

Resident Inspector Demographics

Scope and Objectives

This enclosure provides the annual update on demographic data for inspectors assigned to the resident inspector (RI) program, as the Commission directed in a staff requirements memorandum issued April 8, 1998. This analysis seeks 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 enclosure also provides an update on site staffing.

Resident Inspector Demographic Data

The U.S. Nuclear Regulatory Commission (NRC) staff review of the demographics included analysis of the overall program data for the RI and senior resident inspector (SRI) groups (see Tables 1–6 and Figures 1–10). The staff used median values from the month of November 2003 to November 2007 for statistical comparison.

The demographic analysis consists of the following four distinct data sets:

- (1) "NRC time" is the total number of years the individual has accumulated as an NRC employee.
- (2) "Total resident time" is the total number of years the individual has accumulated as an RI or SRI.
- (3) "Current site time" is the total number of years spent as an RI or SRI at the current site.
- (4) "Relevant non-NRC experience" is nuclear power experience acquired outside of the NRC. Examples of relevant non-NRC experience include operation, engineering, maintenance, or construction experience with commercial nuclear power plants, naval shipyards, U.S. Department of Energy facilities, or the U.S. Navy's nuclear power program.

Analysis of 2007 Resident Inspector Group

RI demographic data for 2007 (see Tables 1, 3, and 5 and Figures 1, 3, 5, 7, and 9) indicate that the RI turnover rate increased resulting in a decrease of both total resident time and current site time. Although the turnover rate has increased and current site time and total resident time numbers are down, the RIs continue to maintain a high level of experience.

During 2007, 33 of 72 RIs left the RI program (46 percent). Of the 33 RIs who left, 13 were promoted to SRI positions, 13 were either promoted or laterally reassigned to a regional office or headquarters, 3 retired, and 4 resigned from the NRC. This data does not include RIs who were laterally reassigned to another site. Table 1 tracks the RIs who left the RI program from 2003 to 2007.

**Table 1
Resident Inspector Turnover**

	2003	2004	2005	2006	2007
Promoted to SRI	14	3	10	11	13
Promoted/ Reassigned	12	3	9	2	13
Retired	1	0	2	1	3
Resigned	0	0	2	0	4
Total	27	6	23	14	33
Turnover Rate	38%	8%	32%	20%	46%

The RI turnover rate for 2007 increased by 26 percent from 2006. Even though a significant portion of the RIs were promoted to an SRI position (40 percent), an equal share of the RIs were either promoted or reassigned outside the RI program.

This turnover has resulted in decreases in the total resident time and current site time across the agency. The national median value (NMV) for total resident time decreased 20 percent from 2006 to 2007. This decrease offset the gradual 20 percent increase in the NMV for total resident time from 2003 to 2006.

The national data from 2003 to 2007 shows that the RIs have maintained an average of 10 years relevant non-NRC experience and 4 years of NRC time. This demonstrates that the RIs continue to maintain a high level of experience despite the high turnover rates in recent years.

Further, there were 18 new RIs in 2007 and they had an average of 10 years of relevant non-NRC experience and 3 years of NRC time (or a combined total of 13 years relevant nuclear experience). This shows that the new RIs that are filling open positions have a substantial amount of nuclear experience. The staff is considering combining the NRC time and relevant non-NRC experience data to reflect overall nuclear experience in the next revision to IMC 0307.

NOTE: The RI demographics data in 2008 will reflect the addition of five new RIs from November to December 2007.

The staff was directed in the staff requirements memorandum dated June 14, 2007 to evaluate the recruitment, training, and development of the RI program to confirm that the human resources are adequate to meet changing needs. The staff collected the following information:

- RI Recruitment - The regions recruit inspectors to potentially fill RI positions externally from universities, service academy career conferences, job fairs, the Nuclear Safety

Professional Development Program, U.S. Navy and shipyards, the nuclear power industry, and corporate engineering firms. The regions recruit internally by posting RI vacancies within the region or nationwide. Due to the high turnover rate in 2007, the regions have had difficulty filling RI vacancies and have implemented various recruitment strategies to fill the open positions. The staff will continue to evaluate the RI recruitment strategies in 2008.

- **RI Training** - In 2007, the regions qualified 23 individuals in accordance with Inspection Manual Chapter (IMC) 1245, "Inspector Qualification Program." Currently, 41 individuals are in the IMC 1245 qualification program, and 38 are projected to receive their inspector qualification in 2008. Overall, the inspector training program in the regions is well established and continues to produce highly qualified inspectors.
- **RI Development** - RIs continue to develop professionally by filling rotational assignments and participating in team inspections, training opportunities, inspector seminars, and knowledge transfer sessions.

Analysis of 2007 Senior Resident Inspector Group

SRI demographic data for 2007 (see Tables 2, 4, and 6 and Figures 2, 4, 6, 8, and 10) indicate that the SRI turnover rate was high resulting in a national decrease in current site time from 2006 to 2007. Although there was a national drop in current site time, the NMV for total nuclear experience (combined NRC time and relevant non-NRC time) and total resident time has increased annually since 2004.

In 2007, 17 of 66 SRIs left the program (26 percent). Of those 17, 7 were promoted, 7 were laterally reassigned to headquarters or a regional office, 1 retired, and 2 resigned from the NRC. This data does not include SRIs who were laterally reassigned to another site. Table 2 tracks the SRIs who left the program from 2003 to 2007.

Table 2
Senior Resident Inspector Turnover

	2003	2004	2005	2006	2007
Promoted	7	0	5	7	7
Reassigned	6	3	4	7	7
Retired	1	2	1	1	1
Resigned	0	0	0	1	2
Total	14	5	10	16	17
Turnover Rate	21%	8%	15%	24%	26%

The SRI turnover rate in 2007 (26 percent) is about the same as in 2006; however, it has been increasing since 2004. The high national SRI turnover rate directly affected the NMV for current site time. In 2007, all four regions' SRI current site time was less than three years and decreased from 2006. This decrease offset the gradual national current site time increase from 2003 to 2006. Although the national current site time numbers have decreased, SRI experience level remains high in that the NMV for total resident time and relevant nuclear experience has been increasing since 2004.

The staff was directed in the staff requirements memorandum dated June 14, 2007, to consider ways to enable SRIs to be promoted and still remain within the RI program. A task force of staff from the Office of the Executive Director for Operations and the Deputy Regional Administrators is currently assessing RI program retention issues and will provide the Deputy Executive Director for Regulatory Programs with recommendations and potential solutions.

Site Staffing Requirement

The staff developed a site staffing metric in response to a recommendation by the Davis-Besse Lessons Learned Task Force (DBLLTF). The purpose of the metric is to evaluate the agency's ability to provide continuity of regulatory oversight. Specifically, DBLLTF item 3.3.5.3 recommended that the staff establish a measurement for RI staffing, including program expectations to satisfy minimum staffing levels.

The following note is an excerpt from IMC 0307, "ROP Self-Assessment," and defines the staffing metric criterion:

NOTE: Inspectors assigned to the site permanently or through a rotation with a minimum duration of 6 weeks shall be counted. Inspectors on 6 week or longer rotational assignments will be identified as such. Inspectors assigned to the site for less than six weeks will not be counted, but should be indicated as such. Additionally, the regions shall indicate sites where permanently assigned resident or senior resident inspectors are away from the site for an extended period of time (one continuous time period which is greater than 6 weeks). Only inspectors who have attained at least a basic inspector certification status, as defined by Appendix A to Inspection Manual Chapter 1245, shall be counted.

Data will indicate the number of days a qualified resident and senior resident inspector are permanently assigned to the site during the year divided by the number of days in the year. Number of days spent on training; meetings away from the site; participation in team inspections; leave; or other temporary duties (e.g. acting for branch chiefs in his/her absence) will not be counted against the metric unless the absence exceeds 6 continuous weeks.

Site Staffing Analysis

The criterion for the metric is 90 percent program wide. In 2007 the average site staffing for all the regions was 96 percent, with each region exceeding 90 percent. However, nine sites were below the 90 percent mark. Of these nine sites, eight were between 84 and 89 percent, and one site was 74 percent. The site that had 74 percent site staffing had an RI who retired from the NRC in June of 2007. For each of these nine sites, the vacancies were temporarily filled by

qualified inspectors, but their tours were less than the minimum duration of 6 weeks and therefore counted against the metric. In 2005 three sites did not meet the criterion of 90 percent and in 2006 only one site was below 90 percent.

As a result of the high turnover rate in 2007, the regions were presented a significant challenge in providing continuity of regulatory oversight at the affected sites. Two regions were able to meet the 90 percent site staffing goal at all of the individual sites; however, this was a significant burden on the regional staff and management. The RI and SRI vacancies were filled by inspectors on extended rotations, resulting in complex regional human resource allocation issues. Additionally, inspection resources were provided by other regions and headquarters enabling the region to fill the openings for 6 weeks or longer and meet the metric. The other two regions experienced difficulty in staffing the vacant RI and SRI positions for extended periods resulting in 9 sites falling below the 90 percent site staffing goal. In 2007, the sites that fell below the 90 percent mark were dealing with an RI or SRI who left the site permanently (either by retirement, resignation, or transfer to a regional or headquarters position). To support the site inspection efforts, the regions provided qualified inspectors to the sites but for periods shorter than 6 weeks. Because these periods were less than 6 weeks, the site was recorded as not continuously staffed during this timeframe. However, at no time did these sites remain without qualified inspectors to support the required inspection efforts.

Conclusions

The staff concluded the following:

- The combined RI and SRI turnover rate increased significantly in 2007 creating a complex regional human resource allocation issue.
- The NMVs for RI total resident time and for both RI and SRI current site time decreased from 2006 to 2007 as a result of the high turnover rates.
- In 2007, nine sites experienced staffing levels below 90 percent according to the site staffing metric criteria. This is a significant increase from 2005 and 2006. The site staffing data correlate with the high RI and SRI turnover rates.
- The overall experience levels (NRC time and relevant non-NRC time) of RIs and SRIs have remained high as indicated by the national data since 2003 (see Figures 9 and 10).

The two significant impacts in 2007 were the high RI and SRI turnover rates and the increase in the number of sites with a staffing level below 90 percent. The RI and SRI turnover rates were elevated because of the increase in promotional opportunities at the Office of New Reactors and the construction inspection efforts in Region II. Since the RI and SRI turnover rates were 46 percent and 26 percent respectively, it was difficult to provide permanent inspectors to sites in a timely manner. As a result, nine individual sites had staffing levels below 90 percent according to the site staffing metric criteria. The staff will review current program requirements to address the increased RI and SRI turnover rates to ensure site staffing continuity. Specifically, a task force of NRC staff is currently assessing RI program retention issues and various recruitment barriers.

- (1) **NRC Time:** NRC time for RIs increased in Region III, remained relatively constant in Regions I and IV, and decreased in Region II. NRC time for the SRIs increased in Region I and remained relatively constant in Regions II, III, and IV.

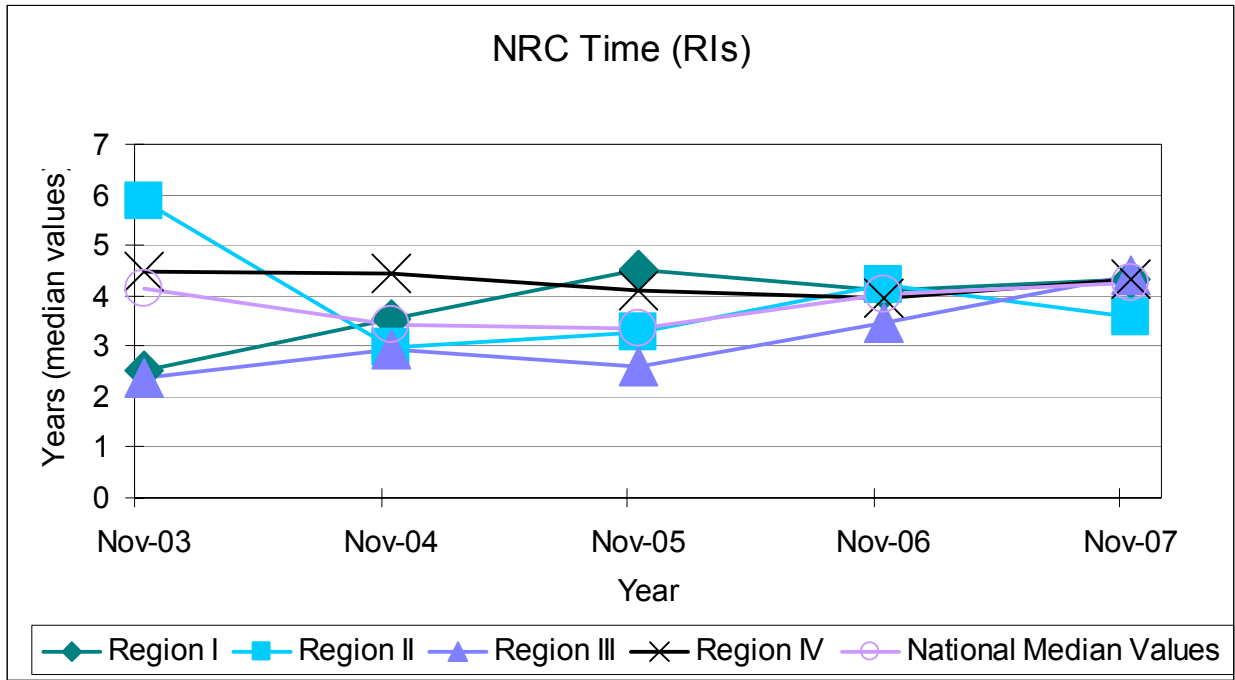


Figure 1

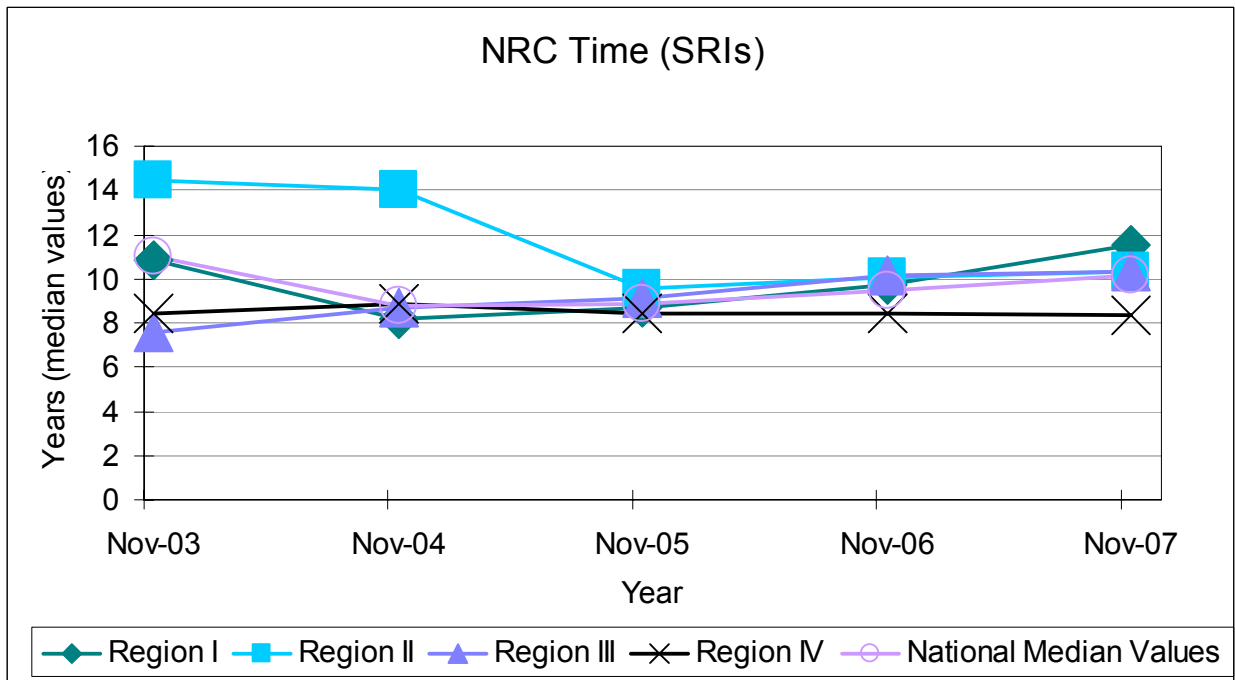


Figure 2

- (2) **Total Resident Time:** Total resident time for the RIs increased in Region I, remained relatively constant in Region III, and decreased in Regions II and IV. Total resident time for the SRIs increased in Regions II, III, and IV and remained relatively constant in Region I.

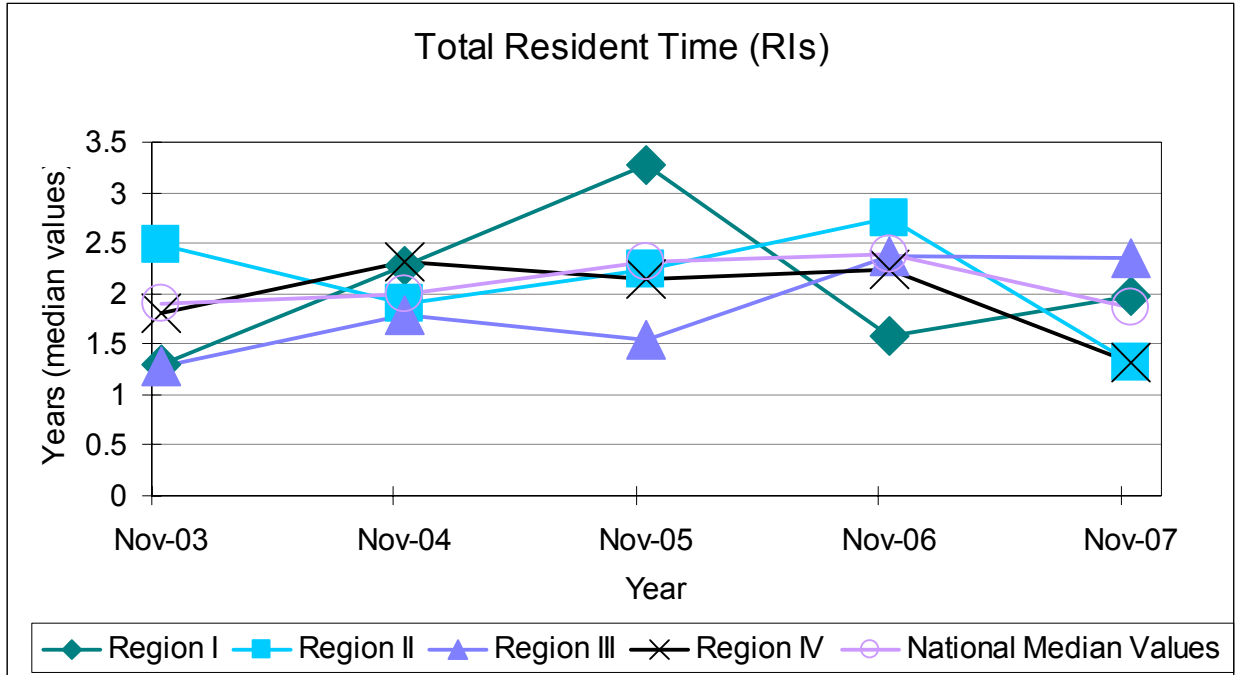


Figure 3

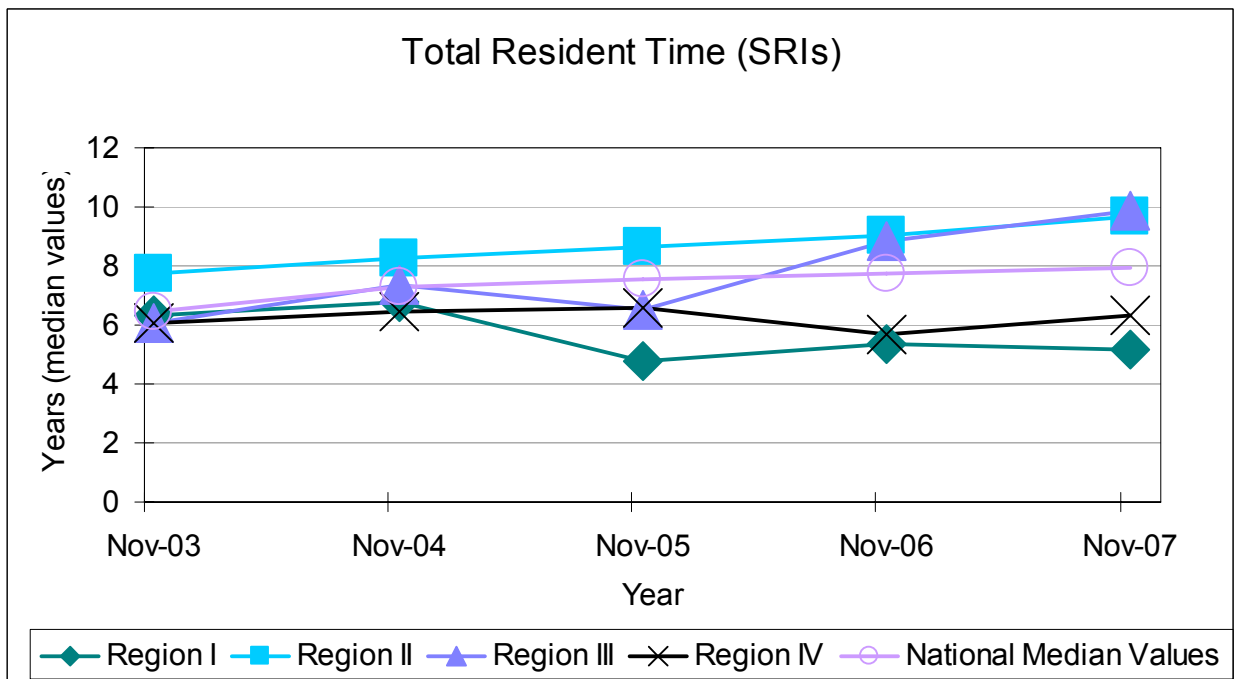


Figure 4

- (3) **Current Site Time:** Current site time for the RIs increased in Region I, remained relatively constant in Region III, and decreased in Regions II and IV. Current site time for the SRIs remained relatively constant in Region II and decreased in Regions I, III, and IV.

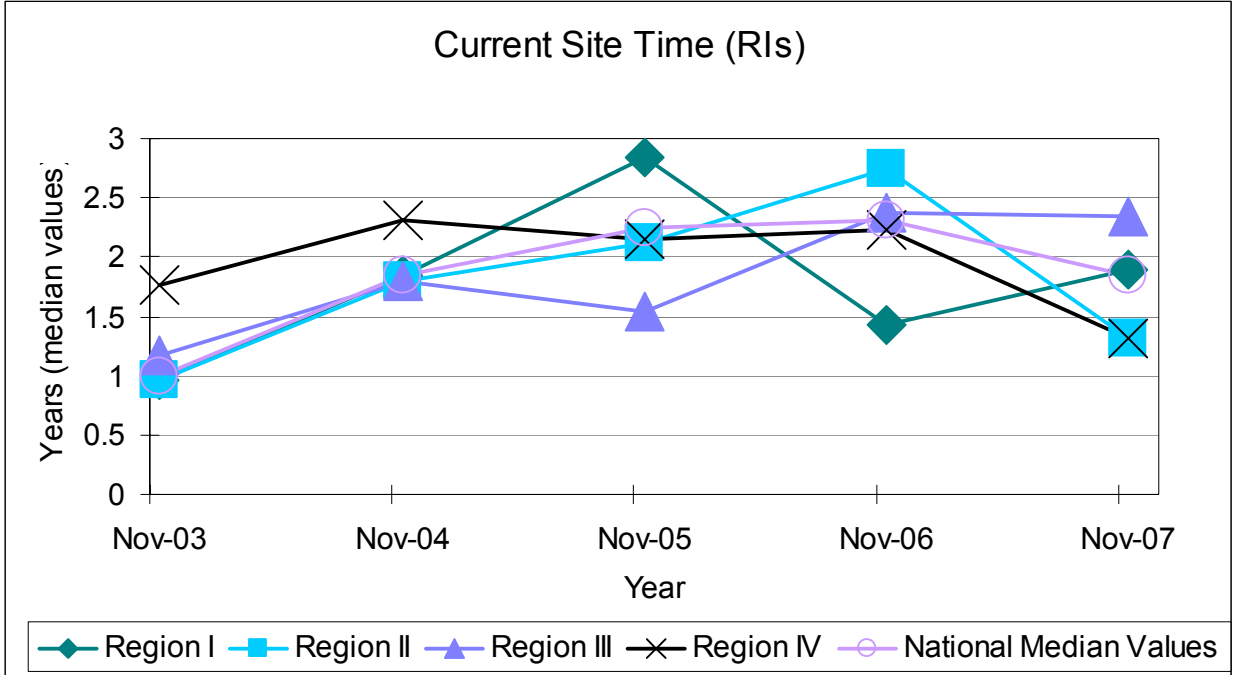


Figure 5

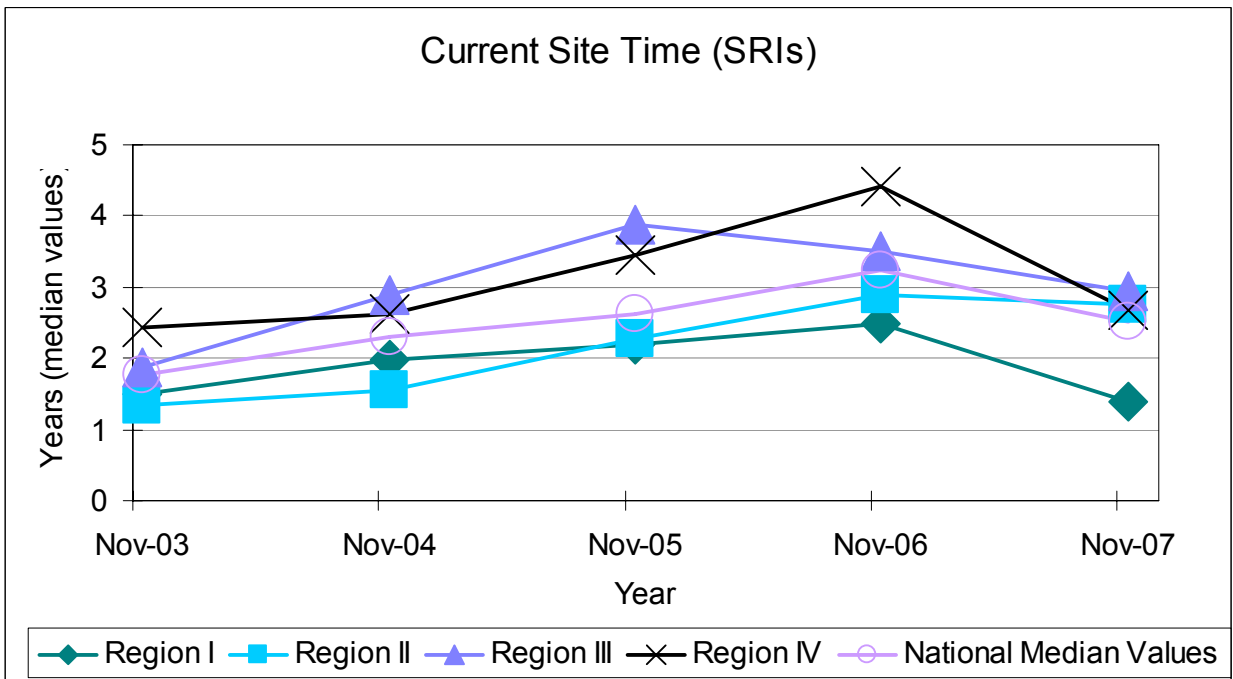


Figure 6

- (4) **Relevant Non-NRC Experience:** Relevant non-NRC experience for the RIs increased in Region II, remained relatively constant in Region IV, and decreased in Regions I and III. Relevant non-NRC experience for the SRIs increased in Regions I, II, and IV and remained relatively constant in Region III.

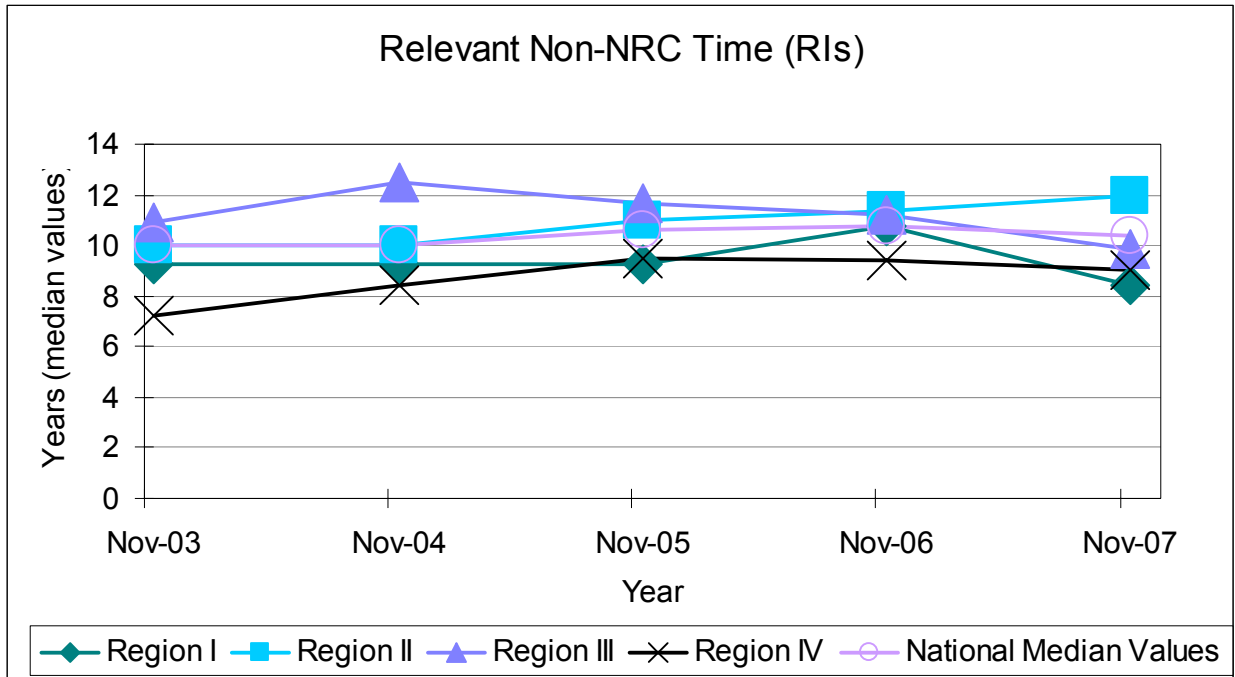


Figure 7

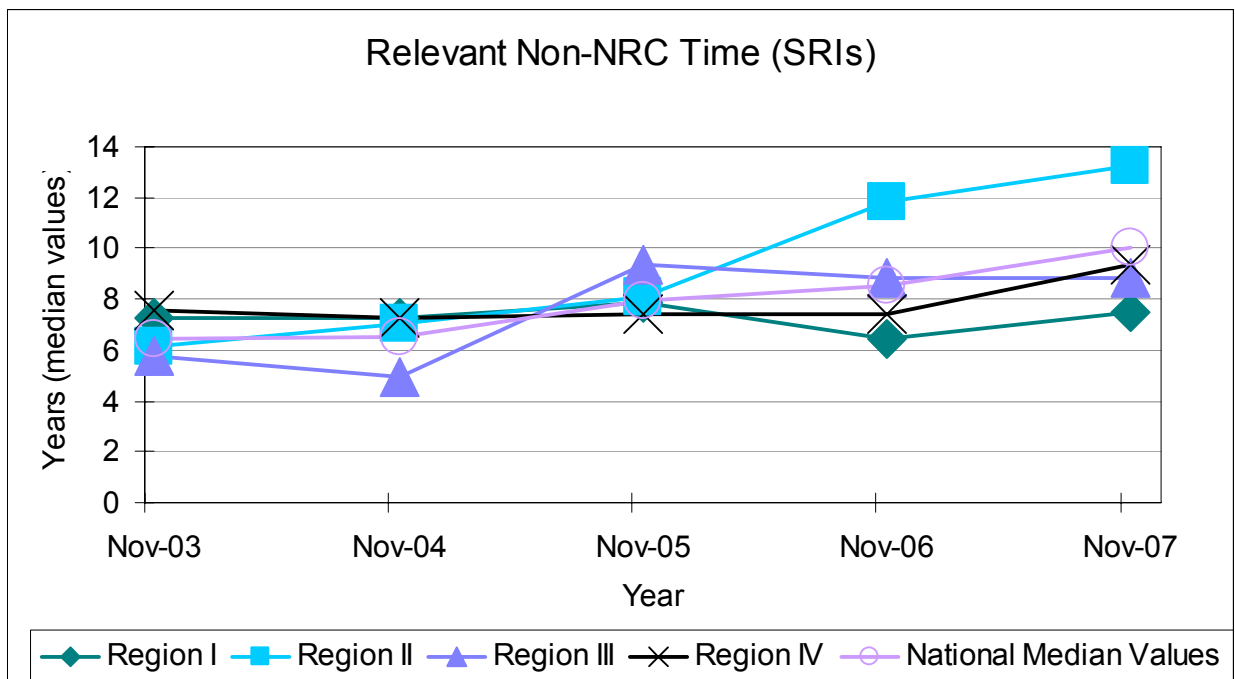


Figure 8

Summary: Overall, the demographic data regarding the RIs were relatively constant. As for the SRIs, there was a slight increase in NRC time and relevant non-NRC experience, total resident time remained constant, and there was a slight decrease in current site time.

**Table 3
Resident Inspectors**

	2003	2004	2005	2006	2007
NRC Time	4.13	3.42	3.36	4.04	4.25
Total Resident Time	1.99	2.00	2.31	2.39	1.87
Current Site Time	1.00	1.85	2.25	2.23	1.85
Relevant Non- NRC Experience	10.00	10.00	10.63	10.75	10.38

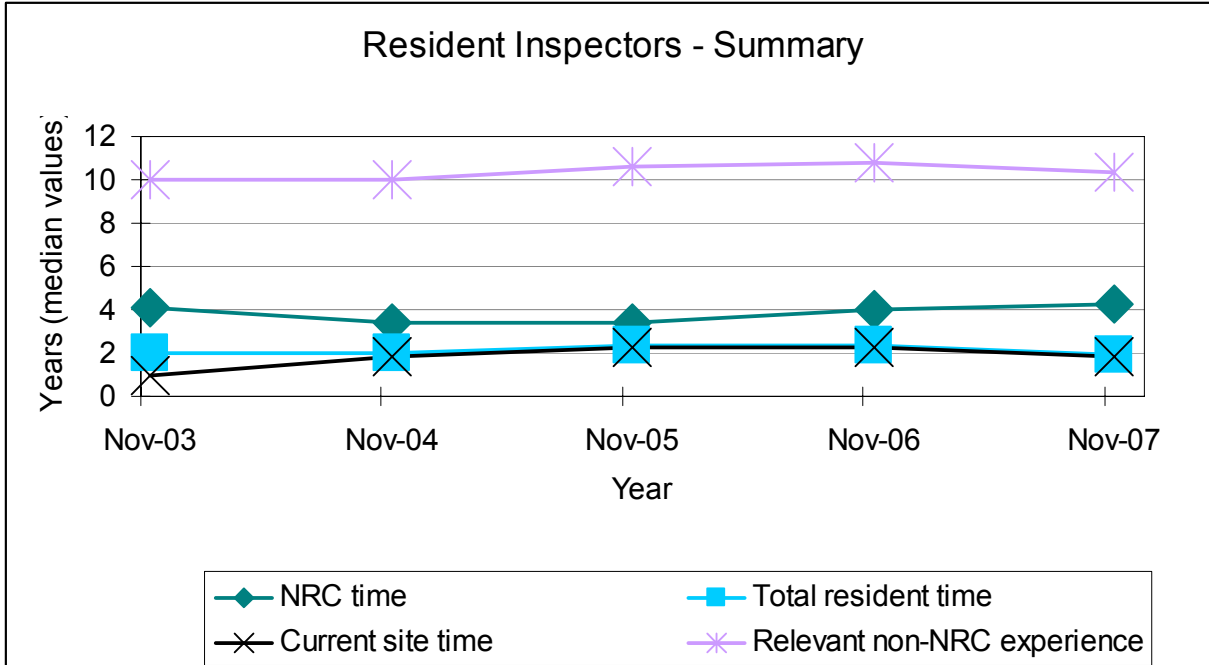


Figure 9

Table 4
Senior Resident Inspectors

	2003	2004	2005	2006	2007
NRC Time	11.00	8.80	8.84	9.28	10.11
Total Resident Time	6.48	7.32	7.54	7.77	7.93
Current Site Time	1.76	2.31	2.63	3.21	2.52
Relevant Non- NRC Experience	6.42	6.55	7.96	9.08	10.04

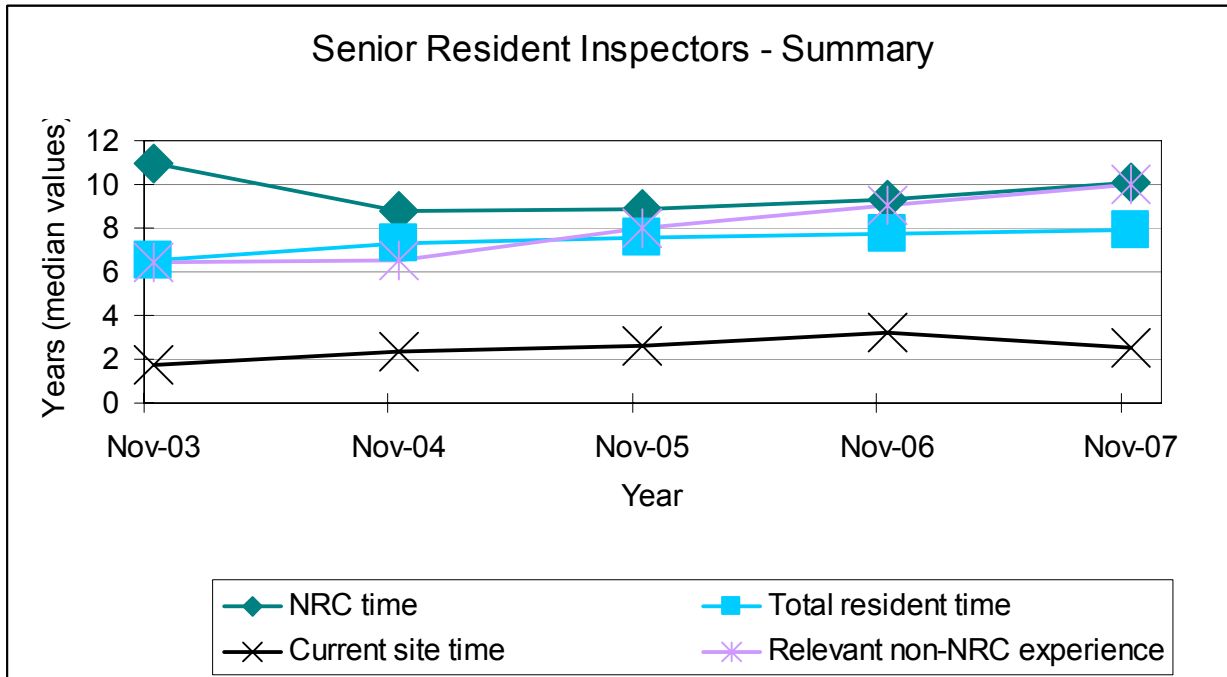


Figure 10

**Table 5
Resident Inspectors 2007 by Region**

2007	NRC Time	Total Resident Time	Current Site Time	<i>Relevant Non-NRC Experience</i>
Region I	4.31	1.97	1.89	8.42
Region II	3.58	1.32	1.32	12.00
Region III	4.42	2.35	2.35	9.83
Region IV	4.34	1.32	1.32	9.00
Total	4.25	1.87	1.85	10.38

**Table 6
Senior Resident Inspectors 2007 by Region**

2007	NRC Time	Total Resident Time	Current Site Time	<i>Relevant Non-NRC Experience</i>
Region I	11.51	5.19	1.39	7.50
Region II	10.32	9.67	2.75	13.25
Region III	10.30	9.86	2.93	8.83
Region IV	8.33	6.30	2.68	9.38
Total	10.11	7.93	2.52	10.04