

POLICY ISSUE INFORMATION

July 24, 2001

SECY-01-0135

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: ANNUAL UPDATE AND ANALYSIS OF DEMOGRAPHIC DATA ON
RESIDENT INSPECTORS

PURPOSE:

As requested by the Commission in a staff requirements memorandum (SRM) dated April 8, 1998, this paper provides the second update and analysis of the demographic data on resident inspectors (RI). This includes both resident and senior resident inspector demographics. The purpose of this analysis is to determine whether the Agency's actions associated with the RI program have resulted in a stable or increasing resident experience base and to identify any necessary actions. This paper also serves to fulfill direction from the Commission in an SRM dated February 2, 1999, that the staff provide assessment regarding the effect of the RI compensation plan on attrition.

SUMMARY:

The Agency has taken numerous initiatives over the last several years to stabilize and improve the RI program. The staff's concern with the increased turnovers and decreasing experience level of the resident inspectors was first expressed in SECY-97-285, "Discussion of Resident Inspector Demographics and the Balance Between Expertise and Objectivity," dated December 10, 1997. SECY-97-285 concluded that the average experience of resident inspection staff was less than in the past and that the attrition rates in the RI program increased during the years 1994 through 1997. Since then, the staff has conducted additional reviews of RI demographics and recommended improvements as discussed in the following Commission papers:

Contact:
James A. Isom, NRR
301-415-1109

- SECY-98-152, “Summary of Issues and Recommended Improvements to the Resident Inspector Program”
- SECY-98-183, “Submittal and Analysis of Revised Resident Inspector Demographics Data”
- SECY-98-281, “Resident Inspector Compensation Policy”
- SECY-99-275, “Annual Update and Analysis of Demographics Data on Resident Inspectors”

Some of the more significant changes made to the RI program as a result of these reviews were the development of guidance to clarify expectations for the RI program and the extension of the relocation policy from 5 to 7 years in 1998; and the provision of full locality pay to the resident inspectors in 2000.

The staff presented its first annual update and analysis of resident inspector demographic data in SECY-99-275. The 1999 demographic data indicated an overall improving stability and increased experience levels for both RIs and senior resident inspectors (SRI) since demographic data were reported in SECY-97-285. The 1999 data found that the overall nuclear experience levels for both the SRIs and RIs were about the same at 14 and 13 years, respectively, with the SRIs having about twice as much NRC specific experience as the RIs.

The 2000 demographics show a sustained increasing trend overall in the RI and SRI statistics since 1999. Collectively, the nuclear experience levels for the SRIs and RIs are slightly higher at 15 and 13 years respectively, with the SRIs still having about twice as much NRC experience as the RIs.

DISCUSSION:

Resident Inspector Demographic Data

The RI demographic data includes the median and average time worked at NRC, time spent as a RI, time spent as a qualified RI, time spent at a current reactor site, and relevant non-NRC experience. The data are sorted by region and also combined to show all regions (see Attachment). The data are further broken into RI and SRI categories. The months used for making the statistical comparison are April 1994, November 1997, September 1999, and December 2000. The data are summarized in Tables 1 and 2 below.

“NRC time” is total number of years the individual spent as an NRC employee; “total resident time” is total number of years the individual spent in the RI program, and “current site time” is total number of years spent as a resident at the current site. “Qualified total resident time” is the time spent by the individual after completing the resident/operations inspector qualification requirements of NRC Inspection Manual Chapter (IMC) 1245, “Inspector Qualification Program for the Office of Nuclear Reactor Regulation Inspection Program.” This calculation does not include the period of time that a RI receives an “interim qualification,” which new RIs typically receive to conduct independent inspections in specified areas before having completed all requirements in the qualification journal.

“Relevant non-NRC experience” is nuclear power experience acquired before joining the NRC. Examples of relevant non-NRC experience are operation, engineering, maintenance, or construction experience with commercial nuclear power plants, Naval shipyards, Department of Energy facilities, and/or the Navy nuclear power program.

Table 1 - Summary of RI Experience Levels (in years)

		<u>Resident Inspectors</u>			
		<u>April</u> <u>1994</u>	<u>November</u> <u>1997</u>	<u>September</u> <u>1999</u>	<u>December</u> <u>2000</u>
NRC time	average	5.55	5.08	5.70	6.26
	median	4.79	6.01	5.11	4.83
Total resident time	average	3.29	2.66	3.28	3.84
	median	2.64	1.51	2.43	3.41
Qualified total resident time	average	2.38	1.76	2.53	3.15
	median	1.68	0.61	1.61	2.54
Current site time	average	1.86	1.35	2.23	2.54
	median	1.57	1.01	2.16	2.68
Relevant non-NRC experience	average	5.83	6.60	7.74	8.07
	median	5.33	6.17	7.50	7.83

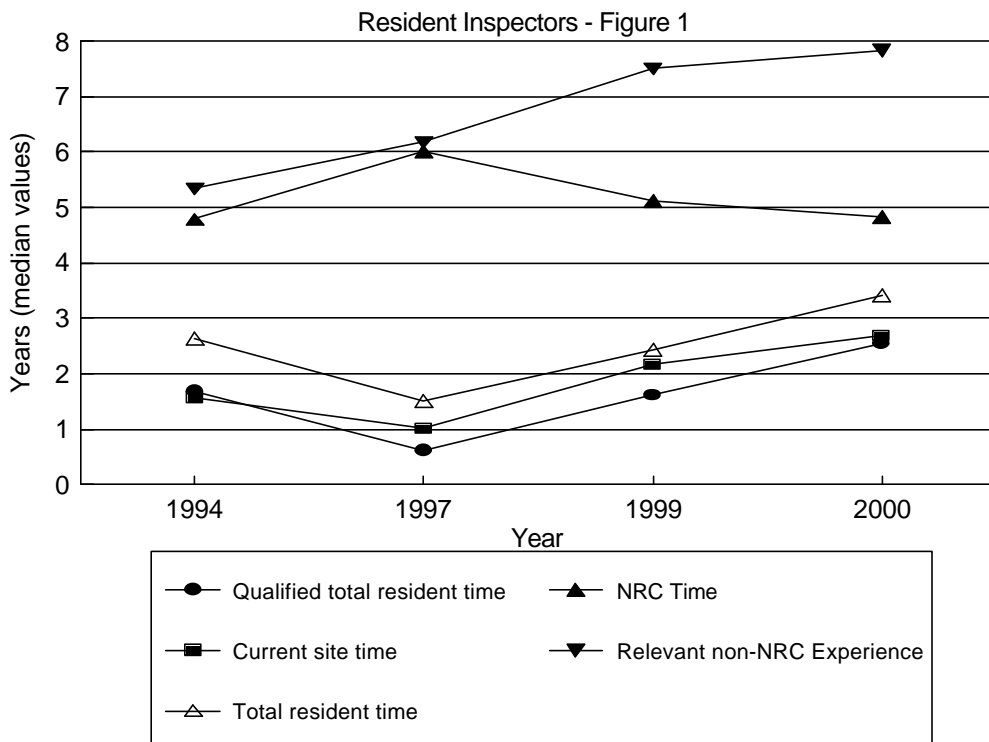
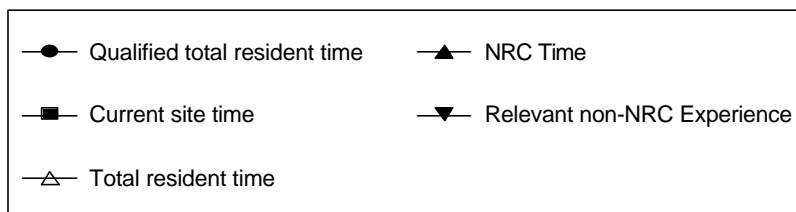
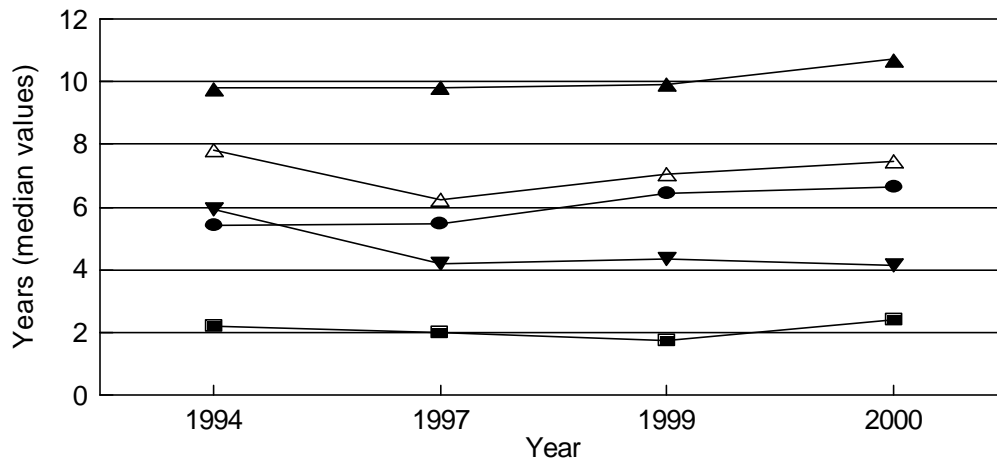


Table 2 - Summary of SRI Experience Levels (in years)

		<u>Senior Resident Inspectors</u>			
		<u>April 1994</u>	<u>November 1997</u>	<u>September 1999</u>	<u>December 2000</u>
NRC time	average	10.46	9.93	10.44	11.18
	median	9.78	9.80	9.90	10.70
Total resident time	average	7.59	6.93	7.60	8.07
	median	7.81	6.22	7.06	7.44
Qualified total resident time	average	5.62	6.03	6.62	7.27
	median	5.43	5.45	6.41	6.63
Current site time	average	2.38	2.11	2.03	2.84
	median	2.18	1.97	1.74	2.41
Relevant non-NRC experience	average	6.87	5.30	5.61	5.62
	median	5.92	4.17	4.33	4.13

Senior Resident Inspectors - Figure 2



Analysis of 2000 Resident Inspector (RI) Demographic Data

A comparison of the 1999 and 2000 resident inspector demographic data using the national median values from Table 1 indicates that RI stability and experience levels continued to increase in the areas of total resident time, qualified total resident time, current site time and relevant non-NRC experience. These trends indicate that the various policy changes implemented over the last several years appear to have contributed to the Agency being able to successfully attract and retain experienced individuals in the RI program. The RI demographic data for the year 2000 were particularly noteworthy, showing an increase over the 1994 demographic data in all measured areas.

NRC time was the only value in the December 2000 demographic data that decreased since September 1999 indicating a continuing trend of filling RI positions with recently hired employees. Additionally, the decrease in the median NRC time with an accompanying increase in average NRC time value indicates that we are experiencing an influx of RIs who are new to the Agency while at the same time retaining experienced RIs in the program.

The experience levels of the RI group in 2000, as measured by the total resident time and current site time, show a continuing overall increasing trend in service. In fact, the median values for the total resident time and the current site time have never been higher since the staff started recording these statistics in 1994.

Analysis of 2000 Senior Resident Inspector (SRI) Demographic Data

An analysis of the demographic data contained in Table 2 for the SRIs also indicates an overall program improvement nationwide since 1999. The current site time of over 2 years reported in the 2000 demographic data appears to indicate a reversal in the declining trend which had started in 1994. The increase in total resident time, qualified total resident time, and current site time, indicates that more senior resident inspectors appear to be taking advantage of the longer site assignment policy enacted in 1998.

The relevant non-NRC experience of SRIs appears to have stabilized. The reported value was about 4 years in the 2000 demographic data. Although 4 years is less than the relevant non-NRC experience for the SRI group in 1994, this data was not available for many of the SRI positions during 1994. Currently, RIs as a group have about twice as much experience outside the Agency as those individuals currently serving in the SRI positions. This indicates that many SRIs gained most of their nuclear experience inside the NRC, while we are currently attracting a greater percentage of people from outside the Agency with more relevant non-NRC experience to fill RI positions.

A typical SRI is someone who has been with the Agency 11 years, and who has about 7 years of RI experience and 2 years of current site time as an SRI. The total resident time of about 7 years for the year 2000 is near what it was in 1994, and has increased since 1997. The total resident time for the SRIs in 2000 indicates that the agency's new policies over the last several years appear to have contributed to an increased retention of more experienced SRIs. Additionally, the current site time of over 2 years is greater than in 1994 and has also steadily increased since

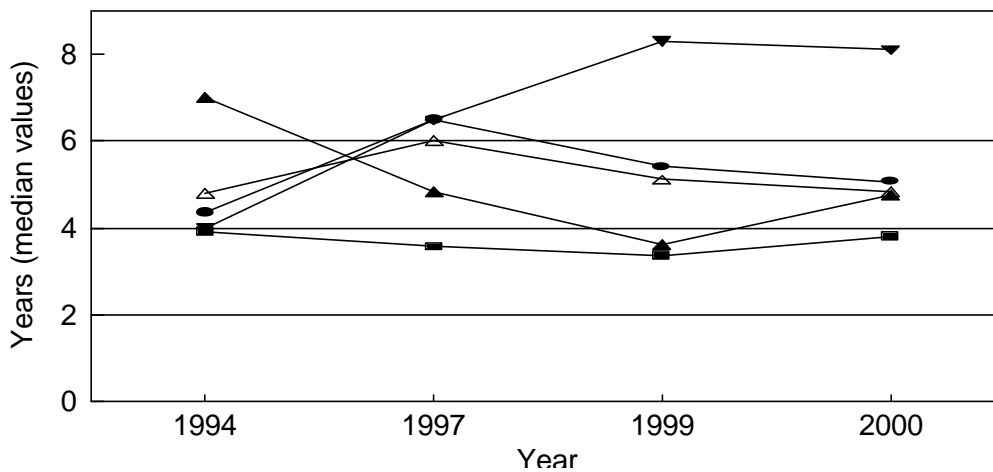
1997. The 2000 SRI demographic data appear to indicate that more SRIs are electing to stay in the program and those who are staying appear to be taking advantage of the 7-year relocation policy.

Regional Comparison

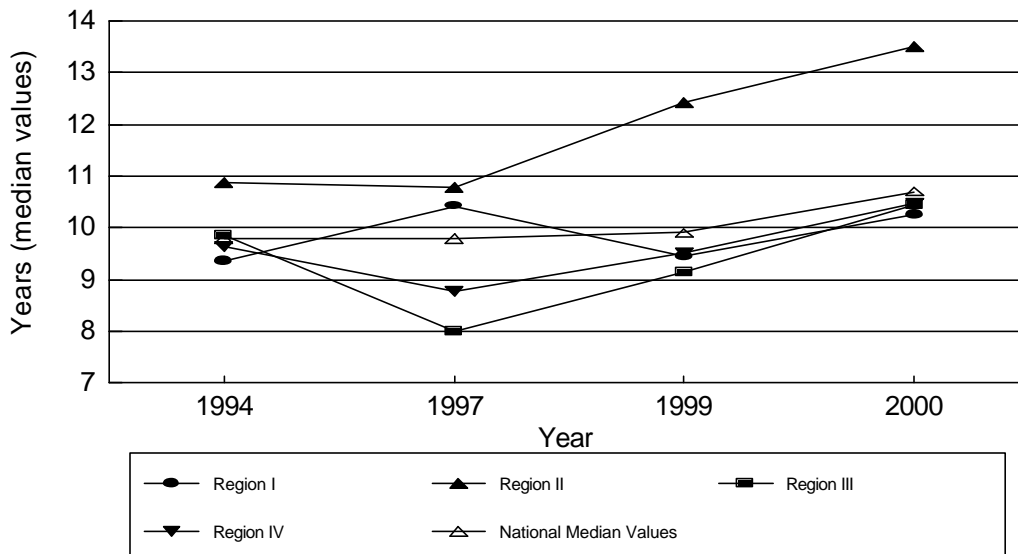
In general, there were increasing trends in many of the demographic data for the regions. While there was an overall increase in the demographic data for Region III resident inspectors from 1997 to 2000, there was a decrease in some of the Region III resident inspector demographic data from 1999 to 2000 because many of the current RIs were new to the RI program in Region III. A review of Region III demographic data indicated that about 50 percent of RI positions in Region III were filled during the years 1999 and 2000 with individuals new to the RI program. This resulted in the decrease of demographic data for total resident time, qualified total resident time, current site time, and qualified current site time. However, many of these individuals had at least 3 years of NRC time indicating that they have had regulatory inspection experience.

Figures 3 through 14 display the regional demographic data from 1994 through 2000 for the RI and SRI groups.

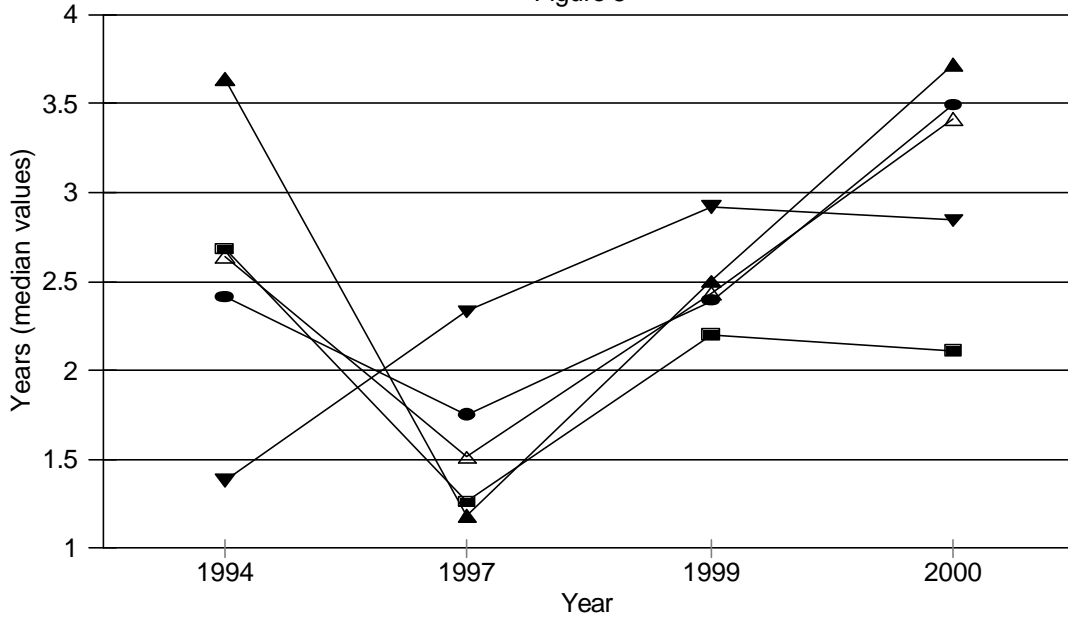
NRC Time (RIs) - Figure 3



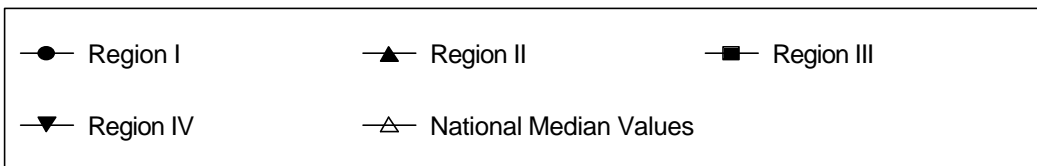
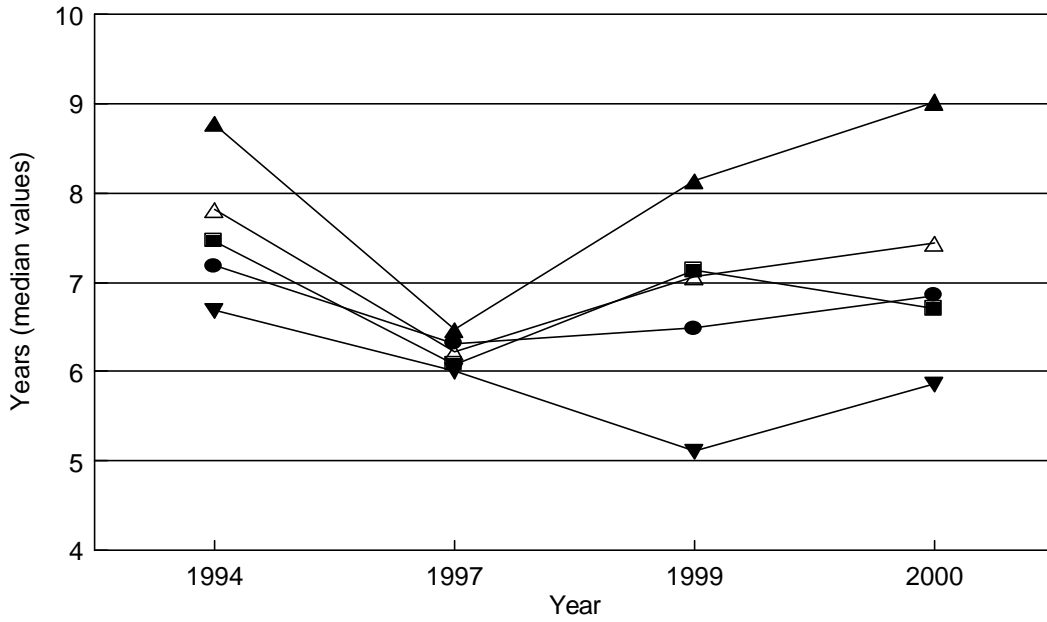
NRC Time (SRIs) - Figure 4



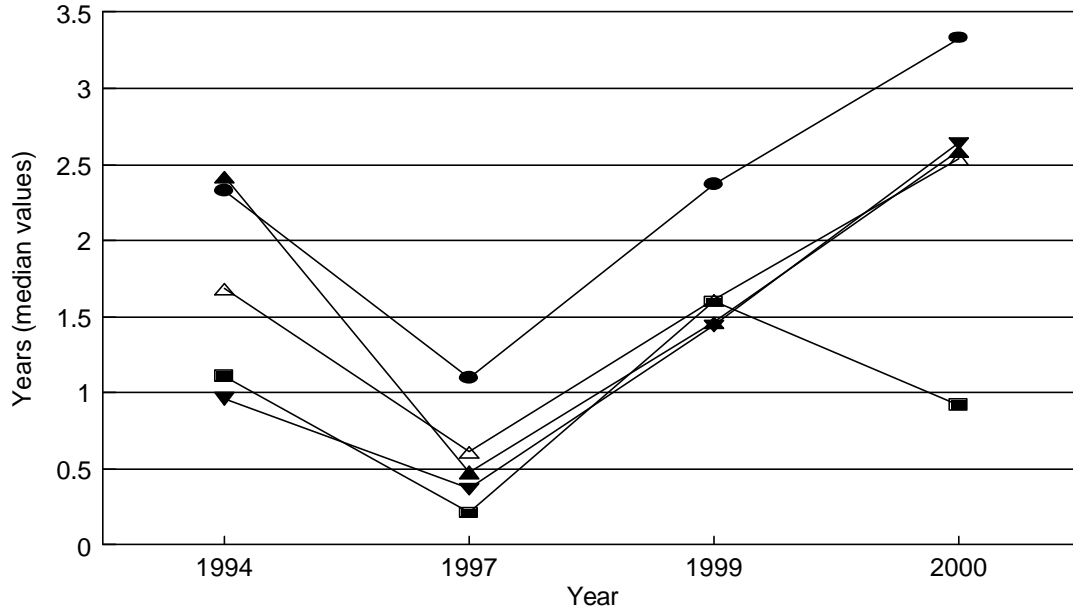
Total Resident Time (RIs)
Figure 5



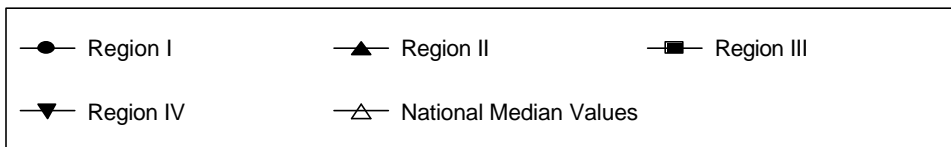
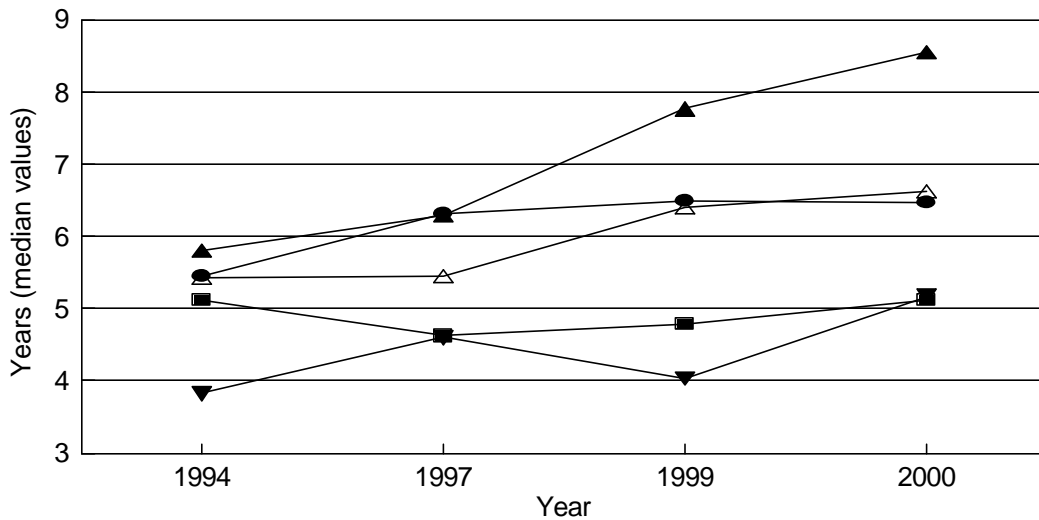
Total Resident Time (SRIs)
Figure 6



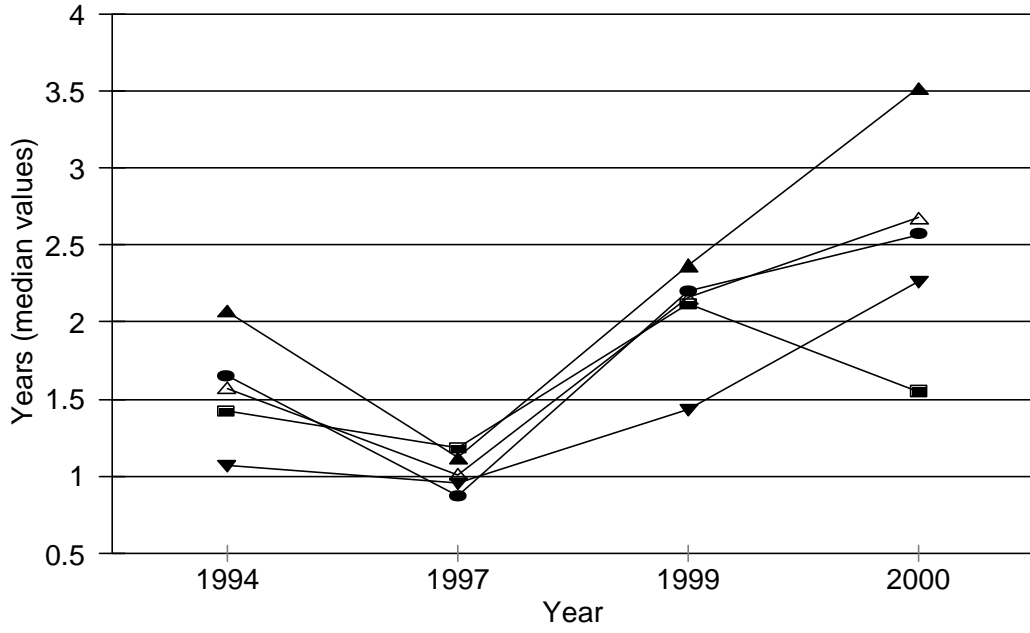
Qualified Total Resident Time (RTs)
Figure 7



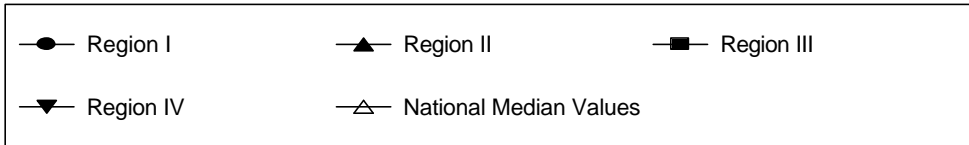
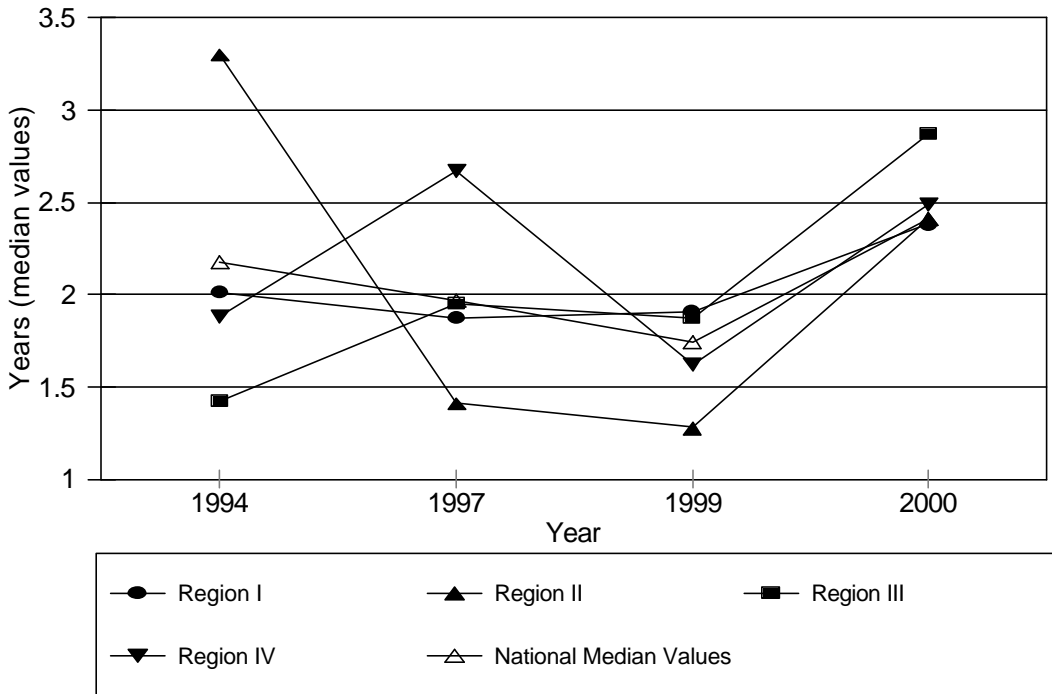
Qualified Total Resident Time (SRIs)
Figure 8



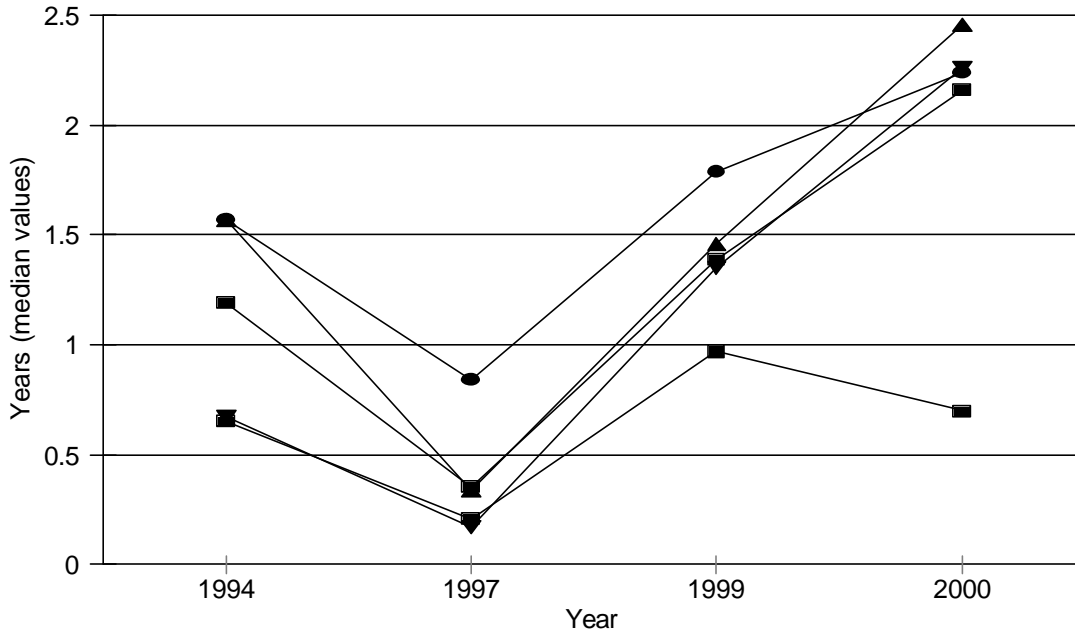
Current Site Time (RIs)
Figure 9



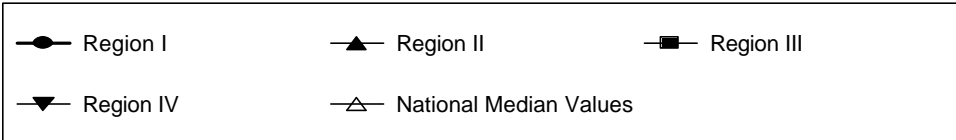
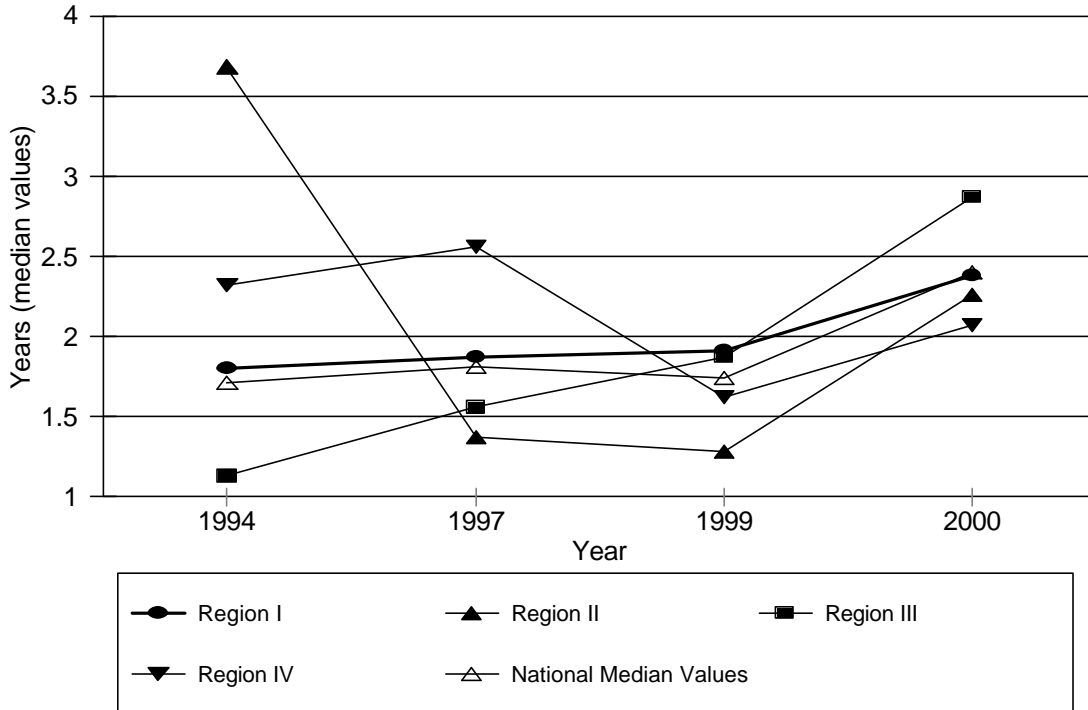
Current Site Time (SRIs)
Figure 10



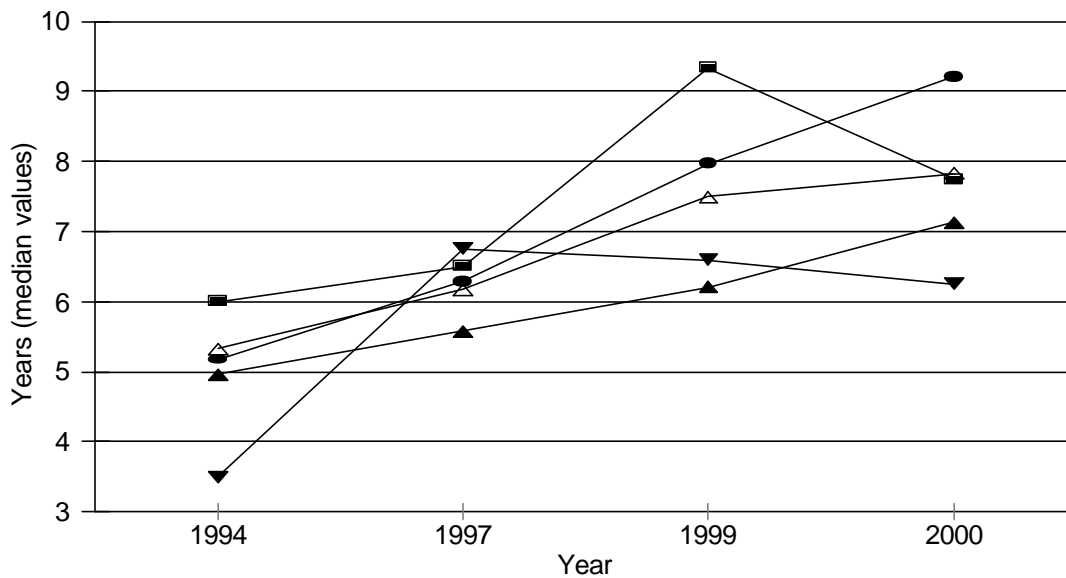
Qualified Current Site Time (RIs)
Figure 11



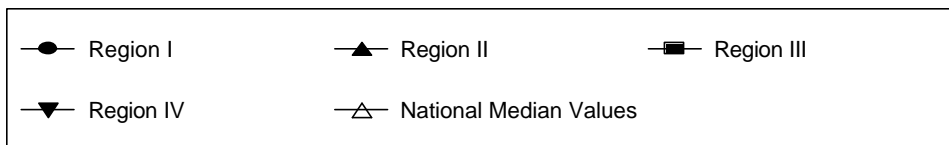
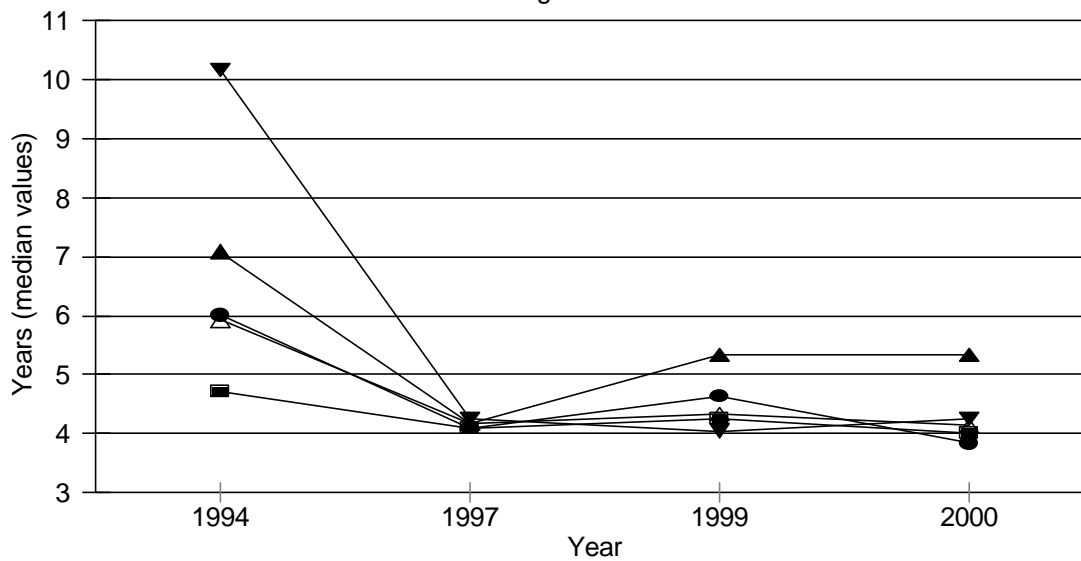
Qualified Current Site Time (SRIs)
Figure 12



Relevant Non-NRC Time - RIs
Figure 13



Relevant Non-NRC Time (SRIs)
Figure 14



Trend Analysis of Relevant New-Hire Experience

The data in Table 1 indicate that the relevant non-NRC experience for the RIs continues to increase. The December 2000 demographic data for the RIs show that their median relevant non-NRC experience has increased steadily since the agency began keeping demographic data. The 2000 average was about 8 years, a fairly substantial increase over the low of about 5 years in 1994.

Although the cumulative experience level of the RIs as a group continues to rise, the rate of increase is slowing because more new hires in the year 2000 had no or limited (defined to be less than 3 years) relevant non-NRC experience. Table 3 shows the percentage of new hires with less than 3 years of relevant non-NRC experience from 1994 through 2000.

Table 3 - Percentage of New Hires With Less Than 3 Years Relevant Non-NRC Experience Levels

1994*	1995	1996	1997	1998	1999	2000
43% (3/7)	0% (0/2)	0% (0/14)	6% (1/18)	12% (2/17)	0% (0/5)	31% (4/13)

* indicates that data was only available from 5/1/1994 through 09/30/1994

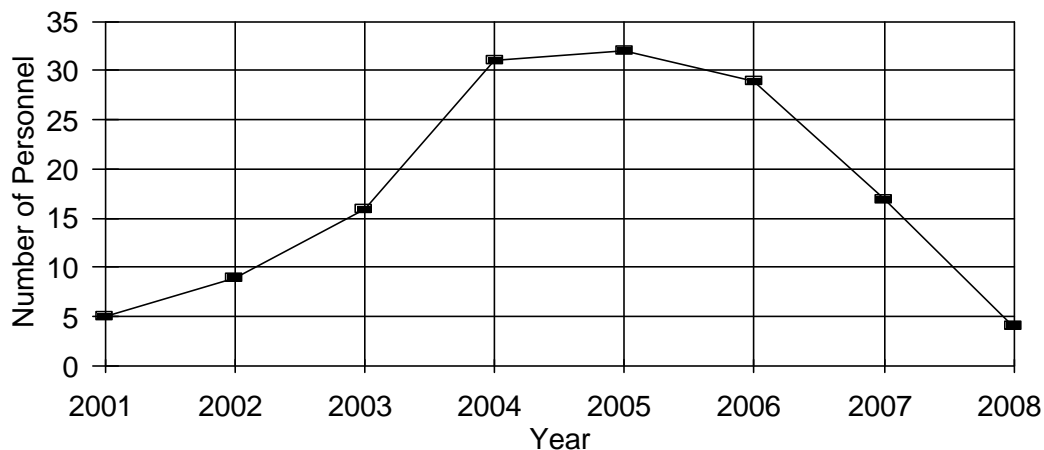
The percentages in the table represent the ratio of those RIs hired in that particular year who had fewer than 3 years of relevant non-NRC experience to the total RIs hired. There was an increase in the hiring of those RIs with limited relevant non-NRC experience in the year 2000.

While this single data point does not represent a trend in the NRC's ability to attract experienced individuals into the RI program, the Agency's current initiative with respect to increasing the number of entry level hires may affect this demographic in the future.

Projected Rotations

Figure 15 shows the number of RIs and SRIs who are scheduled to rotate, according to the information available in 2001. There is a substantial increase in the projected rotations during the years 2004 through 2006 and it is anticipated that the demographic data will be greatly influenced by the results of these transfers and rotations. It is anticipated that approximately 64 percent of the RIs and SRIs will rotate during this 3-year period. The level of projected rotations may warrant implementation of more aggressive overhire practices in order to reduce the expected impact, particularly with the transition to "N" resident inspector staffing at multi-unit sites.

Figure 15
Projected Resident Inspector Rotations



CONCLUSIONS:

The 2000 demographics show an overall improving trend in the RI and SRI statistics since 1999. Program improvements made over the last several years appear to have contributed to improved stability and increased experience levels in the RI program.

While the staff has no recommendations for changing the RI program, it will consider a more aggressive overhire policy in order to reduce the expected impact from the projected increase in the resident inspector rotations during 2004 through 2006. The staff intends to continue to provide annual updates on RI demographic data and may integrate this information with its annual self-assessment effort on the reactor oversight process vice providing the Commission a separate paper on this topic.

/RA by William F. Kane Acting For/

William D. Travers
Executive Director
for Operations

Attachment: As stated

**DECEMBER 2000
EXPERIENCE LEVELS**

RESIDENT INSPECTOR PROGRAM							
		NRC TIME	TOTAL RESIDENT TIME	QUALIFIED TOTAL RESIDENT TIME	CURRENT SITE TIME	QUALIFIED CURRENT SITE TIME	RELEVANT NON-NRC TIME
REGION							
Region I	Average	8.50	6.09	5.81	2.47	2.38	7.27
	Median	8.97	4.56	4.56	2.57	2.31	7.50
Region II	Average	9.65	6.99	6.05	3.12	2.69	6.82
	Median	9.75	4.83	4.33	3.33	2.41	6.17
Region III	Average	7.33	4.75	3.94	2.50	2.13	5.84
	Median	6.29	3.64	3.03	2.22	1.76	4.33
Region IV	Average	8.51	4.93	3.92	2.50	2.30	7.90
	Median	9.70	4.96	3.60	2.38	2.17	5.04
National	Average	8.57	5.83	5.09	2.68	2.40	6.92
	Median	9.32	4.33	3.79	2.61	2.26	5.75

RESIDENT INSPECTORS ONLY							
Region I	Average	6.47	4.21	4.02	2.38	2.23	9.26
	Median	5.06	3.49	3.33	2.57	2.24	9.21
Region II	Average	6.77	4.72	3.69	3.52	2.77	7.59
	Median	4.76	3.72	2.59	3.52	2.46	7.13
Region III	Average	4.47	2.47	1.68	1.87	1.18	7.47
	Median	3.80	2.11	0.92	1.55	0.70	7.75
Region IV	Average	7.30	3.55	2.81	1.99	1.78	7.82
	Median	8.09	2.84	2.64	2.26	2.26	6.25
National	Average	6.26	3.84	3.15	2.54	2.07	8.07
	Median	4.83	3.41	2.54	2.68	2.16	7.83

SENIOR RESIDENT INSPECTORS ONLY							
Region I	Average	10.85	8.27	7.88	2.58	2.55	4.96
	Median	10.25	6.86	6.47	2.38	2.38	3.83
Region II	Average	12.93	9.59	8.75	2.65	2.60	5.94
	Median	13.49	9.02	8.56	2.41	2.26	5.33
Region III	Average	10.36	7.16	6.32	3.17	3.14	4.11
	Median	10.43	6.71	5.13	2.87	2.87	4.00
Region IV	Average	9.90	6.51	5.20	3.08	2.90	8.01
	Median	10.46	5.86	5.17	2.49	2.07	4.25
National	Average	11.18	8.07	7.27	2.84	2.77	5.62
	Median	10.70	7.44	6.63	2.41	2.40	4.13

**SEPTEMBER 1999
EXPERIENCE LEVELS**

RESIDENT INSPECTOR PROGRAM							
		NRC TIME	TOTAL RESIDENT TIME	QUALIFIED TOTAL RESIDENT TIME	CURRENT SITE TIME	QUALIFIED CURRENT SITE TIME	RELEVANT NON-NRC TIME
REGION							
Region I	Average	7.82	5.39	5.09	2.00	1.89	6.87
	Median	8.00	4.17	4.15	2.06	1.91	6.25
Region II	Average	8.51	5.96	4.84	2.31	1.81	6.83
	Median	8.39	3.58	3.08	2.25	1.41	5.75
Region III	Average	6.80	4.73	3.74	2.16	1.78	6.29
	Median	7.73	3.23	2.58	2.08	1.39	4.92
Region IV	Average	8.04	4.42	3.37	2.07	1.76	7.18
	Median	9.01	4.23	2.48	1.43	1.35	5.42
National	Average	7.83	5.22	4.37	2.14	1.82	6.73
	Median	8.36	4.07	3.04	2.08	1.49	5.71

RESIDENT INSPECTORS ONLY							
Region I	Average	5.85	3.40	3.18	2.00	1.81	7.89
	Median	5.40	2.39	2.37	2.20	1.79	7.96
Region II	Average	5.57	3.56	2.51	2.65	1.78	7.45
	Median	3.61	2.50	1.46	2.37	1.46	6.21
Region III	Average	4.66	2.84	1.95	2.12	1.42	7.50
	Median	3.35	2.20	1.60	2.12	0.97	9.33
Region IV	Average	6.89	3.15	2.20	2.05	1.55	8.25
	Median	8.29	2.92	1.44	1.43	1.35	6.59
National	Average	5.70	3.28	2.53	2.23	1.67	7.74
	Median	5.11	2.43	1.61	2.16	1.39	7.50

SENIOR RESIDENT INSPECTORS ONLY							
Region I	Average	10.67	8.27	7.86	2.00	2.00	5.39
	Median	9.45	6.49	6.49	1.91	1.91	4.63
Region II	Average	12.15	8.93	7.73	1.89	1.84	6.06
	Median	12.41	8.14	7.77	1.28	1.28	5.33
Region III	Average	9.06	6.72	5.62	2.19	2.16	5.02
	Median	9.15	7.14	4.78	1.87	1.87	4.25
Region IV	Average	9.36	5.88	4.67	2.08	2.01	5.96
	Median	9.50	5.11	4.04	1.62	1.62	4.04
National	Average	10.44	7.60	6.62	2.03	2.00	5.61
	Median	9.90	7.06	6.41	1.74	1.74	4.33

**NOVEMBER 1997
EXPERIENCE LEVELS**

RESIDENT INSPECTOR PROGRAM							
		NRC TIME	TOTAL RESIDENT TIME	QUALIFIED TOTAL RESIDENT TIME	CURRENT SITE TIME	QUALIFIED CURRENT SITE TIME	RELEVANT NON-NRC EXPERIENCE
REGION							
Region I	Average	7.94	4.93	4.67	1.60	1.48	5.65
	Median	7.31	4.15	4.01	1.14	1.12	5.17
Region II	Average	7.70	4.81	3.96	1.65	1.29	5.59
	Median	7.43	4.05	3.40	1.22	0.84	5.17
Region III	Average	6.01	4.10	3.02	1.68	1.29	6.01
	Median	6.75	2.83	2.02	1.18	0.84	5.00
Region IV	Average	7.70	4.70	3.11	2.02	1.65	7.12
	Median	7.41	4.30	2.35	2.16	0.77	5.42
National	Average	7.34	4.65	3.77	1.71	1.41	5.99
	Median	7.17	3.84	2.68	1.26	0.91	5.13

RESIDENT INSPECTORS ONLY							
Region I	Average	5.60	2.99	2.43	1.28	1.01	6.47
	Median	6.49	1.75	1.10	0.87	0.84	6.29
Region II	Average	5.11	2.71	1.82	1.31	0.77	6.00
	Median	4.82	1.18	0.48	1.12	0.34	5.58
Region III	Average	4.17	2.17	1.36	1.46	0.98	6.43
	Median	3.56	1.26	0.21	1.18	0.21	6.50
Region IV	Average	5.65	2.79	1.15	1.39	0.72	8.33
	Median	6.47	2.33	0.37	0.95	0.17	6.75
National	Average	5.08	2.66	1.76	1.35	0.89	6.60
	Median	6.01	1.51	0.61	1.01	0.35	6.17

SENIOR RESIDENT INSPECTORS ONLY							
Region I	Average	10.78	7.31	7.11	1.99	1.99	4.73
	Median	10.42	6.32	6.32	1.87	1.87	4.08
Region II	Average	10.89	7.41	6.63	2.06	1.94	5.10
	Median	10.78	6.47	6.30	1.41	1.37	4.17
Region III	Average	8.42	6.65	5.33	1.97	1.73	5.42
	Median	8.00	6.09	4.62	1.95	1.56	4.09
Region IV	Average	9.27	6.15	4.60	2.51	2.36	6.19
	Median	8.77	6.01	4.60	2.67	2.56	4.25
National	Average	9.93	6.93	6.03	2.11	2.00	5.30
	Median	9.80	6.22	5.45	1.97	1.81	4.17

**APRIL 1994
EXPERIENCE LEVELS**

RESIDENT INSPECTOR PROGRAM							
REGION		NRC TIME	TOTAL RESIDENT TIME	QUALIFIED TOTAL RESIDENT TIME	CURRENT SITE TIME	QUALIFIED CURRENT SITE TIME	RELEVANT NON-NRC EXPERIENCE
Region I	Average	6.98	4.76	4.26	2.01	1.93	6.12
	Median	5.85	3.83	3.83	1.82	1.68	5.63
Region II	Average	9.07	5.96	3.68	2.55	2.12	5.63
	Median	8.70	5.21	3.72	2.57	1.59	5.33
Region III	Average	6.97	5.12	3.43	1.81	1.17	6.52
	Median	6.02	3.79	2.25	1.42	1.00	5.58
Region IV	Average	6.60	3.80	2.77	1.68	1.38	6.75
	Median	5.56	2.84	2.51	1.38	1.17	5.75
National	Average	7.56	5.05	3.61	2.08	1.66	6.22
	Median	6.90	3.91	2.81	1.72	1.40	5.58

RESIDENT INSPECTORS ONLY							
Region I	Average	4.89	3.25	3.16	1.89	1.90	5.78
	Median	4.35	2.41	2.33	1.65	1.57	5.17
Region II	Average	7.12	4.24	2.99	2.26	1.86	4.83
	Median	7.01	3.64	2.42	2.07	1.57	4.96
Region III	Average	5.04	3.11	1.61	1.63	0.85	7.31
	Median	3.91	2.68	1.11	1.42	0.65	6.00
Region IV	Average	4.54	1.90	1.30	1.39	0.86	5.66
	Median	3.99	1.38	0.96	1.07	0.67	3.50
National	Average	5.55	3.29	2.38	1.86	1.43	5.83
	Median	4.79	2.64	1.68	1.57	1.19	5.33

SENIOR RESIDENT INSPECTORS ONLY							
Region I	Average	10.47	7.28	5.87	2.21	1.97	6.65
	Median	9.36	7.19	5.45	2.01	1.80	6.00
Region II	Average	11.81	8.39	5.63	2.97	2.86	7.77
	Median	10.87	8.78	5.81	3.30	3.68	7.08
Region III	Average	9.44	7.68	5.91	2.04	1.61	5.45
	Median	9.85	7.47	5.13	1.42	1.13	4.71
Region IV	Average	9.52	6.48	4.82	2.09	2.12	8.40
	Median	9.63	6.69	3.82	1.88	2.32	10.17
National	Average	10.46	7.59	5.62	2.38	2.03	6.87
	Median	9.78	7.81	5.43	2.18	1.71	5.92