmithKline Beecham Laboratory to PharmChem Laboratories, Inc. in November, 1993, resulted in the licensee experiencing three start-up programmatic errors which were corrected in April. These were: a failure of PharmChem to report the monthly statistical reports to the licensee for the first four months of implementation; a failure to consistently report low urine creatinine levels on samples submitted to the lab by the licensee; and, a failure to consistently perform and report a 6 MAM on samples containing morphine at a confirmatory rate. In all cases the problems were identified by the licensee and corrected by the confirming laboratory. There were not violations or compromises in the reliability of the FFD Program.

During the routine quality control check of the Fitness for Duty random pool in March, twenty-two individuals were identified as being absent from the random pool. Immediate corrective action was implemented to either inactive badges or re-test those that were available for testing. All tests performed were negative. The causative factor of the error was identified as a coding error in the FFD pool program. This problem was immediately corrected and the frequency of quality checks was increased. Effective July 15, Plant Vogtle changed the data source of the pool to a system which incorporates the lessons learned from this issue.

Due to the increase in licensee employee-confirmed positive test results requiring notification to the NRC during the last reporting period, several changes were instituted for Plant Hatch Operations Department personnel. An additional Supplemental Random Testing Pool (SRTP), which requires the personnel in this department to be tested at a rate of 100 percent yearly of the total population, was instituted effective September 9, 1994. A revision of the Continual Behavior Observation Program (CBOP) content was also made which includes a special aberrant behavior training program for supervisors of licensed operators and operations department supervisors at Plant Hatch. For this reporting period, there have been no positives within the SRTP population.

GPU Nuclear Corporation

An incorrect interpretation of 10 CFR 26 occurred which resulted in non-compliance with the Fitness for Duty procedure. Procedure 1000-ADM-2002.06 did not discriminate between the requirements for Fitness for Duty determinations by breath analysis for call-outs and the requirements for drug and alcohol testing. This lack of clarity resulted in personnel not complying with the procedure, e.g., personnel trained to perform FFD determinations following call-outs had not received background investigations every three years.

The procedure was revised (7/1/94) to clearly distinguish between FFD determinations for call-outs where there is no requirement for a background check and psychological evaluation. The history page of the document reflects the basis for the interpretation to prevent future misinterpretations.

10 CFR 26, Appendix A, section 2.9 states in part, "Before the Medical Review Officer (MRO) verifies a confirmed positive result and the licensee takes action for opiates, he or she shall determine that there is clinical evidence in addition to the urine test of unauthorized use of opium, opiate, or opium derivative (e.g., morphine/codeine)."

Contrary to the above, on July 21, a confirmed positive HHS-certified laboratory test was verified as positive by the MRO after a physical examination was performed that did not reveal any clinical evidence to justify the positive determination. This incident occurred due to the MRO's misunderstanding of procedural requirements.

The individual whose access was removed on July 21 was reinstated on July 22 when the GPU Nuclear Medical Director (also an MRO) discovered the mistake and informed the declaring MRO who immediately reversed the test result to negative.

To prevent recurrence, the MRO was required to read all applicable procedures and attest that he did not have any questions. Further, he attended an AAMRO Certification course in December.

Houston Lighting & Power Company

In February an appeal was made on a gas chromatography (GC) blood test for alcohol. When information was requested from the laboratory, it was discovered that the blood specimen had been inadvertently shipped to another laboratory location of the company that was not approved by the site Nuclear Assurance Department. As a result, Nuclear Assurance conducted an audit of the secondary location. After the audit it was determined that the test result was valid. This incident and audit are detailed under Audit No. 94-035 (VA) dated March 24, 1994.

In March, as a self assessment, a 100 percent review was conducted of the random list to determine if all individuals were available for testing. It was discovered that four (4) individuals were not available. The reason the individuals were not in the random testing pool was that their data files were incorrectly entered into the computer system that controls the random list. As corrective action the individuals were immediately contacted for random testing. For those who were not available, their badge was tagged as having Infrequent Access and will be tested the next time that their badge is used. Awareness training was provided to the individuals responsible for the data entry. In April a second 100 percent review was conducted to determine if the corrective action was adequate and an additional individual was discovered not to be available for random testing. Additional corrective action was implemented. A daily report is now automatically generated of all individuals added to the data files. This report is reviewed daily to determine that data entry has been done correctly.

Illinois Power Company

We have experienced a very low number of low specific gravity and low creatinine test results requiring

repeat tests. We attribute this to the fact that we escort our randoms to the testing site without advance notice, allowing us to monitor the amount of fluid intake prior to testing.

IES Utilities, Inc.

Late in the reporting period, IES Utilities, Inc. instituted the use of digital electronic refractometer for use by the collection site personnel to measure specific gravity levels of specimens. This provides more precise, faster readings than the formerly used "dip sticks." IES Utilities, Inc. also continues to use off site laboratory testing for creatinine as a control against dilution of specimens by intentional hydration, addition, or substitution of the specimen.

Maine Yankee Atomic Power Company

The following list is a synopsis of initiatives by Maine Yankee:

- Annual audit completed by independent auditors which included an FFD technical specialist from another utility. As a result of this audit, an enhancement to the Special Terms and Conditions (ST&C) was made along with increased security being added to the collection facility.
- Reviewed, revised, and issued new FFD testing guidelines package for Supervisors.
- An enhancement to the collection site process was done with the addition of a collection site box for Airborne pickup.

New York Power Authority

The Authority identified that blind test specimens for the prior reporting period (July – December 1993) were less than the ten percent per quarter required by 10 CFR 26, Subpart A, Section 2.8(e)(2). The NRC was notified of this incident in a letter dated March 14, 1994. This error is attributed to personnel and computer error. To prevent this from recurring, the computer program was changed and the individual involved was counseled on the use of the computer program and the importance of the blind testing program.

A false negative result was identified in a blind test sample. In accordance with Appendix A to 10 CFR 26, Section 2.8(e)(4), an investigation was conducted and a report submitted to the NRC. The Authority immediately discontinued using Roche Biomedical Laboratories, Inc. for specimen analysis after receiving the unsatisfactory blind test specimen report.

An audit of the New York Power Authority's laboratory raised concerns regarding delays in reporting test results to the Medical Review Officer for 6-monoacetylmorphine (6-MAM). The laboratory revised their test procedure so that the results of tests for 6-MAM will not be delayed unnecessarily in the future.

Immediately following the collection of a random test sample on November 21, a New York Power Authority employee admitted to using marijuana two days prior to the sample collection date. Although the results of the employee's test were negative, the sample was reported as being atypical of normal urine due to a low creatinine level. Based on the confession by the employee, the Authority took action that was consistent with the action taken as the result of a first-time positive test result.

Niagara Mohawk Power Corporation

The Training Department has enhanced NMPC's present behavioral Observation Training (BOT) for Supervisors. A Self-Study Package has been implemented to accommodate Supervisors' availability for training on their BOT responsibilities required by the FFD Program. This self-study package allows supervisors to study BOT and FFD responsibilities at their convenience. Attached to this package is a form for supervisors to list alternate supervisors, facilitating our ability to monitor everyone performing behavioral observation responsibilities. At the conclusion of the package, supervisors will understand the identification, intervention, and referral process for personnel who are not fit to perform their job responsibilities.

To ensure compliance with 10 CFR 26, NMPC has cross-referenced all of our FFD Procedures to the requirements of 10 CFR 26.

FFD representatives were fortunate to attend a Region 1 bi-annual meeting. The meetings are a good opportunity to explore industry practices and to share problems and experiences. As a result we hope to avoid those problems experienced by other plants.

Since February we have reduced the rate of random testing to 50 percent, pursuant to amended NRC regulations governing FFD Programs (10 CFR 26). This has resulted in significant cost reductions and increased efficiency, while maintaining a deterrent against drug use.

A software modification was completed to eliminate duplicate entries into two different databases. One database was used for access verification and a second database was used solely for FFD. This modification will improve efficiency during our next two outages.

We were fortunate to have our Medical Review Officer attend two training conferences during the second half of

this reporting period. The conferences addressed issues such as pharmacology, MRO functions, compliance with ADA, and alternative testing methods.

The new DOT regulations required implementation by January 1995. Some of our employees are covered under both the DOT and NRC programs. As a result, there are now two different programs to monitor.

North Atlantic Energy Service Corporation

Added a note to clarify that excessive drinking (prior to a five hour, pre-work abstinence) may still result in a BAC at or above .04 percent upon arrival at work.

In response to a self-inspection (following a violation at another nuclear facility), reorganized a number of office forms into a more formalized structure.

Reviewed and recommended changes for computer-based training program after scrutinizing all FFD sections.

Northeast Utilities Service Company

An informational letter was submitted to the NRC on December 21, 1994, regarding adsorption of a marijuana metabolite by the caps of urine sample containers provided to Northeast Utilities by our primary testing laboratory. As was documented, in NRC letter dated January 18, 1995, this matter is under investigation by the Substance Abuse and Mental Health Administration.

PECO Energy Company

During the period, a performance-based audit of the FFD program was completed to assess the program's implementation. The assessment determined that PECO Energy is effectively implementing the FFD program in compliance with 10 CFR Part 26. Noted as significant strengths were:

- A highly competent FFD staff
- A well-run and responsive Laboratory (DrugScan, Inc.)
- Self-assessment activities

Weaknesses identified were:

- Documentation deficiencies regarding the medical decision to restore unescorted access to individuals previously denied
- Laboratory process for validating the screening controls

Corrective actions have been initiated to resolve the deficiencies.

On September 1, PECO Energy reduced the immunoassay screening cut-off level for marijuana to 50 ng/ml. Since the reduced cut-off level was implemented, there have been twelve confirmed positive test results for marijuana at PBAPS. It is estimated that only four positive tests for marijuana would have been identified using the 100 ng/ml cut-off level.

Attempted Substitution

On July 11, an employee subject to follow-up testing provided a specimen which had a temperature of 104.2 degrees F. When requested to provide another specimen under direct observation, the employee asked the observer to provide a sample as he "had done something over the weekend." The observer refused and reported the incident. A specimen was collected under direct observation and both specimens were sent for testing. The first specimen was reported as negative. The specimen collected under direct observation was reported as positive for marijuana. During the course of the investigation the individual admitted to substituting a specimen which he had obtained from his son. The employee was discharged.

As a result of this incident, the following program enhancements are planned:

- Provide a collection site within the protected area at each site. This has both business and FFD implications. From a business perspective, it will mean less time away from the job, and from the FFD aspect, it may diminish an individual's ability/options to attempt subversion of the testing.
- Reduce/minimize the notification time. This also should help diminish an individual's ability/options to attempt subversion of the testing.
- Enhance Supervisory FFD training to further emphasize recognition of persons who may attempt to subvert testing. This enhanced training will provide supervisors with additional information around behaviors and other signs/symptoms which may indicate a person is preparing to attempt subversion of an FFD test.
- Periodically reinforce with collection site personnel the need to be constantly on the alert for attempted subversion efforts. This was done immediately following the incident and should be done routinely in order to keep detection skills as sharp as possible.

Public Service Gas & Electric Company of New Jersey

Trends: 1990 to Present

- Opiates: No MRO positives since the Fitness for Duty rule went into effect

- Fewer challenges to the accuracy and validity of HHS laboratory test results
- Number of confirmed positives reduced by approximately 50 percent as compared to same time periods during previous years

Comments:

PSE&G has enthusiastically adopted the 50 percent random testing rate reduction. From a cost benefit standpoint, pre-access testing has proven to be more effective while the 100 percent random testing rate has consistently provided "low yield" (below 1%) positives.

Recommendations:

- Eliminate the second breath alcohol test when the first test is negative.
 - After greater than 70,000 breath tests, equipment sensitivity of 100 percent has been demonstrated (second breath test has never been positive after the first breath test was negative). Cost savings over months to years would be considerable.
 - FHWA designed and is implementing a program with only one breath alcohol screen.
- Continue to permit/encourage on-site pre-screening.
- Consider moving toward "interchangeability" and mutual acceptance among regulated Fitness for Duty programs (NRC, DOT, RSPA).

Rochester Gas & Electric

The NRC conducted a Safeguards Inspection, 50-244/94-13 (5/9-13/94), that included a review of our annual FFD audit report for 1993. From that audit there was a finding that identified errors in the random selection database list of names. It appeared that there was an administrative weakness involving the manner in which the selection pools were updated. Since our meeting with the inspector, this item has been resolved through the use of a computer program created to match the currently badged employees and contractors located in the plant's security computer system with the FFD database. The program compares files and shows any discrepancies. The procedure has proven to be an effective means to keep a current database of individuals with unescorted site access. This matter will be reviewed for final disposition by the NRC (IFI 50-244/94-13-01).

South Carolina Electric and Gas

There were seven direct observation collections performed during the January through June reporting period. All of these were conducted at the request of the

Medical Review Officer due to abnormal specific gravity and creatinine levels. The test results for all seven specimens were negative.

There were no additional confirmed positive results received for benzodiazepines or barbiturates. The lower cut-off level for marijuana resulted in three additional confirmed positive tests.

SCE&G elected to delete methaqualone from its drug panel in 1994. No positive results for methaqualone had been received (other than blind performance tests) since the inception of the V.C. Summer Nuclear Station Fitness for Duty Program in 1990. Laboratory officials indicated that methaqualone was no longer a problem as a drug of abuse, so SCE&G believed it was appropriate to discontinue testing.

In addition to lowering our annual random testing rate from 100 percent to 50 percent of the average annual population in accordance with the revision to 10 CFR 26.24, SCE&G changed the parameters on periodic testing. Previously, any individual eligible for random testing who was not selected within a fifteen-month period, was tested before 18 months had elapsed. Now, individuals not selected randomly within 4½ years will be subject to periodic testing before five years elapses.

One pre-access test involving a contractor was suspected of being substituted/adulterated. This individual was retested under direct observation and tested confirmed positive.

There were seventeen direct observation collections performed during the July through December reporting period. Thirteen of these were conducted at the request of the MRO due to abnormal specific gravity and creatinine levels. The test results for all thirteen specimens were negative. The remaining four direct observations were collected due to low temperature readings of urine specimens on pre-access test and unbadged/other test. Only one test confirmed positive for drugs in which the individual was denied unescorted access authorization.

Virginia Electric and Power Company

Incorporated Fitness for Duty Contractor-Vendor Program Requirements with the Access Authorization Program into one Nuclear Access Requirements Document which is provided to contractors/vendors who require access to our sites.

Implemented a system where contractors/vendors are assigned a Continual Behavioral Observer prior to the granting of access.

A bar-coding system was implemented. This system reads from our Nuclear Human Resource System which maintains data on nuclear workers. The introduction of

bar-coding has eliminated operator error in addition to reducing data-entry time in the onsite testing facility.

Washington Public Power Supply System

Review of the random data base in September showed that on September 9, one individual who had emergency plan functions which required him to report to the Emergency Operations Facility (EOF) was removed from the FFD random test pool. This individual had unescorted access terminated, but maintained emergency response requirements. The individual was deleted from the FFD pool when FFD inadvertently identified the individual as "inactive" in the Emergency Response Organization. Upon discovery of this event, the individual was immediately placed back into the FFD random pool. A Problem Evaluation Request (PER) was submitted. A meeting was conducted with the FFD staff to discuss this event and the FFD requirements for emergency responders. A meeting was conducted also with Emergency Planning to discuss this event and the FFD requirements for emergency responders.

The following are changes that have been made to the Fitness for Duty Program in an effort to improve the overall effectiveness of the program.

- A new FFD/Continued Behavioral Observation Program (CBOP) lesson plan was developed to strengthen the CBOP training. In the past the main focus of FFD training was on substance abuse. However, the equally important part of the FFD program, CBOP, needed to be enhanced. CBOP techniques for detecting degrading performance, impairment, or significant changes in behavior now has added emphasis. This lesson plan has been implemented in GET Escort, Awareness, and Supervisor training.
- FFD created a video library available to employees. The videos are designed for use in a variety of settings and may be checked out for meetings, personal, home, or community use. These videos are considered a prevention resource and provide a focus on our goal of achieving a healthy and drug-free workforce.
- The contract for drug collection technicians was eliminated saving the FFD Program a considerable amount in its operating costs. The contract elimination allowed FFD to staff the collection technician position with Supply System personnel and cross-train two current FFD administrative staff members as collection technicians. This enhances the program by allowing increased flexibility of staffing hours and availability for collections while controlling cost.

Wolf Creek Nuclear Operating Corporation

The Continuous Observation Program was improved to detect personnel away from the observation program for more than 30 days through an electronic system. Personnel away from observation for more than 30 days will be denied access until they have tested negative for drugs and alcohol, and completed a questionnaire regarding their activities during their absence.

APPENDIX D: ENLARGED FIGURES

Figure 1
Comparison of results during 1994 for each test category

Figure 2
Percent of positive tests during 1994 for each test category

Figure 3
Distribution of tests conducted during 1994 for each worker category

Figure 4
Comparison of positive test rates for each worker category during 1994

Figure 5
Confirmed positive test results during 1994 for each substance category
(n=1400)

Figure 6
Distribution of positive test results for each substance by worker category

Figure 7
Distribution of positive test results for each worker category by substance

Figure 8
Confirmed positive test rates for marijuana by screen level

Figure 9
Random positive test rates by each NRC region during 1994

Figure 10
Confirmed positive test rates for each worker
category by NRC region during 1994

Figure 11
Distribution of tests conducted for each worker category by NRC region

Figure 12
Distribution of positive test results by substance for each NRC region during 1994

Figure 13
Comparison of tests conducted for each test category for 1990 through 1994

Figure 14
Comparison of actual and adjusted overall positive test rates for 1990 through 1994

Figure 15
Comparison of confirmed positive test rates for
each test category

Figure 16
Comparison of random positive test rates by worker category

Figure 17

Distribution of positive test results for each substance for 1990 through 1994

Figure 18
Comparison of random positive test rates for
each NRC region for 1991 through 1994

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less) This report summarizes data from semiannual reports on fitness-for-duty program performance submitted to the NRC by utilities for two reporting periods: Jan. 1 through June 30, 1994, and July 1 through Dec. 31, 1994. In 1994, licensees reported that they had conducted 163,247 tests for the presence of illegal drugs and alcohol. Of these tests, 1,372 (.84%) were confirmed positive. Positive test results varied by category of test and category of worker. The majority of positive test results (977) were obtained through pre-access testing. Of tests conducted on workers having access to the protected area, 233 were positive from random testing and 122 were positive from for-cause testing. Followup testing of workers who had previously tested positive resulted in 50 positive tests. For-cause testing resulted in the highest percentage of positive tests; about 16% of for-cause tests were positive. In comparison, 1.22% of pre-access tests and .28% of random tests were positive. Positive test rates also varied by category of worker. When all types of tests are combined (pre-access, random, for-cause, and followup), short-term contractor personnel had the highest positive test rate at 1.22%. Licensee employees and long-term contractors had lower combined positive test rates (.33% and .49% respectively). Of the substances tested, marijuana was responsible for the highest percentage of positive test results (52.79%), followed by cocaine (24.57%) and alcohol (17.93%).

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