

## **Resident Inspector Demographics**

This attachment provides the annual update on demographic data for inspectors assigned to the resident inspector program, as the Commission requested in a staff requirements memorandum (SRM) dated April 8, 1998. The purpose of this analysis is to determine whether the agency's actions associated with the resident inspector program have resulted in a stable or increasing resident experience base and to identify any necessary actions.

### **Resident Inspector Demographic Data**

The review of the demographics includes analysis of the overall program data for the resident (RI) and senior resident inspector (SRI) groups (see Tables 1 and 4, as well as Figures 1 and 2). Additionally, Figures 3 through 14 provide an analysis of the regions in each of the data categories. The months used for the statistical comparison are September 1999, December 2000, November 2001, November 2002, and November 2003. Median values were used to make the comparisons.

The demographic analysis consists of five distinct data sets, including (1) "NRC time," (2) "total resident time," (3) "qualified total resident time," (4) "current site time," and (5) "relevant non-NRC experience." These data sets align with the PR1 through PR5 metrics in Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," as discussed in Attachment 3 to this paper. "NRC time" is the total number of years the individual has accumulated as an employee of the U.S. Nuclear Regulatory Commission (NRC); "total resident time" is the total number of years the individual has accumulated as an RI or SRI; "qualified total resident time" is the time the individual has been assigned to an RI or SRI position after completing the reactor operations inspector qualification requirements of IMC 1245, "Inspector Qualification Program for the Office of Nuclear Reactor Regulation Inspection Program;" and "current site time" is the total number of years spent as an RI or SRI at the current site. "Relevant non-NRC experience" is nuclear power experience acquired outside of 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 U.S. Navy's nuclear power program.

### **Analysis of 2003 RI Groups**

Resident inspector demographic data for 2003 (see Table 1 and Figure 1) indicate that with the exception of relevant non-NRC experience, all categories experienced a decline in both average and median experience levels. The decline is driven by the fact that the NRC hired about twice as many new RIs in 2003 compared to the average number of new RIs hired over the previous 3 years (see Table 2). The slight increase in relevant non-NRC experience indicates that the regions successfully recruited individuals with relevant non-NRC experience into the RI program. Of 74 resident inspector positions, 27 vacancies needed to be filled in calendar year (CY) 2003, primarily as a result of promotion of experienced RIs into SRI or other positions. These vacancies were generally filled by persons who had not yet achieved full inspector qualifications, but were basic inspector certified under IMC 1245. This is indicative of a general practice of retaining new hires in the regional offices and certifying them to the basic level before assigning them to a site. Of the 27 filled vacancies, 19 of the new resident inspectors had more than 3 years of relevant non-NRC experience, indicating that a large number of experienced engineers entered the program.

Table 1. Summary of RI Group Experience Levels (in years)						
		Sept. 1999	Dec. 2000	Nov. 2001	Nov. 2002	Nov. 2003
<b>NRC time</b>	average	5.70	6.26	6.21	6.39	5.34
	median	5.11	4.83	5.13	5.61	4.13
<b>Total resident time</b>	average	3.28	3.84	3.84	3.90	3.28
	median	2.43	3.41	3.87	3.77	1.99
<b>Qualified total resident time</b>	average	2.53	3.15	3.11	3.14	2.50
	median	1.61	2.54	2.92	3.14	0.96
<b>Current site time</b>	average	2.23	2.54	2.74	2.86	1.64
	median	2.16	2.68	3.18	2.30	1.00
<b>Relevant non-NRC experience</b>	average	7.74	8.07	8.80	9.68	10.26
	median	7.50	7.83	8.00	9.29	10.00

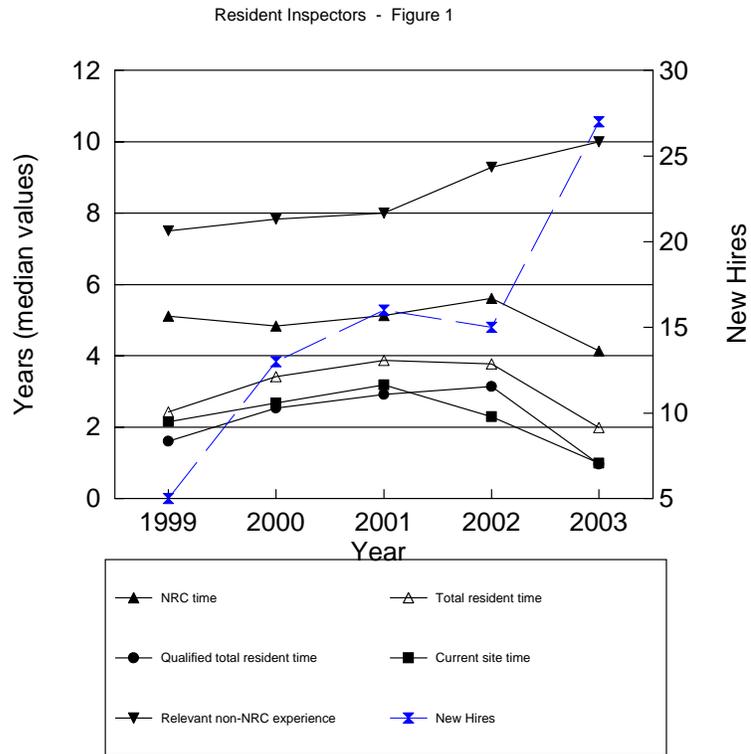


Figure 1 illustrates the correlation of experience levels with the number of new hires. In 2003, experience levels were down, with the exception of relevant non-NRC experience, principally as a result of the hiring of new inspectors.

### Trend Analysis of Relevant Non-NRC Experience for Personnel Entering the RI Program

The 2003 data indicate that many experienced engineers entered the program as RIs. On average, the 27 new RIs had about 9 years of relevant non-NRC experience, compared to an average of 12 years in 2002.

Table 2 shows the percentage of new RIs with less than 3 years of relevant non-NRC experience from 1996 through 2003. The turnover rate in the RI population was about 36 percent in 2003. This was based on 74 available RI positions and 27 inspectors entering the RI program during 2003. The increase from 2002 to 2003 resulted from the effort to hire more entry level staff.

**Table 2. Percentage of New RIs With Less Than 3 Years of Relevant Non-NRC Experience**

1996	1997	1998	1999	2000	2001	2002	2003
0% (0/14)	6% (1/18)	12% (2/17)	0% (0/5)	31% (4/13)	6% (1/16)	20% (3/15)	30% (8/27)

The percentages in this 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 number of RIs hired.

### Projected Transfers

The transfer rate projections previously reported in this analysis have been based solely on the expectation of completing a 7-year assignment. In reality, inspectors frequently leave before the end of this period for a variety of reasons, including promotions (especially from RI to SRI), transfers to regional offices and headquarters, and relocations to other sites. Therefore, the projected RI and SRI transfers have not been reliable and will no longer be included as part of the annual RI demographic analysis.

### Analysis of 2003 SRI Groups

The NRC experience levels for the SRI group decreased from the previous year in all areas, but to a lesser extent than those of the RI group, and with a slight increase in relevant non-NRC experience (see Table 4 and Figure 2). This was attributable to movement of experienced RIs into SRI positions. The median qualified total resident time of the SRI group was about the same as the previous year. The “relevant non-NRC experience” for both groups continues to increase.

During 2003, 20 SRI positions were filled, compared to five SRI positions in 2002 (see Table 3). Region I filled 5 of these positions, Region II filled 9, Region III filled 3, and Region IV filled 3. Filling these positions created vacancies in the RI program, as evidenced by the hiring of 27 RIs in 2003. Regions I and II each filled 7 of the RI positions, Region III filled 8, and Region IV filled 5 (see Table 3). Of particular note is that during 2003, only one RI left the NRC, and that was due to retirement. This indicates that RIs are not leaving the program but instead are being promoted to SRI, region-based, and/or headquarter positions. Specifically, approximately one-

third of the RI population was promoted to SRI or other positions in regional offices and headquarters.

Fourteen SRIs left the program during this period (see Table 3). Seven of these SRIs received promotions, 6 received lateral reassignments, and 1 retired. Regions I, II, and IV each promoted 1 SRI, while Region III promoted 3 SRIs; all of these promotions were within the respective regions. In addition, a Region I SRI received a promotion in headquarters, and another Region I SRI retired. The six SRIs who left the program transferred to other positions in either the regional offices (5) or headquarters (1).

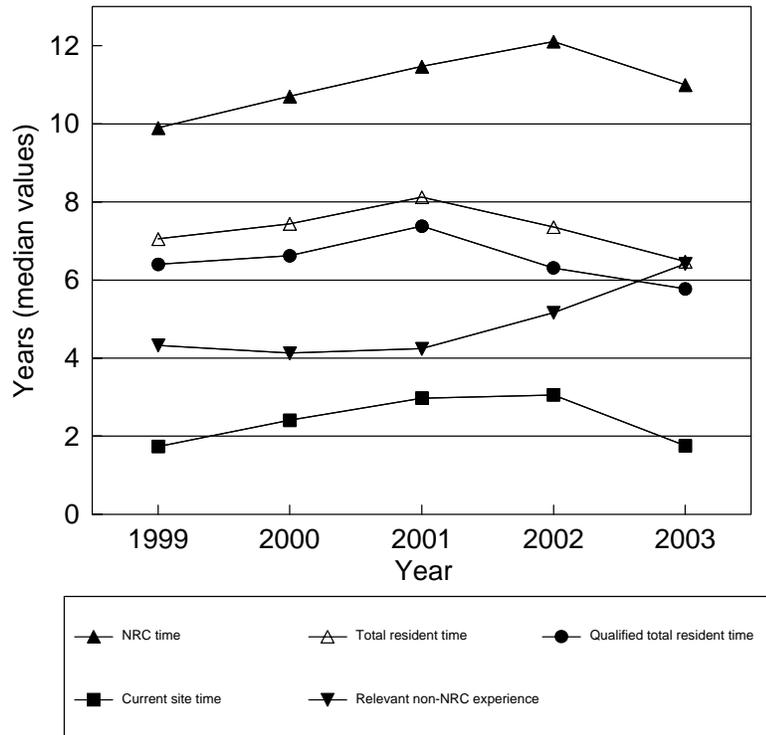
**Table 3. RI and SRI Activity During 2003**

<b>Activity</b>	RI	RII	RIII	RIV	Total
SRI positions filled	5	9	3	3	20
RI positions filled	7	7	8	5	27
<b>SRI Movement</b>					
SRIs promotions to GG-15	2*	1	3	1	7
SRI lateral reassignments	2	2	1	1	6
SRI retirement	1				1
*SRI received promotion in Headquarters.					

NOTE: The number of positions filled does not necessarily equal the number of positions vacated during a given period because of the time involved in the recruitment process.

Table 4. Summary of SRI Group Experience Levels (in years)						
		Sept. 1999	Dec. 2000	Nov. 2001	Nov. 2002	Nov. 2003
<b>NRC time</b>	average	10.44	11.18	12.03	11.85	11.30
	median	9.90	10.70	11.47	12.11	11.00
<b>Total resident time</b>	average	7.60	8.07	8.66	8.17	8.22
	median	7.06	7.44	8.12	7.36	6.82
<b>Qualified total resident time</b>	average	6.62	7.27	7.94	7.36	7.40
	median	6.41	6.63	7.38	6.31	5.95
<b>Current site time</b>	average	2.03	2.84	2.96	2.90	2.44
	median	1.74	2.41	2.98	3.06	1.76
<b>Relevant non-NRC experience</b>	average	5.61	5.62	6.07	7.26	8.37
	median	4.33	4.13	4.25	5.17	6.42

Senior Resident Inspectors  
(Program Total) - Figure 2



## Conclusions

The 2003 RI demographics for “NRC time”, “total resident time,” “qualified total resident time,” and “current site time” are below their 1999 values, reflecting an RI population with reduced NRC experience primarily as a result of an influx of new hires. The SRI demographics have remained relatively stable in all areas since 1999, with the exception of relevant non-NRC experience which has increased by 48 percent since 1999.

In 2003 we made progress in addressing the 2002 challenge regarding how to minimize the length in resident inspector site coverage gaps caused by resident inspector transfers. The RI policy was revised to allow double encumbering of new resident and senior resident inspectors to a site. The new policy allows the regional administrator to assign a permanent RI up to 12 months before the planned departure of the incumbent and to assign SRIs up to 6 months before the planned departure of the incumbent. The regions have successfully used this policy at least once for an RI and SRI in 2003, and plan to implement the policy several more times in the upcoming months. This will help minimize site coverage gaps when residents stay for the entire 7-year rotation. However, resident vacancies frequently occur with little notice; therefore, regions can not make use of the early reassignment of residents to address resident gaps in these situations.

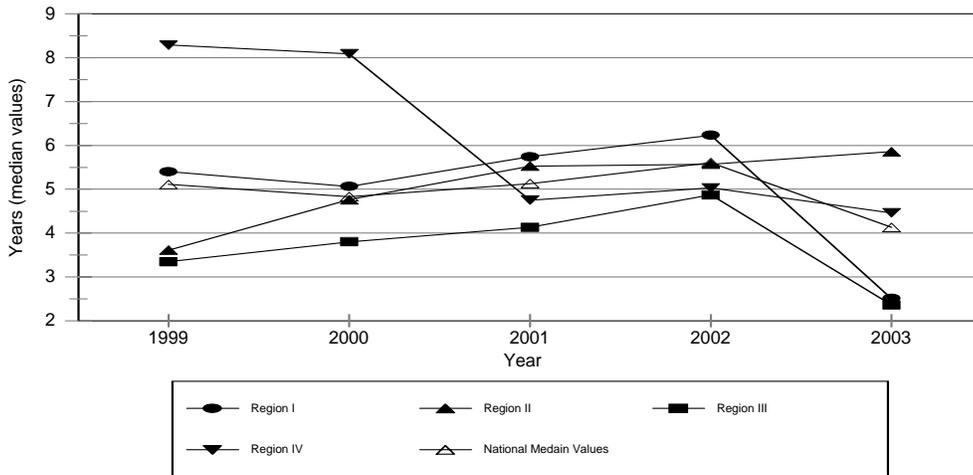
The turnover rate in SRIs during this period led to a number of new RIs entering the program as existing RIs moved up to fill the SRI positions. This indicates that SRIs are well qualified for various jobs throughout the agency. Also, as indicated during this period by the departure of only one RI and one SRI, both due to retirement, inspectors are not leaving the program, but instead are being promoted or reassigned to positions within the agency/regions, thereby retaining this expertise (mostly within the regions). However, it is important to recognize the human capital impact of 27 new RIs and 20 new SRIs into the resident program during 2003. The movement of inspectors between sites, between regions and to headquarters creates a “domino” effect in filling vacancies and impacts the effectiveness and efficiency of work completed. For each vacancy filled there are associated costs that may impact program accomplishments due to lost time at the site.

In conclusion, the program continues to attract and retain quality staff. Therefore, no resident inspector program changes are warranted at this time. The staff will continue to monitor the program.

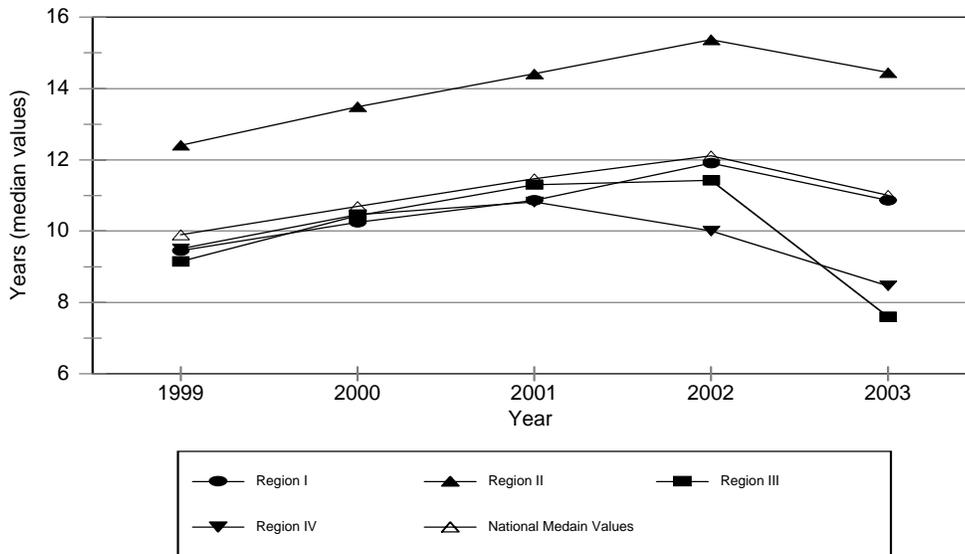
## NRC Time

NRC time for RIs decreased in all regions except Region II. NRC time for SRIs decreased in all regions. Region III has the least amount of total NRC time, while Region II continues to have the greatest amount of NRC time for both populations. Region II SRIs continue to have the most experience in the agency, while Region III SRIs have the least.

NRC Time (RIs) - Figure 3



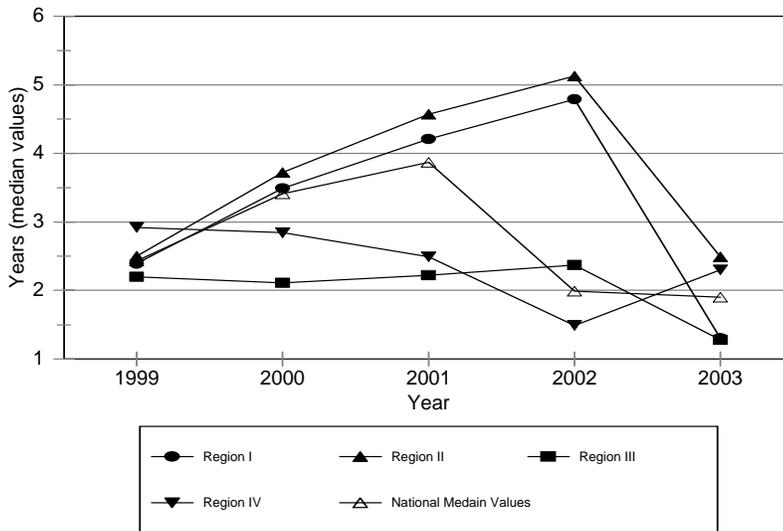
NRC Time (SRIs) - Figure 4



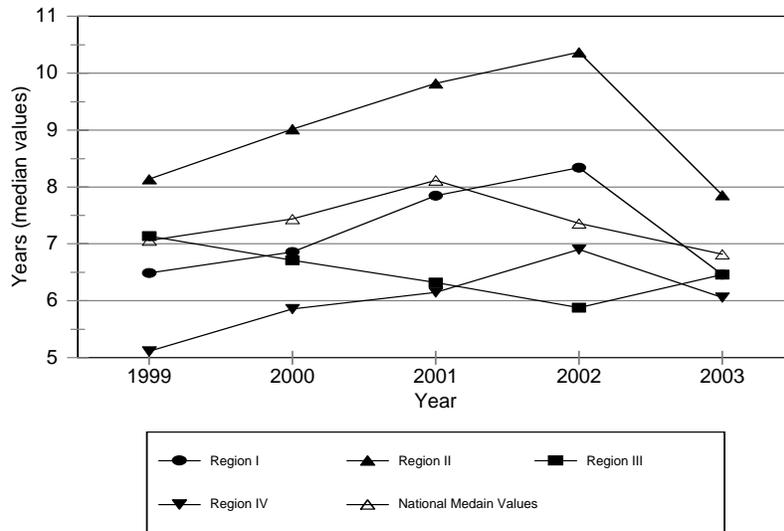
### Total Resident Time

With the exception of Region IV, all of the regions reflect a decline in resident time for RIs. Region II has the greatest amount of total RI time, while Regions I and III have the least. Regions II and IV were above the national median values. Twenty-seven new RIs entered the program, and 20 SRI positions were filled in 2003. With the exception of a slight increase for Region III, all of the regions reflect a decline in the total resident time for SRIs.

Total Resident Time (RIs) - Figure 5



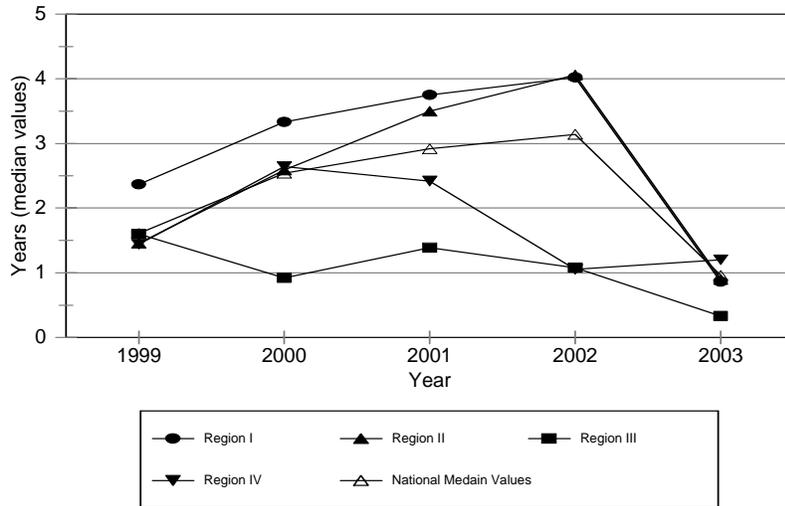
Total Resident Time (SRIs) - Figure 6



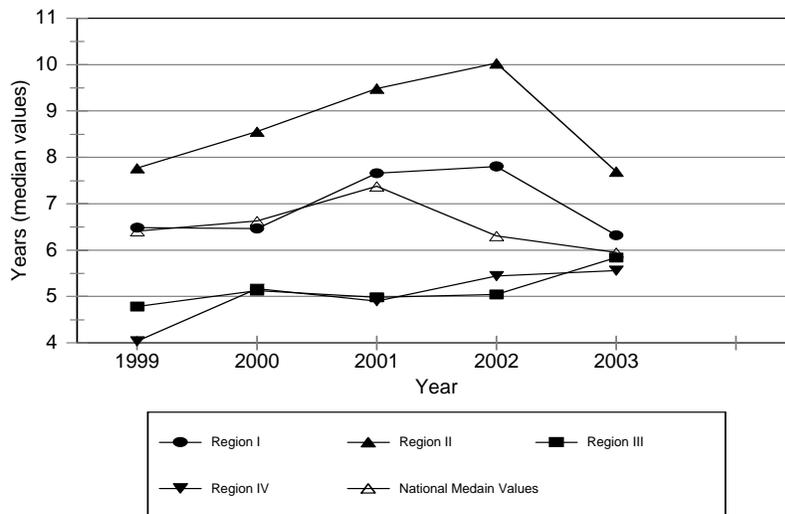
### Qualified Total Resident Time

With the exception of Region IV, all of the regions experienced a decrease in the experience level of qualified RIs. New hires may have contributed to this decline. For total resident time, all of the regions except Region II were below the national median. Regions I and II showed a decline in SRI qualified time, while Regions III and IV showed a slight increase.

Qualified Total Resident Time (RIs)  
Figure 7



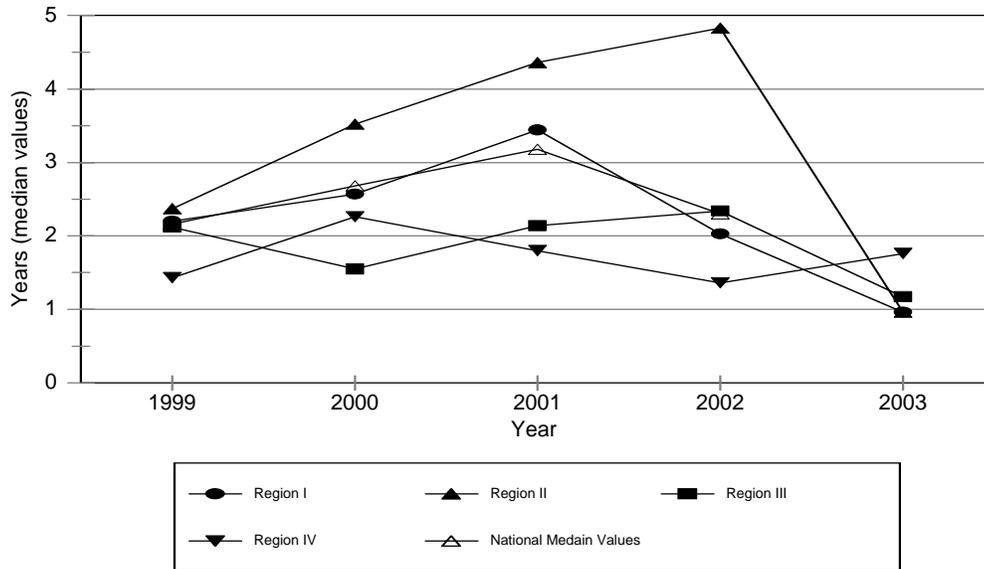
Qualified Total Resident Time (SRIs)  
Figure 8



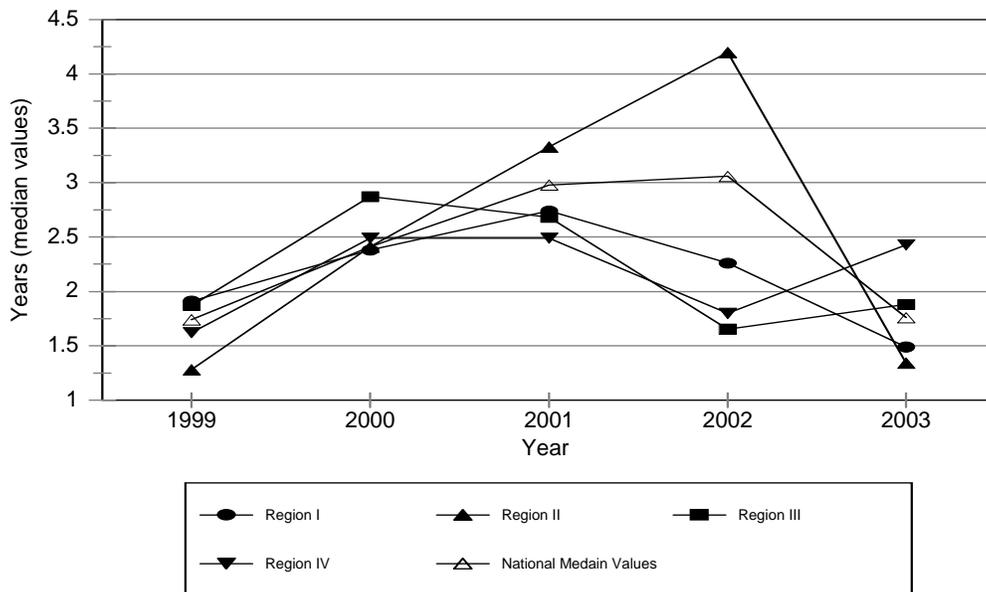
### Current Site Time

The SRI metrics for Regions I, II, and III were lower than those for Region IV, which experienced a slight increase in both RI and SRI positions during 2003. Total site time for Region II decreased substantially during 2003. For RIs, all regions were close to the national median.

Current Site Time (RIs) - Figure 9



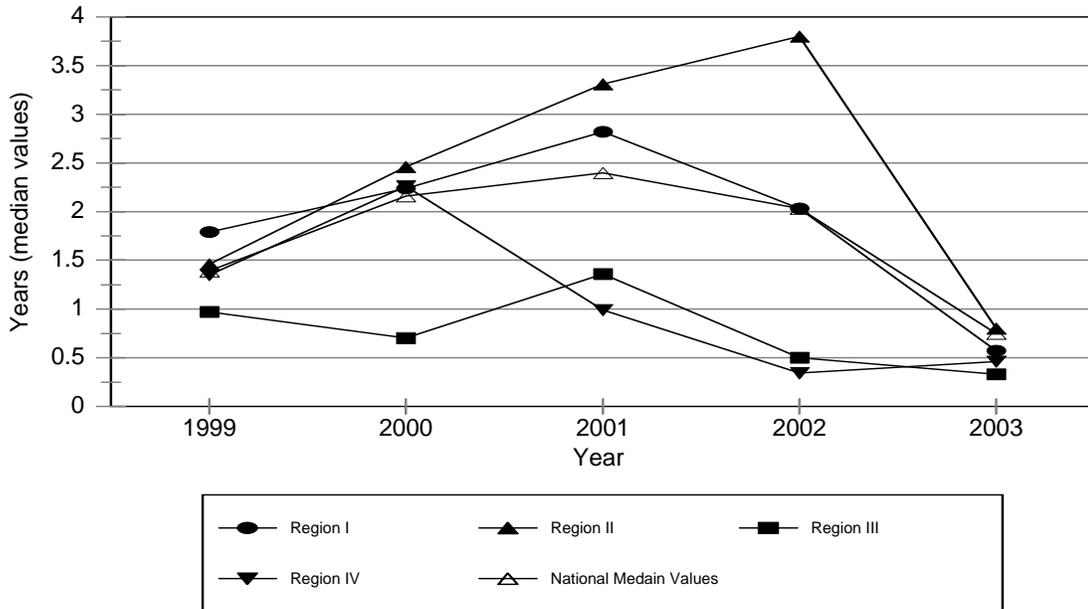
Current Site Time (SRIs) - Figure 10



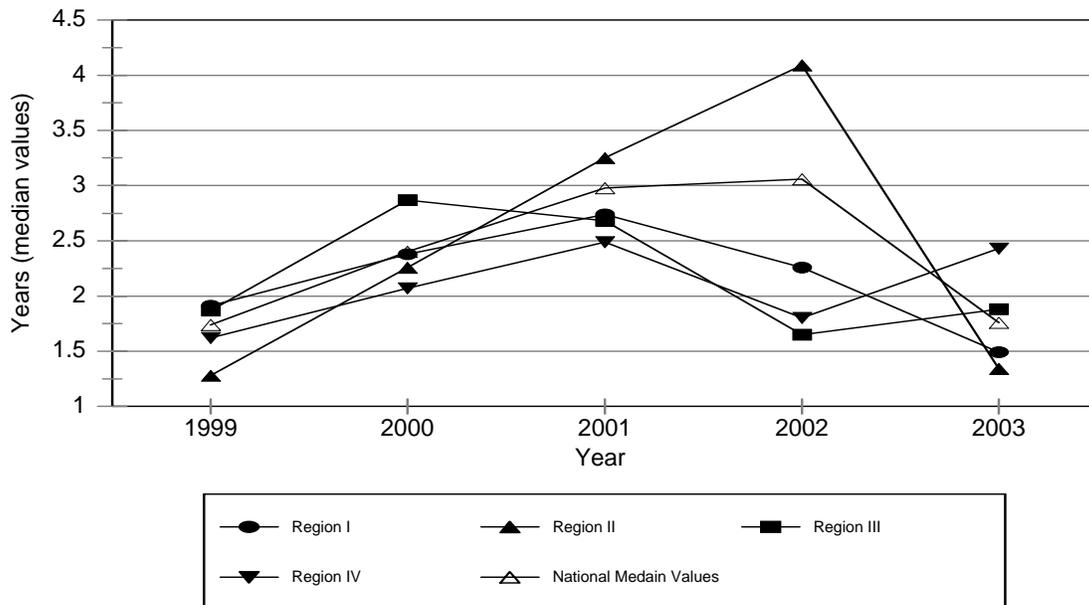
### Qualified Current Site Time

The RI metrics for Regions I, III, and IV were slightly lower than those for Region II. Region I and II metrics for SRI qualified current site time were lower than the previous year and lower than the national median.

Qualified Current Site Time (RIs)  
Figure 11



Qualified Current Site Time (SRIs)  
Figure 12



### Relevant Non-NRC Experience

Region III metrics for RIs increased significantly during 2003. The other regions remained fairly stable. All of the regions experienced an increase in relevant non-NRC time for SRIs.

