



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

PDR

OFFICE OF THE  
CHAIRMAN

December 12, 1985

The Honorable George Bush  
President of the United States Senate  
Washington, DC 20510

Dear Mr. President:

The NRC Authorization Act for fiscal years 1982/83 (P.L. 97-415) directed the NRC to conduct a study of quality and quality assurance (QA) in the design and construction of nuclear power plants and to develop improvements to NRC's and the industry's programs for achieving and assuring quality in design and construction. In April 1984, the NRC staff completed their study in response to that Congressional request. The report of that study is entitled "Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants." The Commission transmitted that report to Congress on April 20, 1984, and it was subsequently published as an NRC staff report, NUREG-1055. In the transmittal letter, the Commission indicated that the staff report was complex and had several interrelated recommendations. The Commission also indicated that it would need to take further time for analysis, including an opportunity for public comments, before informing Congress of its final actions or recommendations for legislation.

The Commission has completed that process and its staff is currently implementing a plan entitled "Programs to Improve Quality and the Assurance of Quality in the Design, Construction and Operation of Licensed Nuclear Activities." This plan, with minor exception, implements the recommendations of NUREG-1055.

The Commission's conclusions and exceptions regarding the QA report, which was previously transmitted to Congress as a staff report, are contained in Attachment A. As required by P.L. 97-415, administrative actions that are underway or planned by the Commission as a direct consequence of the QA report are summarized in Tables 1 and 2 of Attachment A.

To put its decisions into suitable context, the Commission wishes to make clear that licensees, not the NRC, are primarily responsible for achieving and assuring quality. Substantive improvements in quality in the nuclear industry must come from the industry itself; they cannot be "inspected in" or "regulated in" by the NRC. The QA report found that the key to achieving quality and assuring quality lies with utility management. The focus of NRC's and the industry's programs for improving quality in the nuclear industry should be oriented toward prevention and early detection of quality problems, and identifying and correcting root causes of those quality problems.

The NRC has significantly increased its design and construction inspection effort for plants currently under construction, including such things as adding a second resident inspector at all single-unit construction sites. The NRC has made a number of other improvements to its overall programs which have the

effect of improving quality in the nuclear industry. These improvements focus largely on the approximately ninety units presently licensed for operation and include such initiatives as improved training and requalification programs for plant operational staff; increased staff and industry attention to preventive and routine maintenance; a major new focus on the effectiveness and quality of plant activities related to plant outages; and a thorough reanalysis, for all operating plants, of the NRC-required technical specifications issued as conditions of operating licenses.

Since the introduction of the legislation that led to the QA study, the industry also has initiated a number of activities that should result in an overall improvement in the quality of nuclear plant construction and operations. These include the Construction Project Evaluation Program of the Institute of Nuclear Power Operations (INPO); the establishment of a new senior-level industry group, the Nuclear Utility Management and Human Resources Committee (NUMARC), to address some of the difficult people-oriented issues facing the industry, such as operator training; and the voluntary use of third-party management audits by some utilities. In addition, two utilities have volunteered to undertake a pilot test of the readiness review concept identified by the QA report as an area for further analysis. Georgia Power Company is applying the concept to their Vogtle project and the Washington Public Power Supply System is employing the concept for the potential restart of their WNP-3 project. Readiness Reviews are expected to lead to improvements in managing, licensing, and confirming the quality of nuclear construction projects, including the incremental acceptance by NRC of properly completed work. These pilot tests are underway and are being closely followed by the Commission and the industry.

As stated in its policy and planning guidance to the staff, the Commission believes that NRC's fundamental task is to ensure that existing nuclear facilities and those coming on-line operate safely. Consequently, the highest priority will be given to assuring that operating facilities maintain adequate protection of public health and safety. Following operating plants, in decreasing order of priority, are plants currently under construction and future plants for which construction applications have not yet been received. Budget and resource limitations preclude the extensive development of quality and quality assurance initiatives for the future generation of nuclear power plants. However, the Commission recognizes that the success of this future generation of plants is closely coupled to an aggressive and mature policy and implementation plan assuring quality and quality assurance in design and construction. Therefore, the Commission intends to explore creative solutions to past design and construction QA problems and to apply these solutions where opportunities are presented in the future. Where possible, the Commission will draw from the experience of activities underway at operating plants. The Commission views the present hiatus in new plant orders as an opportune time to address innovative QA approaches through such pilot programs.

Although the staff's program plan necessarily deals principally with NRC actions, we believe that it does embody the Commission's QA philosophy, which emphasizes the importance of the industry's role in improving nuclear quality. The NRC directly controls only its own activities, but NRC actions can provide great leverage to foster or inhibit licensee actions. The QA report made it clear that simple regulatory compliance is not enough to assure excellence in the

construction or operation of nuclear power plants. The planned NRC QA program revisions are intended to create an environment which maximizes the incentives for and ability of utilities to achieve excellence while assuring compliance with the Commission's regulations.

At this time, no changes to NRC authorizing legislation are recommended. Each of the Commission's proposed administrative actions can be implemented within the NRC's current statutory authority. However, after further analysis, some issues may result in legislative proposals at a future date.

Commissioner Asselstine adds the following comments:

I believe that the NRC staff report "Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants, NUREG-1055," provides many useful insights. For example, the staff reported that the key to achieving and assuring quality lies with utility management. The report highlights the fact that one of the greatest contributors to the risk associated with nuclear plants is the human component which plays a part in design, construction, operation and maintenance of nuclear facilities. And, how the human element affects nuclear plants, whether for good or for ill, depends largely upon the quality of utility management.

However, the Commission seems to take this idea one step too far. The Commission's letter states:

To put its decisions into suitable context, the Commission wishes to make clear that licensees, not the NRC, are primarily responsible for achieving and assuring quality. Substantial improvements in quality in the nuclear industry must come from the industry itself; they cannot be "inspected in" or "regulated in" by the NRC.

While I agree that the primary responsibility for achieving quality must lie with the industry, the Commission also has substantial responsibility for assuring quality. The NRC must establish and enforce minimum standards to ensure quality in the design, construction, operation, and maintenance of nuclear power plants. The Commission cannot abdicate this responsibility and merely rely on the industry to regulate itself.

In my view, the Commission should do much more to ensure quality in operation and maintenance of plants than it does presently. Instead, the Commission has chosen not to take aggressive action to ensure quality. Specifically, the NRC's quality assurance plan, "Programs to Improve Quality and the Assurance of Quality in the Design, Construction, and Operation of Licensed Nuclear Activities," does not go far enough. A fundamental premise of the plan is the idea that the NRC cannot regulate in quality. The Commission has used this philosophy as an excuse to defer regulatory initiatives in the area of plant operations, maintenance, and management, and instead to rely upon voluntary industry programs in these essential areas.

The Commission should not take the most useful insight from the NRC staff report, that utility management and the human component are key to quality, misinterpret it, and then use it as a reason to step back from and do less in the area of operations and maintenance. Rather, the Commission should use that insight as a springboard and get much more involved in working with the industry to ensure quality.

I also agree with Commissioner Bernthal's comments.

Commissioner Bernthal adds the following comments:

The Commission's letter leaves too much unsaid; its proposed actions will surely be judged inadequate to meet the challenges that lie ahead. Midland, Zimmer, Marble Hill and doubtless other plants which never approached the threshold of completion remain as monuments to abrogation of responsibility by government at all levels. The public will and should demand better in the 1990's. I do not believe the NRC will be prepared to offer better if the Commission contents itself to focus almost exclusively on operating plants for the foreseeable future.

Serious consideration should be given now to the concept of third-party QA audits during plant construction, and to the institutional framework that might be required to carry out such audit functions. For example, NRC appears to know and care surprisingly little about the considerable success of the Technische Überwachungs-Verein (TUV) third-party audit program in Germany, a program that deserves careful study by NRC to determine what an American analog may have to offer.

The "designated representative" concept that has served the airline industry so ably deserves further exploration as well, at least to determine the level of utility interest, and to see whether utility volunteers for a pilot program might be found.

In short, I consider the Commission's commitment to the future to be insufficient. As a minimum, the Commission should initiate, and Congress should fund the following:

- ° A serious, in-depth study of the third-party audit concept for future power plant construction.
- ° A pilot program to test the third-party audit concept on major plant modifications during planned outages. This would allow the Commission and licensees to gain experience, on small scale, with one concept that shows promise for improved quality assurance, but which cannot and should not now be broadly implemented because of resource limitations and the current hiatus in new power plant orders.
- ° A pilot program for volunteer utilities to test the designated representative concept.



These few specific actions hardly constitute a tall order or a burdensome commitment; there are doubtless other concepts which deserve similar active exploration by the Commission.

Chairman Palladino adds the following comment:

The Commission has expended significant resources on quality assurance. The information provided in this letter and attachments thereto clearly attest to this fact. Furthermore, the Commission has continued to authorize significant expenditures of funds for QA initiatives. The most recent approval authorized \$1,500,000 for technical assistance contracts to help us develop and implement quality assurance programs.

I believe that the Commission has afforded the correct priority and appropriate resources to quality assurance consistent with our budget constraints. This letter is meant to describe how the NRC is meeting, and will continue to meet, its QA responsibilities. Emphasis has been placed on operating plants and new plants coming on-line; we will continue to look at ways to improve our QA Program for these plants. These actions certainly do not lend credence to Commissioner Asselstine's assertion that the NRC's philosophy to not "regulate in quality" is "an excuse to defer further regulatory initiatives...and instead to rely upon voluntary industry programs in these essential areas."

Regarding Commissioner Bernthal's comments about the Commission's involvement with future plants, we are considering, or have considered the initiatives he suggested. However, we do not feel that attention to future construction should dilute our efforts to ensure high quality assurance for existing plants and those coming on-line.

Sincerely,



Nunzio J. Palladino  
Chairman

Enclosure:  
Attachment A, Commission Conclusions on the  
Staff QA Report to Congress



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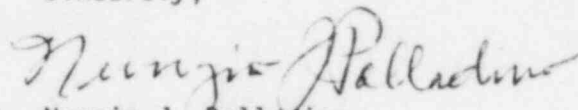
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Sincerely,



Nunzio J. Palladino  
Chairman

Enclosure:

Attachment A, Commission Conclusions on the  
Staff QA Report to Congress

## ATTACHMENT A

### COMMISSION CONCLUSIONS ON THE STAFF QA REPORT TO CONGRESS

The Commission is in general agreement with the findings and conclusions of the QA report (which was previously forwarded to Congress as a staff report) and has approved the staff's action plan (which takes into account public comments received on the QA report and current budget limitations) to implement the findings of the report. The Commission endorses the staff's earlier findings, conclusions and recommendations contained in the QA report, with the following modifications:

- 1) We do not think, at this time, that construction permits (CPs) for future nuclear power plant applicants need be conditioned on post-CP demonstration by the applicant of its capability and effectiveness in implementing its quality assurance program. The NRC has ample authority within its current regulations to take appropriate action if a licensee does not capably and effectively implement its QA program. Changes in the Commission's practices are being undertaken, however, to improve NRC and licensee ability to assess the effectiveness of QA programs at the earliest possible stage in the construction process. Licensees should demonstrate the effectiveness of their programs continually throughout the construction process, but the CP need not be conditioned on such demonstration.
- 2) It is not clear that a new, special advisory board needs to be established to supplement staff advice on the qualifications of new applicants. This is one alternative that would have to be further analyzed before implementation to see if an additional source of advice is needed or whether an already existing body (e.g., the Advisory Committee on Reactor Safeguards) could perform that function. Efforts by industry-sponsored groups such as the Nuclear Utility Management and Human Resources Committee (NUMARC) and the Institute of Nuclear Power Operations (INPO), having the effect of a "self-screening" process, will also affect any decision in this area. Planned further analysis of the advisory board concept will not be undertaken at this time.
- 3) Other feasible alternatives to mandatory third-party audits are available to accomplish the QA program goals of improved management and increased prevention and detection capability. Readiness reviews, now being tested and evaluated at the Vogtle nuclear plant and WNP-3, provide one possible alternative. Increased NRC use of team inspections and resident inspectors and voluntary use of third parties by some utilities provide other alternatives. As a result of these considerations, the staff has proposed, and the Commission has agreed, to defer rulemaking activities to require periodic third-party audits for plants under construction, pending results of the pilot Readiness Review Program tests.

TABLE 1. Commission Action on Staff Recommendations Contained  
in the QA Report to Congress (see NUREG-1055, Table 2.1)

<u>QA Report Recommendation</u>	<u>Commission Action</u>
1. Enhanced Pre-Construction Permit (CP) Review of Experience and Managerial Quality	Seek opportunities to test concepts with industry volunteers
Establishment of an Advisory Board	Dropped pending exploration of potential industry action on this topic
2. Post-CP Demonstration of Management Effectiveness	Dropped in favor of Readiness Review program
3. QA Program Performance Objectives	NRC inspection program being revised to place more emphasis on performance
4. Management Appraisals as an Adjunct to Construction Appraisal Team (CAT) Inspections	Dropped in favor of readiness reviews and other management initiatives
5. Inspection Prioritization of Plants Currently Under Construction (Problem Plant Identification)	All plants currently under construction are receiving a "graded" inspection approach. Additional work planned in this area
6. Improved Diagnostic Capability/Trend Analysis	Implement as part of QA Performance Objectives program
7. Senior Management Meetings	Being implemented
8. Enhanced Vendor Program	Being implemented
9. Third-Party Audit/Interim CAT Inspections/Interim Independent Design Verification Program (IDVP)	Third-party rulemaking deferred pending outcome of readiness review program; perform CAT inspections at 4/year (no expansion in program); continue IDVP on case-by-case basis
10. Regional Team Inspections	Increasing use of team inspections. Pilots under way in several NRC regions



<u>QA Report Recommendation</u>	<u>Commission Action</u>
11. Expanded Resident Program	More residents being assigned to sites. Pilot test under way in one NRC region to reduce regional inspections in favor of resident inspections
12. Improved Licensee Detection Capability	Primary responsibility for improvement remains with industry. NRC inspection program revisions will cause greater NRC attention to this area
13. Independent Audits of NRC QA Programs	Being implemented

TABLE 2. Commission Action on Staff Recommendations for Further Analysis  
Contained in the QA Report to Congress (see NUREG-1055, Table 2.2)

<u>Area Recommended For Further Analysis</u>	<u>Commission Action</u>
1. QA Report-Type Study for Plants in Operation	Separate report not necessary--lessons from plants under construction also apply to operating plants
2. Prioritization of QA Measures: Guidance on "Safety-Related" vs. "Important to Safety"	The Commission has a proposed rulemaking under review
3. Measuring Effectiveness of QA	Further analysis conducted. Results being used in revised NRC inspection program
4. Essentially Complete Design at CP Stage	Regulatory reform legislation has been proposed to Congress that addresses this issue
5. Configuration Management	Seek opportunities to test concepts with industry volunteers
6. Readiness Reviews	Pilot programs at Vogtle and WNP-3 underway
7. Quality Engineering	Further analysis and developmental work not planned due to budget priorities
8. Alternate Ownership and Management Arrangements	Efforts redirected to explore improvements within current arrangements in an all operating reactor environment
9. Feasibility of Designated Representatives	Further consideration deferred pending a licensee request for a pilot program
10. Limiting Construction Permits	Analysis of the problems faced by NRC in the event of resumption of nuclear plant construction is included as a possible contingency in the study described in 8., above