BY THE U.S. GENERAL ACCOUNTING OFFICE

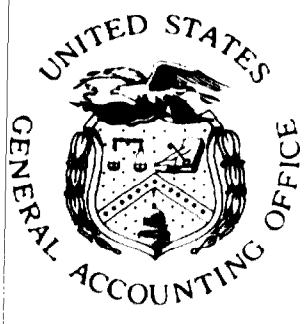
Report To The Chairman, Nuclear Regulatory Commission

NRC Needs Alternative To Mandatory Relocation For Maintaining Objectivity Of Resident Inspectors

Since 1978, the Nuclear Regulatory Commission has stationed resident inspectors at nuclear powerplant sites. A continuing concern is the ability of these inspectors, or residents, to retain their objectivity over an extended period of time.

NRC plans to relocate residents at least every 5 years as one way to help assure objectivity. However, residents are likely to incur personal financial hardship--on the average of $7,700--upon relocation, because federal employee relocation allowances are less than actual relocation costs. Therefore, NRC has not yet required residents to relocate due to concern that many of them might resign.

GAO believes there are better ways to preserve residents' objectivity than by mandating relocation within a set time period. NRC should make more use of alternative measures now being used by some regional inspection offices to help assure that residents objectively perform their duties. These measures could be used in conjunction with a flexible relocation policy which encourages--but does not mandate--periodic relocations.



GAO/RCED-84-37
NOVEMBER 2, 1983

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WASHINGTON, D.C. 20548

RESOURCES, COMMUNITY,
AND ECONOMIC DEVELOPMENT
DIVISION

B-196708

The Honorable Nunzio J. Palladino
Chairman, Nuclear Regulatory Commission

Dear Mr. Palladino:

This report presents our views on the Nuclear Regulatory Commission's policy of relocating its resident inspectors at least every 5 years. We evaluated this policy because some residents are now completing their 5-year duty tours at nuclear powerplant sites.

This report contains recommendations to you on page 14. As you know, 31 U.S.C. 720 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Chairmen, House and Senate Committees on Appropriations, House Committee on Government Operations, Senate Committee on Governmental Affairs, Senate Committee on Environment and Public Works, and the House Committees on Energy and Power and Interior and Insular Affairs. We are also sending copies of the report to the Director, Office of Management and Budget, and we will make copies available to other interested parties upon request.

Sincerely yours,

J. Dexter Peach
Director

Contents

ABBREVIATIONS

GAO	General Acounting Office
NRC	Nuclear Regulatory Commission

GENERAL ACCOUNTING OFFICE
REPORT TO THE CHAIRMAN,
NUCLEAR REGULATORY COMMISSION

NRC NEEDS ALTERNATIVE TO MANDATORY RELOCATION FOR MAINTAINING OBJECTIVITY OF RESIDENT INSPECTORS

D I G E S T

Until about 5 years ago, the Nuclear Regulatory Commission (NRC) inspected operating nuclear powerplants and plants under construction by sending inspectors to plant sites from five regional offices. In 1978, however, NRC began assigning inspectors, called resident inspectors or residents, to these sites. NRC believed that residents would increase the agency's presence at sites, increase total powerplant inspection time, enhance its knowledge of utilities and their nuclear powerplants, and generally increase its assurance that utilities were properly building and safely operating these plants. NRC assigned 32 regional inspectors to nuclear powerplant sites in the first year of the program. As of December 1982, NRC had 134 residents assigned to 82 sites.

A major NRC concern when it began the resident inspection program was that residents might lose their ability to objectively perform their inspection duties as they gained familiarity with utility employees. In November 1979, GAO reported that, particularly where only one resident is assigned to a nuclear powerplant site, the loss of objectivity appeared to be a legitimate concern.[1] GAO reasoned that the longer the residents remained at the plant, the more they might consider themselves a part of that plant's organizational structure and perhaps begin to defend it against outsiders who raise questions concerning its design, construction, or operation.

NRC believed it could minimize this risk by carefully selecting residents, ensuring their frequent contact with region-based inspectors and supervisors, and relocating each resident to a new powerplant site every 3 years. The relocation policy, however, created a dilemma because many of the initial group of residents incurred financial losses when they moved from

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[1]"Placing Resident Inspectors At Nuclear Powerplants: Is It working?", EMD-80-28, November 15, 1979.

Tear Sheet

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regional offices to their assigned plant sites. Relocation allowances permitted by federal regulations were insufficient to cover their actual expenses.

As a result, in 1981 NRC extended the maximum duty tour at a nuclear powerplant site from 3 to 5 years to reduce the risk that experienced residents would resign rather than relocate at personal financial hardship. NRC also asked the Congress for legislative authority to pay residents higher relocation allowances than federal employees are generally provided. The Congress did not give NRC this authority but directed NRC to study and report on the financial hardship issue, along with any new request for legislation. On April 29, 1983, NRC submitted its report. Among other things, NRC estimated that residents will incur, on the average, a financial loss of about $7,700 due to relocation. NRC also affirmed its continuing support for its earlier legislative proposal. (See p. 3.)

Since some residents are approaching the end of their 5-year duty tours, NRC has authorized heads of its five regional offices to recommend case-by-case extensions of duty tours beyond 5-years pending resolution of the financial hardship issue. Extensions may be granted only upon weighing factors such as

--the remoteness of a plant site and the presence or absence of other residents at the site, the inspector's overall performance (including objectivity) and career goals, and the availability of commensurate positions within NRC;

--the regulatory performance of the nuclear facility to which the resident is assigned; and

--the overall safety, staffing, and recruiting impacts of relocating a number of residents in a short period of time.

This measure is in effect until NRC obtains authority to pay residents higher relocation allowances. NRC plans to enforce its mandatory relocation policy once it obtains this authority. (See p. 3.)

GAO continues to believe that maintenance of residents' objectivity is a legitimate

concern. GAO also believes that, in the long run, periodic movement of inspectors among nuclear powerplants is healthy in that it provides a diversity of experience. Even with these advantages, however, GAO believes that implementation of NRC's mandatory relocation policy may impair the overall quality of NRC's inspection program by causing experienced residents to resign rather than accept periodic relocation.

NRC has not yet actually required its residents to relocate. However, when NRC began the program it reassigned experienced inspectors from its regional offices to nuclear powerplant sites. These mandatory reassignments were a major reason that the annual attrition rate among NRC inspectors subsequently increased from 3.5 percent to 17 percent. In addition, 19 of 21 residents GAO interviewed said that, based on the potential financial hardship of moving, they would seek employment elsewhere if NRC required them to relocate. Furthermore, 7 of these 19 residents said they did not want to relocate even if it would not cause financial hardship. Thus, mandatory relocation is likely to result in a loss of experienced residents and a concurrent need to recruit and train replacements. (See p. 9.)

Moreover, GAO found that, because of the differences among plants and the utilities which operate them, residents require from 1 to 2 years to fully acquaint themselves with a nuclear powerplant. While movement among nuclear powerplants should in the long run broaden the experiences of residents, in the short run relocation every 5 years means that residents will spend a significant portion of their assignments at less than full proficiency. (See p. 11.)

Alternative measures are available to help assure the residents' objectivity. Some NRC inspection offices are selectively using measures which promise the dual benefits of permitting better assessments of objectivity and improving the quality of NRC's inspection program. Examples include temporarily reassigning resident inspectors to other nuclear powerplants, for about 2 weeks, to broaden their perspectives and increasing the frequency of regional office supervisory visits to nuclear powerplant sites. (See p. 11.)

Finally, although NRC presently has only limited means to measure residents' objectivity, to date NRC has concluded that loss of objectivity has generally not occurred. NRC's 5 regional office administrators could identify only two cases over the last 5 years in which they had determined that inspectors had compromised their objectivity. One involved a resident inspector; the other an inspector assigned to a regional office. (See p. 8.)

CONCLUSIONS

GAO agrees that maintaining residents' objectivity is important and that periodic relocation is desirable. However, GAO believes that there is a better way than mandatory relocation for NRC to help assure objectivity. This is particularly true in view of the uncertainty that NRC will obtain legislative authority to pay higher relocation allowances to this small group of federal employees and the risk that many residents may resign rather than relocate.

First, NRC should establish a flexible relocation policy which does not limit the length of residents' assignments but encourages periodic relocations and retains NRC management's prerogative of relocating individual residents when it determines that it is in the agency's best interests. In making such determinations, NRC should weigh factors such as those it now uses in considering assignment extensions beyond 5 years. In conjunction, NRC should use some or all of the alternative measures being selectively used by some regional offices as a framework for assuring objectivity. This modified approach is particularly applicable in view of the fact that NRC has not found the loss of objectivity to be a significant problem.

RECOMMENDATIONS TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION

To help assure that resident inspectors objectively perform their duties while at the same time minimizing the potential drawbacks of relocating them, GAO recommends that the Chairman, NRC

--adopt a flexible policy which encourages, but does not mandate, periodic relocations while

retaining NRC management's prerogative of relocating individual residents when management determines that it is in the best interests of NRC; and

--use alternative measures, such as those now being selectively used by some regional offices, to assess inspector objectivity.

AGENCY COMMENTS

GAO did not obtain NRC's official comments on this report. GAO did, however, discuss the report with representatives of NRC's Executive Director for Operations, and their comments have been incorporated as GAO believed appropriate.

CHAPTER 1

INTRODUCTION

The Nuclear Regulatory Commission (NRC) and electric utilities each have important responsibilities in making sure that commercial nuclear powerplants are properly built and safely operated. Utilities construct and operate these plants, while NRC sets the regulations, standards, and guides for construction and operation. Furthermore, NRC is expected to ensure, through its inspection and enforcement program, that utilities are fulfilling their responsibilities for quality construction and safe powerplant operations.

In January 1975, when NRC was created as an independent regulatory agency out of the Atomic Energy Commission, it had responsibility for inspecting 53 operating nuclear powerplants and 63 plants under construction. Now, NRC's inspection responsibilities include 80 nuclear powerplants licensed to operate and another 64 plants under construction. NRC has increased its total inspection staff from about 200 inspectors in 1975 to about 475 by the end of 1982.

Until the late 1970s, NRC's nuclear powerplant inspections were made by inspectors assigned to NRC's five regional offices. Regional inspectors specialized in carrying out certain parts of NRC's inspection program such as fire protection, plant security, training and requalification of plant personnel, and quality assurance. These inspectors traveled to powerplants from regional offices to perform their assigned parts of NRC's inspection program. However, because of time spent (1) preparing for inspections, (2) traveling to and from plants, and (3) documenting and evaluating inspection findings, only about 25 percent of the regional inspectors' time was spent at plant sites. Furthermore, much of this time was devoted to reviewing records rather than observing work in progress or conducting independent tests and measurements.

In June 1977, the NRC Commissioners decided to station one inpector full-time at each operating nuclear powerplant and at selected plants under construction. Implementation started during the summer of 1978 with the relocation of 20 inspectors from regional offices to 20 nuclear powerplant sites. Each resident inspector (resident) received technical support from NRC's regional inspection offices. NRC intended that residents would be its "eyes and ears" at plant sites.

In 1981, NRC's Commissioners expanded the resident program. At least one resident was assigned at each site with a nuclear powerplant under construction or in operation, with additional residents assigned to sites on the basis of plant designs, past utility performance, and availability of adequately trained inspectors. As shown below, NRC had assigned residents to 82 nuclear powerplant sites as of December 1982. Funding for the program has grown from about $2.7 million in fiscal year 1978 to about $11.4 million in fiscal year 1982.

NUCLEAR POWERPLANT SITES WITH

RESIDENT INSPECTORS

	Number of sites		
	With one inspector	With two or more inspectors	Total
Single unit			
Operating	12	10	22
Under construction (note a)	22	5	27
Multi-unit			
Operating	2	20	22
Under construction (note a)	1	10	11
Total	37	45[b]	82

[a]Includes plants constructed but undergoing tests before operation.

[b]Five sites had more than two inspectors assigned. For example, four residents are assigned to the Three Mile Island site.

One of the major concerns raised when NRC established the program was the potential loss of residents' objectivity. For example, in the report accompanying the NRC authorization bill for fiscal year 1979, the House Committee on Interstate and Foreign Commerce (now the Committee on Energy and Commerce) remarked:

> "The committee believes that the placement of an NRC employee at the site of an operating reactor or one under construction might lead to a familiarity with the operator or contractor which impairs the inspector's objectivity. This observation is in no way meant to raise questions as to the character or integrity of any inspector. Resident inspectors will have more frequent contact with the operator or contractor than they have with other NRC employees, and the likelihood of less than total objectivity must be viewed as a natural outgrowth of this phenomenon. Every effort must be exerted to guard against this possibility."

NRC believed it could minimize this risk by carefully selecting residents, limiting their duty tours at a site to 3 years, and ensuring that they had frequent contact with regional inspectors, supervisors, and other resident inspectors. In addition, NRC developed a strict code of conduct for them which prohibits activities such as car pooling with utility employees.

In 1981, NRC extended the 3-year duty tour to a maximum of 5 years because it was concerned that residents might resign rather than relocate. NRC's Office of Inspector and Auditor found that relocation costs they incurred in initially moving to their assigned plant sites were generally greater than what NRC could reimburse under government relocation allowances. NRC was concerned that residents might resign rather than face financial losses--then estimated by NRC at about $4,700 per relocation--thus adversely affecting the inspection program. When NRC decided to extend maximum duty tours from 3 to 5 years, it also intended to assign more than one resident to each site. Therefore, NRC reasoned, a minimum of two at each site would reduce the potential that they might lose their objectivity as a result of longer duty tours.

In 1981 NRC also requested legislative authority to pay residents higher relocation allowances. The legislative proposal was included in the fiscal years 1982 and 1983 NRC authorization bill passed by the Senate, but it was subsequently deleted by the House and Senate conference committee. Furthermore, the legislative proposal was opposed by both the General Services Administration and the Office of Management and Budget because of its preferential treatment of NRC residents over other federal employees and because of its estimated cost. NRC estimates that, if it obtains authority to pay residents higher relocation allowances, the annual cost of relocating them will increase from about $600,000 to somewhere between $880,000 and $1.4 million.

In lieu of giving NRC the authority it sought, the Congress directed NRC to conduct a study of financial hardships due to relocation. On April 29, 1983, NRC submitted its report, entitled "Study of Financial Impacts on Resident Inspectors," to the Congress. Among other things, NRC estimated that the average future financial loss a resident will incur with relocation is about $7,700 and endorsed the earlier legislative proposal intended to reduce this hardship.

The first group of NRC's resident inspectors will be completing their 5-year duty tours in the summer of 1983. NRC had expected that 11 residents would be relocated in 1983, and that an average of 72 annual relocations would eventually be required. This estimate included normal attrition and transfers into and out of the program as well as relocations among sites.

In December 1982, however, NRC's Executive Director for Operations authorized the administrators of NRC's five regional offices to recommend for his approval, on a case-by-case basis, extensions of duty tours beyond 5 years after considering the following factors:

--The resident's overall performance, including continued objectivity.

--Whether the remoteness of site location, the presence or absence of other residents at the site, and the level of

day-to-day regional office contact affect the resident's performance and objectivity over time.

--The personal desires and career goals of the individual.

--Humane considerations where a family move could create an undue hardship.

--Whether the nuclear facility's regulatory performance calls for maintaining the resident for continuity or replacing him or her for a fresh look.

--Whether available positions at other sites, NRC regional offices, or NRC headquarters are commensurate with the experience, qualifications, and career development of the individual and NRC needs.

--The overall safety impact of rotation of a number of residents during a short period of time.

--The recruiting/staffing impact of rotation of a number of residents during a short period of time.

The directive announcing this policy modification states that it is in effect until NRC obtains legal authority to pay resident inspectors' relocation allowances in amounts above current federal regulations.

OBJECTIVES, SCOPE, AND METHODOLOGY

NRC's mandatory resident inspector relocation policy was scheduled to be implemented beginning in the summer of 1983. In addition, the Congress directed NRC to study and report on the financial hardship issue by April 4, 1983. For these reasons, we evaluated the issue of maintenance of resident inspector objectivity. Our evaluation included an assessment of NRC's experience to date with this issue; a review of NRC's mandatory relocation policy in terms of its rationale, estimated cost, and potential impacts on NRC's overall nuclear powerplant inspection program; and an analysis of alternative ways of assuring that residents maintain their objectivity.

We discussed these issues with officials of NRC's Office of Inspection and Enforcement in Bethesda, Maryland, and in the NRC regional offices at King of Prussia, Pennsylvania, and Atlanta, Georgia. These regional offices inspect a relatively large number of nuclear powerplants. We also examined inspection program policies and procedures as well as studies of NRC's resident inspection program. We requested each of NRC's five regional administrators to identify all cases in which NRC management had concluded that resident and regional inspectors had compromised their objectivity.

In addition, we discussed NRC's relocation policy with four former regional inspectors, four former residents, and 21 current

residents. We did not select these former or current NRC inspectors on a random basis. Our criteria for selecting interviewees included (1) coverage of all five of NRC's regions, (2) ready accessibility to us of nuclear powerplant sites, and (3) availability of current and former inspection personnel.

Duty Stations of Residents Interviewed by GAO

Nuclear powerplant	State
NRC Region I	
Millstone	Connecticut
Pilgrim	Massachusetts
Susquehanna	Pennsylvania
Yankee-Rowe	Massachusetts
NRC Region II	
Hatch	Georgia
Sequoyah	Tennessee
Watts Barr	Tennessee
NRC Region III	
Cook	Michigan
Dresden	Illinois
Quad Cities	Illinois
NRC Region IV	
Cooper Station	Nebraska
Fort Calhoun	Nebraska
Fort St. Vrain	Colorado
NRC Region V	
Diablo Canyon	California
San Onofre	California

The results of our discussions with NRC's former and current inspectors are not statistically projectable. We believe, however, that the results discussed in this report represent a good cross-section of views since we interviewed about 16 percent of NRC's current residents, including inspectors from all of NRC's five regions.

We also discussed the resident inspection program and relocation policy with inspectors in two states--Connecticut and Massachusetts--having nuclear plant inspection programs; with

officials of the Institute of Nuclear Power Operations;[1] with officials of six electric utilities (listed below) operating nuclear powerplants at eight of the plant locations where we interviewed resident inspectors; and with representatives of three groups (listed below) with longstanding and active interests in nuclear power and nuclear regulation.

Electric utility organizations

Boston Edison Company, Boston, Massacusetts
Commonwealth Edison Company, Chicago, Illinois
Northeast Nuclear Energy Company, Hartford, Connecticut
Omaha Public Power Company, Omaha, Nebraska
Pacific Gas and Electric Company, San Francisco, California
Tennessee Valley Authority, Chattanooga, Tennessee

Citizen groups interested in nuclear power

Critical Mass
Friends of the Earth
Union of Concerned Scientists

Finally, through their embassies in Washington, D.C., we obtained the views of the nuclear regulatory organizations of Canada, France, Germany, and Japan concerning their nuclear powerplant inspection programs. These countries all have major nuclear power programs. Of these countries, however, only Canada uses resident inspectors.

We did not obtain official NRC comments on this report. We did, however, discuss the report with representatives of the NRC Executive Director for Operations, and their comments have been incorporated as we believed appropriate.

Except as noted above, we conducted our audit in accordance with generally accepted government auditing standards. Audit work was performed during the period of October 1982 through July 1983.

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[1]The Institute of Nuclear Power Operations is a non-profit organization established by nuclear utilities after the accident at the Three Mile Island nuclear powerplant to assist utilities in improving the safety of operations at nuclear powerplants. The Institute conducts periodic inspections of utilities constructing and operating nuclear powerplants.

CHAPTER 2

THERE ARE BETTER MEASURES THAN MANDATORY RELOCATION TO HELP ASSURE RESIDENT INSPECTOR OBJECTIVITY

NRC has attached considerable importance to assuring that residents objectively perform their duties, because they work daily at nuclear powerplants and are in frequent contact with utility personel.

There are two fundamental ways of helping to provide this assurance. One is to monitor the individual inspector's performance, including his or her objectivity. The other, which NRC selected when it established its resident inspector program, is to relocate each inspector periodically so that the inspector does not lose his or her objectivity over time. NRC has not, however, implemented this mandatory relocation policy. NRC is concerned that, due to the financial hardship inspectors can incur in moving to new nuclear powerplant sites, many might resign rather than relocate. If this happened, NRC believes the loss of these experienced inspectors would hurt the quality of its inspection program. Our review tended to confirm NRC's concern. Nineteen of 21 residents we talked to said that, considering the potential financial hardships, they would seek other employment if NRC required them to relocate. In addition, while NRC's capabilities for assessing objectivity are limited, to date it has not found loss of objectivity to be a significant problem.

On the other hand, we believe occasional relocations of residents are generally healthy. Not only does it provide some assurance that they retain their objectivity, but it also allows them to broaden their bases of experience. On balance, however, we believe mandatory relocation every 5 years is unnecessary, particularly in view of the possibility that NRC might lose many experienced inspectors. Alternative measures, which some NRC regional offices are currently using to a limited extent, could improve the inspection program and help NRC managers assess how objectively inspectors perform their duties. These measures, coupled with a flexible relocation policy which generally encourages but does not mandate relocation, should help NRC management maintain and possibly improve the inspection program.

LOSS OF OBJECTIVITY MAY NOT BE THE PROBLEM IT WAS ORIGINALLY ASSUMED TO BE

As noted earlier, the ability of residents to retain their objectivity over prolonged tours of duty at nuclear powerplant sites was a major concern when NRC established the program in 1978. NRC believed that the longer an inspector was assigned to a specific powerplant site, the greater the likelihood that the inspector would lose some of his or her objectivity.

In November 1979, we reported that, particularly where only one inspector is assigned to a nuclear powerplant site, the loss

of a resident's objectivity appeared to be a legitimate concern.[1] We reasoned that while onsite, inspectors will probably become acquainted with many plant employees on a first name basis. The longer inspectors remain at the plant, the more they may consider themselves a part of that plant's organizational structure. They may even begin to defend it against outsiders who raise questions concerning its design, construction, or operation. Because of these considerations, we believed it would be hard for inspectors to indefinitely maintain their objectivity, particularly if they were the only resident assigned to their respective plants.

Largely because of a combination of concern over objectivity and lack of experience with the resident inspector concept, NRC promulgated a strict code of conduct which applied to them and, to some extent, to their immediate families. Other than the general supervision provided out of its regional office, however, the code of conduct was the only step NRC took to permit it to measure or evaluate residents' maintenance of objectivity.

NRC now has about 5 years of experience with its resident inspection program. To date, based on the general supervision of residents and experience with the code of conduct, NRC has not found loss of objectivity to be a significant problem. As stated in a December 6, 1982, paper on the resident inspection program from NRC's Executive Director for Operations to the NRC Commissioners:

> "Overall, it is the staff's judgment that the maintenance of objectivity by Resident Inspectors has not, so far, proven to be a significant problem. It is important to note, however, that a claim of success in this matter is only as good as our inexact ability to recognize and react to the often subtle changes in the objectiveness of an employee's actions over a span of several years. Additionally, those originally assigned as Resident Inspectors have, in general, been experienced NRC inspectors, which has contributed to their understanding of the importance of objectivity."

During the program's 5 years, it has been expanded to include 134 residents stationed at 82 nuclear powerplant sites. However, only once during this period has NRC management decided that a resident compromised his objectivity. In that case, the inspector publicly stated his opinions about an NRC drug investigation and plant security measures. The inspector's opinions generally supported the utility's rather than NRC's position. Because of the inspector's publicly stated views, NRC management decided that it would have to reassign him. He later resigned from NRC.

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[1]"Placing Resident Inspectors At Nuclear Powerplants: Is It Working?", EMD-80-28, November 15, 1979.

During the same period NRC management also decided that a regional inspector--rather than a resident--had compromised his objectivity by accepting free tickets to an entertainment event from a utility employee. In this case, NRC suspended the inspector for 30 days without pay and prohibited him from further inspections of the utility's plant.

Furthermore, NRC's decision in 1981 to extend residents' duty tours from 3 years to 5 years was based on its conclusion that (1) maintaining their objectivity had not been a problem and (2) assigning two or more to each of many nuclear powerplant sites would reduce the risk of decreased objectivity.

Of the foreign nuclear regulatory agencies we visited, only the Canadian Atomic Energy Control Board has resident inspectors. The Board said that for about 20 years it has had two assigned to each nuclear powerplant. The Board added that it has not identified any potential cases of lost objectivity and it does not require inspectors to periodically relocate.

MANDATORY RELOCATION MAY WEAKEN NRC'S INSPECTION PROGRAM

Mandatory periodic relocation of residents is intended to provide NRC management with increased assurance that they objectively perform their duties. At the same time, broadening inspectors' experiences through periodic reassignments should, in the long run, make them better inspectors. However, implementation of the mandatory relocation policy may weaken NRC's inspection program by reducing the overall level of experience of NRC's resident inspectors, because:

--The attrition rate of residents, who are generally among NRC's most experienced inspectors, could increase. If this happens, NRC will have to hire and train replacements. The new inspectors would need time to acquire experience commensurate with those who left NRC. Although NRC has not actually implemented its mandatory relocation policy, the attrition rate among its regional inspectors inceased drastically in 1979 and 1980 when it began assigning them as residents.

--Residents say it generally takes them 1 to 2 years to become thoroughly familiar with a specific nuclear powerplant and the utility's operations. Thus, mandatory relocation every 5 years, while broadening their experience, would mean that for a significant portion of their duty tours residents would be performing at less than their full potential.

Inspector attrition rate could increase

During the first year of its resident inspection program, NRC assigned 32 inspectors to nuclear powerplant sites. Currently, 9 of them are still at their initial sites, 14 have voluntarily

rotated to new positions within NRC, 3 have retired, and 6 have resigned. However, because NRC has not yet implemented its mandatory relocation policy, it does not have actual experience on the policy's impact on retention.

One indication of its potential effect is what occurred when the resident inspection program began. At that time, NRC management reassigned experienced regional inspectors to plant sites rather than hire new inspectors. This mandatory relocation caused some of them to leave NRC. For example, the four former regional inspectors we contacted told us they left NRC rather than relocate. They were not alone. On November 12, 1980, the Director, Office of Inspection and Enforcement, told NRC's Executive Director for Operations:

> "During the last year there has been a particularly high loss rate of 17 percent of reactor operations inspectors. A few of these were resident inspectors but the majority were regional inspectors who had been notified of a reassignment to a resident site or had reason to believe that they were prime targets for such a reassignment. The loss of 17 percent is more than four times as great as the loss rate of 3.5 percent for the preceding year. The 17 percent loss rate combined with the need for an 18-24 month training period for new inspectors, creates a formidable obstacle to effective use of allocated positions. Too many of them are tied up with trainees or are vacant and thus cannot make any significant contribution to the inspector program."

Further, there has been and continues to be concern over the disruptions and potential financial hardships of relocation. Nineteen of the 21 residents we interviewed told us that, considering the potential financial hardships, they would seek other employment rather than relocate if required by NRC. For example, one of these residents told us he had considered relocating to another powerplant with greater promotion potential but decided against it after estimating that a move would cost him more than the $3,200 annual increase in pay he would receive with a promotion. His estimate was based on higher State income taxes, commuting costs, and mortage interest payments at the potential new location. Finally, 7 of these 19 residents--more than one-third--said they did not want to relocate even if it would not cause personal financial hardship.

Of the 2 residents in addition to the 19 discussed above, 1 said the location of his next duty assignment would largely determine whether he would relocate or seek other employment. The other resident said he is returning to a regional office to avoid having to relocate every 5 years.

Not only are some residents likely to resign if NRC implements its mandatory relocation policy, but NRC must hire and train new inspectors to fill vacancies created by these resignations. As stated by the Director, Office of Inspection and Enforcement, in the memorandum quoted above, the 18 to 24 months required to train new inspectors "***creates a formidable obstacle to effective use of [these] allocated positions." Even beyond the 18 to 24 month training period, new inspectors would need several years to acquire experience commensurate with the level of experience possessed by many of NRC's current residents.

Relocation could result in residents' loss of specific plant expertise

In the long run, periodic relocations to different nuclear powerplant sites should make better inspectors out of NRC's residents because of the inherent diversification of experience. In the short term, however, implementation of the mandatory 5-year relocation policy would mean that residents on a new assignment would not be working at their full potential until they had fully familiarized themselves with the assigned plant. Nuclear powerplants are not built to uniform or standardized designs, nor are utility operating procedures standardized. Therefore, residents need time to learn their plants and the utility's operations. Estimates of the time it takes residents to become familiar enough with a plant and the utility's operations to enable them to effectively perform their duties ranged from 6 months to 2 years. The residents we contacted generally told us it took them from 1 to 2 years before they felt comfortable at their current sites. For example, some residents told us that after they were at a plant a couple of years, isolated deficiencies they identified early in their tours began to develop into patterns which enabled them to identify more deep-rooted problems.

ALTERNATIVE MEASURES ARE AVAILABLE TO HELP ASSURE OBJECTIVITY

NRC regional management, regional inspectors, and residents have identified measures besides mandatory relocation which could be used to provide NRC management with assurances that residents retain their objectivity. They believe these measures are easier to implement, can enhance inspection program quality, and, in contrast to mandatory relocation, provide positive ways of assessing how objectively inspectors perform their duties. These measures, some of which are being selectively used in some regional offices, include

- --peer review of a resident's performance by other residents, or by regional inspectors and supervisors who are not in the resident's chain of command;

- --review of a resident's performance concurrent with NRC's annual assessment of the utility's performance;

--changing a resident's supervisor at 3-year intervals to provide a fresh look at his or her performance;

--monthly, rather than quarterly, visits to nuclear powerplant sites by supervisors based at regional offices; and

--occasional temporary reassignment of residents to other plants for about 2 weeks.

Regarding the latter measure, most of the 21 residents we interviewed favored periodic temporary assignments to other nuclear powerplant sites. They said this would broaden their exposures to other residents, powerplants, and utilities. They believed this type of interaction would improve the program and help them maintain their objectivity. For example, according to one resident, some of the inspections they perform are subjective, such as inspections for plant cleanliness. This presents the question, "how 'clean' is 'clean'?" The inspector said that by seeing other plants, a resident can gain a perspective on how well his assigned plant is doing.

Still another resident suggested that residents could be temporarily assigned to regional inspection duties and travel to several plants to perform inspections. In this case, rather than traveling out of a regional office they would travel from the specific plant to which they were assigned as residents. Instead of returning to a regional office to document and prepare inspection reports, they would prepare the reports at their nuclear powerplant sites.

CONCLUSIONS

As the principal federal agency charged with regulating commercial nuclear power activities, NRC--its management, supervisors, and all employees--needs to be continually aware of and concerned about objectivity in the performance of their regulatory duties. From the outset of the resident inspection program NRC management has attached particular importance to residents' objectivity because they work daily at nuclear powerplants and are in frequent contact with utility personnel. NRC established a mandatory relocation policy as one means to assure that they retain their objectivity.

Periodic relocation is intended to provide some assurance that residents retain their objectivity and in the long run it provides residents with a broader base of experience. Nevertheless, NRC's reliance on mandatory relocations to help assure objectivity has presented the agency's management with a dilemma because, the agency believes, the financial hardships of periodic relocations would probably cause high resident attrition and jeopardize the quality of the inspection program. Our review confirmed this concern. In fact, 7 of the 19 resident inspectors we interviewed said they did not want to relocate even if relocation would not cause personal financial hardship.

NRC's earlier approach to ending this dilemma was to seek legislative authority to pay, when necessary, residents' relocation costs which exceed the limits set out in federal regulations. NRC did not obtain this authority in the last Congress, at least in part due to an objection within the administration that it would provide selected NRC employees preferential treatment over other federal employees. NRC continues to support the earlier legislative proposal as the solution to the mandatory relocation dilemma.

If NRC obtains financial relief for its residents, it intends to fully implement its mandatory 5-year relocation policy. In the meantime, NRC is now permitting case-by-case extensions beyond 5 years, when appropriate, after weighing factors such as

--the resident's overall performance, including objectivity;

--the resident's career goals and the availability of commensurate positions within the agency;

--humane considerations where a family move could create an undue hardship;

--the particular utility's regulatory performance; and

--the overall safety, staffing, and recruiting impacts of numerous relocations during a short period of time.

On balance, there are better ways than mandatory relocation for NRC to help assure that residents retain their objectivity, particularly in view of the uncertainty of obtaining legislative relief from the financial hardships of relocation for this small group of federal employees and the reluctance of many of them to relocate. First, NRC should establish a flexible relocation policy which

--does not limit the length of a resident's assignment,

--encourages periodic relocations, and

--reserves to NRC management the prerogative of relocating a resident after weighing factors such as those now used in considering extensions of residents duty tours beyond 5 years.

In conjunction, NRC should use some or all of the alternative measures now being selectively used by some of its regional offices as a framework to help assure that residents' retain their objectivity. These measures include temporarily reassigning residents to other nuclear powerplants for about two weeks and increasing the frequency of regional office supervisory visits to powerplant sites. When coupled with a flexible relocation policy, this modified approach to the objectivity issue should help NRC management maintain and possibly improve the overall quality of powerplant inspections.

The above approach is particularly applicable in view of the fact that, although NRC's existing measures for testing objectivity are limited, it has not found inspector objectivity to be a significant problem.

RECOMMENDATIONS TO THE CHAIRMAN, NUCLEAR REGULATORY COMMISSION

To help assure that resident inspectors objectively perform their duties while at the same time minimizing the potential drawbacks of relocating them, we recommend that the Chairman, NRC

--adopt a flexible policy which encourages, but does not mandate, periodic relocations while retaining NRC management's prerogative of relocating individual residents when management determines that it is in the best interests of NRC; and

--use alternative measures, such as those now being selectively used by some regional offices, to assess inspector objectivity.

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