

MEMORANDUM

TO: J. T. Larkins
FROM: J. N. Sorensen *JNS*
DATE: September 23, 1998
SUBJECT: Past Regulatory Reform Efforts

In an earlier memo, I suggested that the major barrier to risk informed regulation in particular, and regulatory reform in general, was probably institutional and that the institutional barriers need to be understood and resolved. The NRC has conducted several programs over the last ten or fifteen years to identify beneficial changes to the regulatory process, most notably the Marginal to Safety Program and the Regulatory Review Group. As a result of those efforts and others, we have a fair amount of information about what might be changed and how it might be changed. We also know that few significant changes resulted from those efforts. If the current regulatory reform initiatives are to be successful, we should probably understand why past efforts have largely failed to produce the results envisioned at their outset.

This memorandum summarizes some of the earlier regulatory reform efforts and their results. The analysis of why past reform efforts have had relatively little impact is not attempted here.

Requirements Marginal to Safety

The "Requirements Marginal to Safety (MTS) Program" was initiated in 1984, with the stated goal that "Existing regulatory requirements that have marginal importance to safety should be eliminated." Seven issues were identified and analyzed for risk significance. They were:

- Containment Leak-Rate Testing
- Fire Protection
- Equipment Qualification
- Requests for Information Under 50.54(f)
- Combustible Gas Control
- Quality Assurance
- Physical Protection

In 1991, the staff informed the Commission that it recommended closing the MTS program, concluding "That no 10 CFR Part 50 regulations were identified that are so burdensome on operating reactors and so marginal to safety

that (they) would warrant the expenditure of staff resources to rectify." The staff changed its conclusion as a result of public comments, and recommended an ongoing program to eliminate requirements marginal to safety. Three rulemakings were to be completed in the first three year cycle: containment leak rate testing, fire protection, and combustible gas control. In fact, only Appendix J was modified, and the remaining issues were never acted on.

In an August 11, 1992 letter to the Chairman, the ACRS noted that the MTS program was "not very far along" and that the Committee hoped to remain involved. The letter went on to note that "it is not just the plain wording of a regulation that causes the problems, but the implementation and interpretation by the staff. In short, it is the body of regulatory practice . . . that is at issue."

Regulatory Review Group

A similar broad scope effort was undertaken by the Regulatory Review Group (RRG), starting in January 1993 and extending through February 1996. The RRG examined the regulations in Title 10, Code of Federal Regulations, Parts 21, 26, 50 and 73, the Division 1 Regulatory Guides, and representative operating reactor licenses. The RRG also looked at the integration of risk analysis techniques into the regulatory process. The primary focus of the RRG work was to identify areas where regulatory burden could be reduced in a manner that was safety neutral, and to look for opportunities to make the regulations more performance based.

The RRG recommended changes in about 70 topic areas. Many of the recommendations were implemented, but it is not always clear that the changes ultimately adopted were in accordance with the original recommendation. On the other side, many recommendations were ultimately rejected, and many were never acted on. In particular, the farthest reaching recommendations, i.e. the ones that had the greatest potential for regulatory reform, were ultimately rejected or not acted upon.

Interestingly, the RRG concluded that "the rules themselves were not a major source of unnecessary burden on operating reactors." This result was similar to the MTS program's early conclusion. The RRG also concluded that "regulatory

guides themselves are not a prime source of new burden on licensees."

Where, then, is the regulatory burden? The RRG concluded that a major source of burden was staff requirements or licensee commitments that went beyond what was actually required by the regulations. This burden was aggravated by the staff's practice of enforcing over-commitments, once they were made. The RRG's recommended solution hinged on the adoption (or recognition) of three principles:

1. The regulations represent the safety standard to which licensees should be held accountable.

2. The licensee retains primary responsibility for compliance with the safety standard established by the regulations.

3. The amount of regulatory oversight should bear a relationship to the safety significance of the regulation.

The RRG basically recommended shifting the regulatory paradigm from one of pre-approval of all changes in regulatory programs to one of post-implementation review. They recommended changing Part 50 to include the definition of a commitment and a change process for commitments. The basic idea was that licensees should be able to change their facilities and programs as long as they complied with the underlying regulations. By contrast, for example, quality assurance programs cannot be changed without NRC approval if there is a reduction in the commitments in the program. The standard against which change is measured is the currently approved program for a particular licensee rather than the regulations themselves. The RRG recommendations in this area were either rejected by the staff or not acted upon.

The RRG also concluded that the following findings were important to making the regulatory system more workable:

1. The need for staff to be responsive to licensee submittals that were safety neutral but have a primary aim of economic relief.

2. The need for each licensee to clearly identify the regulatory vehicle that is the cause of unnecessary

expenditures and to then aggressively pursue corrective action fully utilizing the flexibility already available.

3. The need for industry to take a more proactive approach to the interaction with the staff on issues that require rule changes, and the need for the staff to establish clear ground rules for this interaction.

4. The need to establish a clear set of performance standards for the use of risk analysis within the regulatory structure.

The RRG results appear to reinforce a couple of ideas that are part of the current discussion on regulatory reform. First, any regulatory reform effort needs strong input from the industry. Regulatory reform should be focused on those things that provide the most relief with the least impact on safety. The licensees can best identify where relief is most needed. One model of a reform process might be to have the Commission and the staff create a framework and process that is receptive to change, and make the industry responsible for identifying specific areas where change would be helpful.

The second idea reinforced by the RRG is that the focus of regulatory reform should be less on the regulations themselves and more on the process of how they are implemented. Clear, simple, consistent implementation guidance that encourages the staff to stay within the purpose and intent of the regulations may be more important than changes in the regulations.

The ACRS reviewed the RRG report prior to its issuance, and noted, in a July 15, 1993 letter to the Chairman, that, "The RRG proposes that the Commission declare that adherence to the rules and regulations that have evolved constitutes the fundamental condition laid upon a licensee . . ." The letter concludes, in part, "We think that the RRG recommendation is a substantial positive step, . . . but are concerned that natural resistance to change will bury one of the few recent proposals for substantial change, . . ."

Attached to this memorandum is a tabulation of the results of the RRG review of the individual provisions in Part 50. The data have been sorted on the field "Contribution (of the rule) to Safety," which the RRG classified as "substantial," "marginal," "indirect," or "none." They also noted whether

or not the rule itself went beyond what was required for safety (column 5), and whether or not the rule could be made more performance based (column 6).

Sources of Regulatory Burden

The RRG's conclusions call into question the notion that the regulations themselves, or even the Regulatory Guides, are a major source of regulatory burden. At the moment, there does not appear to be a consensus on the major source of burden. Candidates include:

1. The regulations (Title 10).
2. The guidance documents (Reg. Guides, SRPs).
3. Generic communications, requests for information.
4. License conditions and other orders.
5. Staff "licensing" practices (e.g. going beyond regulatory requirements, encouraging/enforcing licensee over-commitments).
6. Staff inspection/enforcement practices (e.g. imposing or encouraging commitments beyond regulatory requirements, imposing requirements through confirmatory action letters).
7. All of the above.

If the RRG conclusions are generally correct, then making Part 50 risk informed may not produce one of its anticipated results, reducing regulatory burden. NEI, on the other hand, believes that changing the scope of Part 50 by changing key definitions based on risk considerations, would in fact reduce burden.

Based on observations of a number a recent meetings between the staff and the industry, there may be a growing consensus that the regulatory burden results from interactions among all the elements of the regulatory structure, rather than from a particular element. If this is the case, modifying regulatory guidance documents without modifying Part 50 and the relevant inspection processes would not likely have any beneficial effect. One case in point is the recent meeting between the NRC staff and South Texas Project personnel on

the status of STP's graded QA initiative. According to the STP staff, they are only getting about 10% of the benefit they anticipated from implementing graded QA. The reason given is that attempts to reduce requirements under the umbrella of graded QA are foiled by interlocking requirements from sources other than Appendix B.

NEI Review of Past Regulatory Reform Efforts

During 1997, the Nuclear Energy Institute did a review of past recommendations for reforming the NRC and what resulted from those recommendations. Their source material included the Kemeny Commission and Rogovin reports, the NRC's regulatory impact surveys, and the Regulatory Review Group report. Steve Floyd of NEI offered to send us a copy of the review, and a copy is attached to this memo. The document is titled "Review of Previous Recommendations for NRC Reform." No date or authors are shown. This was apparently not intended for distribution outside the institute, and they are providing it to us as a courtesy. Some circumstances have changed since the review was written, but most of the conclusions are still relevant. As one might expect, the industry view of past regulatory improvement efforts is somewhat different than the NRC's view of the same events

c: ACRS Members
ACRS Staff and Fellows

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Rule	Subject	Rule Type	Contribution to Safety	Beyond Req. for Safety	Can it be more Performance Based
50.92	Issuance of Amendment	Administrative	Variable		
50.36	Technical Specifications	Mixed	Substantial	No	Yes
50.44	Standards for Gas Control		Substantial	No	No
50.46	Acceptance Criteria for ECCS	Performance Based	Substantial	No	Yes
50.49	Equipment Qualification	Prescriptive	Substantial	No	Yes
50.55a	Codes and Standards	Prescriptive	Substantial	Yes	Yes
50.59	Changes, Tests and Experiments	Performance Based	Substantial	No	Yes
50.65	Maintenance	Performance Based	Substantial	No	No
App. A	General Design Criteria	Performance Based	Substantial	No	No
App. B	Quality Assurance	Performance Based	Substantial	No	No
50.34	Content of Applications - Technical	Mixed/Administrative	Marginal	No	Yes
50.54	Conditions of Licenses	Prescriptive	Marginal	Yes	
50.62	ATWS		Marginal	Yes	Yes
50.5	Deliberate Misconduct	Administrative	Indirect	No	
50.7	Employee Protection	Administrative	Indirect	No	
50.9	Completeness & Accuracy & Information	Administrative	Indirect	No	No
50.34a	Design Objectives - Radiation Control	Mixed	Indirect	No	Yes
50.47	Emergency Plans	Performance Based	Indirect	No	No
50.48	Fire Protection	Prescriptive	Indirect	No	No
50.51	Duration of license, Renewal	Administrative	Indirect	No	Yes
50.55	Conditions of CPs	Administrative	Indirect	Yes	Yes
50.58	Hearings and Report of ACRS	Administrative	Indirect	No	No
50.60	Acceptance Criteria for Fracture Prevention	Prescriptive	Indirect		
50.61	Fracture Toughness for Thermal Shock	Prescriptive	Indirect	No	Yes
50.63	Loss of AC	Performance Based	Indirect	No	No
50.72	Immediate Notifications	Prescriptive	Indirect	No	Yes
50.73	LERs	Prescriptive	Indirect	Yes	Yes
50.80	Transfer of Licenses	Administrative	Indirect	No	No
50.82	Application for Termination of License	Mixed/Administrative	Indirect	Yes	No
50.90	Application for Amendment of License or CP	Administrative	Indirect	No	No
50.100	Revocation, Modification or Susp. of lic. or CP	Administrative	Indirect	No	No
50.101	Retaking Possession of Special Nuclea Material		Indirect	No	No
50.103	Suspension and Ops in War or Nat'l Emergency		Indirect	No	No
50.109	Backfitting	Prescriptive	Indirect	No	
App. G	Fracture Toughness	Prescriptive	Indirect	No	Yes

Rule	Subject	Rule Type	Contribution to Safety	Beyond Req. for Safety	Can it be more Performance Based
App. H	Reactor Vessel Material Surveillance	Prescriptive	Indirect	Yes	No
App. I	ALARA	Mixed	Indirect	No	No
50.1	Basis & Purpose	Administrative	None		
50.2	Definitions	Administrative	None		
50.3	Interpretations	Administrative	None		
50.4	Written Communications	Administrative	None		Yes
50.8	Information collection requirements	Administrative	None	No	No
50.10	License Required	Administrative	None		
50.11	Exceptions & Exemptions	Administrative	None		
50.12	Specific Exemptions	Administrative	None	No	No
50.13	Attacks and Destructive Acts	Administrative	None	No	
50.20	Two Classes of Licenses	Administrative	None		
50.21	Class 104 Licenses	Administrative	None		
50.22	Class 103 Licenses	Administrative	None		
50.23	Construction Permits	Administrative	None	Yes	No
50.30	Filing of Applications	Prescriptive/Administrative	None		
50.31	Combining Applications	Administrative	None		
50.32	Elimination of Repetition	Administrative	None	No	No
50.33	Content of Applications - General	Prescriptive/Administrative	None		
50.33a	Antitrust Information	Administrative	None		
50.35	Issuance of CP	Administrative	None		
50.36a	TS on Effluents	Performance Based	None		No
50.36b	Environmental Conditions	Administrative	None	No	No
50.37	Agreement on Access to Restricted Data	Administrative	None		No
50.38	Ineligible Applicants	Administrative	None	No	
50.39	Public Inspection of Applications	Administrative	None	No	No
50.40	Common Standards	Administrative	None	No	No
50.42	Additional Standards for Class 104	Administrative	None	No	No
50.43	Additional Standards for Class 103	Administrative	None		No
50.45	Standards for CPs	Administrative	None	No	No
50.50	Issuance of Licenses and CPs	Administrative	None		
50.52	Combining Licenses	Administrative	None		
50.53	Jurisdictional Limitations	Administrative	None		
50.56	Conversion of CP to OL and Amendment	Administrative	None		
50.57	Issuance of operating License	Administrative	None		

Rule	Subject	Rule Type	Contribution to Safety	Beyond Req. for Safety	Can it be more Performance Based
50.70	Inspections	Administrative	None	No	No
50.71	Records & Reports	Administrative	None	No	No
50.74	Notifications of RO and SRO Status	Administrative	None	No	No
50.75	Reporting & Recordkeeping for Decommissioning	Prescriptive	None		No
50.78	Installation Information and Verification	Administrative	None		
50.81	Creditor Regulations	Administrative	None		
50.91	Notice for Public Comment; State Consultation	Administrative	None	Yes	
50.102	Comm. order for Ops after Revocation	Administrative	None	No	No
50.110	Violations	Administrative	None	No	No

Review of Previous Recommendations for NRC Reform

NRC has been the subject of a number of assessments intended to review how it does business and recommend how it can improve its performance. This review considers nine high-level assessments of NRC. These included the major reviews following the Three Mile Island accident (Kemeny Commission and Rogovin Inquiry), two NRC Regulatory Impact Surveys, NRC's Regulatory Review Group and Regulatory Reform Task Force, and three industry reviews (EEI, Sillin Report, Towers Perrin). A complete list follows the report.

Each of these assessments made a number of recommendations and findings. Many of them addressed specific NRC activities, at a fine level of detail. These recommendations were not considered in this review. Instead, this review focused on the broader-scope recommendations and findings related to overall NRC functioning. A tabulation of these is provided as Appendix A.

Many actions have been taken as a result of the findings and recommendations of these assessments. It is impossible to say that inaction is the reason NRC has not "improved", that its impact on licensees has not decreased. The question which must be answered is why perceived problems persisted over the 15 year range represented by these assessments, and continue to exist today, despite the efforts at change.

In an attempt to answer that question, the findings and recommendations in the attached table have been grouped into common areas according to the nature of the change in NRC actions which they sought to achieve. These groupings are informative. They show that actions were taken in most areas, with varying degrees of effectiveness. In only one major area have no actions been taken. This area is accountability. It is perhaps not coincidental that industry's major concerns with NRC impact in 1997 deal with the agency's lack of accountability for its actions. Each area is summarized below:

Structure

The basic structure of the NRC has been a consideration of several assessments. It was a principal focus of the post-TMI accident assessments (Kemeny and Rogovin). Both reviews concluded that the Commission form of management was ineffective. Both recommended that the Commission be replaced with a single administrator. Rogovin, specifically chartered to review the NRC for the NRC, went further. He recommended that inconsistencies between reactor-related activities of the Office of Inspection and Enforcement (I&E) and the Division of Operating Reactors (DOR, then a part of the Office of Nuclear Reactor Regulation, NRR) be addressed by consolidating the responsibilities of these groups.

President Carter did not accept the recommendation to eliminate the Commission. He instead proposed a Reorganization Plan which strengthened the roles of the Chairman and the Executive Director for Operations (EDO). The intent was to provide for more focused management while retaining the perceived advantages of the Commission -- five heads are better than one. (Alternatively, Carter's action has been described as reflecting a conclusion that legislative action, which would have been required to eliminate the Commission, was not practically achievable). The plan enhanced the management authority of the Chairman and EDO, but provided that the Commission would continue to have authority in matters of policy. It also allowed the Commission to decide what constitutes policy. The practical effect was to leave the situation much as it was before the TMI accident. (It should be noted that the Rogovin report was issued after the Reorganization Plan of 1980 was proposed, and explicitly concluded that it did not go far enough).

Rogovin's recommendation to combine I&E and NRR was not adopted initially. The change which would have been effected was, however, ultimately realized. NRR had been reorganized, and DOR had ceased to exist before I&E was abolished and its reactor responsibilities were consolidated into NRR. The reason for that consolidation appeared to be different, occurring several years after TMI, but reflected the same underlying problem -- inconsistency in regulating reactors from two offices. Structural problems, if not addressed, persist. Half measures do not address them effectively.

Accountability

Recommendations in this area dealt with external accountability, i.e., of the agency as a whole, and internal, i.e., placing checks and balances on actions within the agency. Recommendations have not been adopted in either area. Some control has been established through creation of the Committee to Review Generic Requirements (CRGR), but it applies almost exclusively to the proliferation of new requirements. This is discussed under "impact" below.

Both of the major post-TMI assessments recommended that an Independent Oversight Committee be created to oversee NRC. The Kemeny Commission recommended that such a body report to the President and Congress. Rogovin would have had the Committee report to the single administrator which was to replace the Commission. In both cases, the Committee was related to the recommendation for a single administrator, and failure to adopt that structural recommendation led to a conclusion that there was no need for the accountability recommendation.

Suggestions for an oversight Board have been made since, but have never appeared to receive serious consideration. Supporters, including Sen. Biden (D. DE) describe the Board as having a relationship to NRC similar to that of the National

Transportation Safety Board to FAA. Supporters contend the Board is needed to assure NRC is tough enough, not to restrain its regulatory reach.

Internal to NRC, both post-TMI assessments recommended a strengthening of the Advisory Committee on Reactor Safeguards (ACRS). This would have included more staff, expanded authority, and an explicit charter to participate in rulemaking activities. In both cases, the reports supported these recommendations by noting that ACRS was an existing body capable of agency oversight and able to provide knowledgeable independent advice to the Commission which was not being used to its fullest potential. The situation has not much changed. With respect to increased resources, the situation may be worse. ACRS and its staff were divided several years ago to create an Advisory Committee devoted exclusively to Nuclear Waste. To the extent that both resulting Committees advise the Commission, the overall level of activity is similar to that at the time of TMI, reduced by budget reductions as is true of the entire agency. If regulating reactor risk is considered as the most important job of the Commission, as suggested by the post-TMI assessments, then the resources applied to this internal review group have decreased considerably.

The need for internal review was again recognized by the first Regulatory Impact Survey in 1981, and implicitly by the Towers Perrin review in 1994. The Regulatory Impact Survey concluded that licensees were being impacted by new interpretations of existing requirements. It called for establishment of a separate group to provide official interpretations. Such a group was never established. The authority for deciding what a rule has "always meant" remains the technical group charged with its current implementation. What it means today, therefore, is usually synonymous with what it has "always meant." Changes required to meet those interpretations are considered compliance backfits, not subject to the restrictions and controls related to the issuance of new requirements.

Focus

There has been a continual attempt to try to help NRC focus on what is important. All the reviewed assessments addressed this area except the Regulatory Impact Surveys (probably because it was at least implicitly outside the scope of those assessments). Recommendations which would have required legislative solutions (conferring emergency planning responsibility exclusively on the Federal Emergency Management Agency or eliminating "non-safety" functions of antitrust and export license reviews) were never meaningfully addressed. Other recommendations have resulted in changes. One reason these changes have not seemed to help focus the intrusiveness of the agency could be that the earliest recommendations suggested NRC's focus was too narrow.

Specifically, the Kemeny Commission criticized NRC's near-exclusive focus on "safety-related" portions of the plant, and its almost-as-exclusive focus on safety-

related hardware to the exclusion of issues related to people. NRC responded by establishing a Division of Human Factors within NRR, and establishing their regulatory interest in all aspects of plant design and operation. Important elements which might have been missed previously (the basis for the Kemeny criticism) were undoubtedly brought under stricter NRC coverage by these changes. "Focus" suffered, and continues to do so.

NRC also established the Office for Analysis and Evaluation of Operational Data (AEOD) to assess reactor performance and identify problem areas so that they could receive appropriate attention. The Systematic Assessment of Licensee Performance (SALP) program was initiated, demonstrably breaking the focus on hardware. Civil penalty authority was increased. Safety goals, identified as a need by the Rogovin Inquiry, were finally established.

The safety goals, however, have never been applied practically. NRC staff is still considering how to do so nearly seventeen years after Rogovin recommended a transition to risk-based regulation. Today, the term is 'risk-informed regulation' and staff is developing new guidance on how to apply risk insights in the regulatory process. Those documents have not yet been shared with the public, but discussion of them does not leave industry hopeful that they will help. One internal debate which has been illuminated by the discussions is the acceptability of minor increases in total risk. Some within the staff would allow for such changes as licensees use PRA to focus their efforts on risk-significant activities. Others, reportedly including many in senior management, contend that no increases in risk should be allowed -- that changes should only be allowed where they reduce total risk. This position is taken against a background in which several NRC studies have shown that existing nuclear power plants exceed the established safety goals by significant margins.

In short, NRC's regulatory scope has increased. It's not just safety-related that's important. It's all important. Some things are just more important than others.

Impact

The agency's impact on its licensees has been considered repeatedly. NRC has been responsive to the specifics of nearly all recommendations in this area. The backfit rule has been revised and strengthened. It provides for consideration of the costs and benefits of proposed changes (Kemeny, Regulatory Reform Task Force). CRGR largely reconstitutes the previous Regulatory Requirements Review Committee (RRRC) as recommended by Rogovin, and has provided a significant control on the issuance of new requirements (Reg. Impact I). Living schedule programs, of varying types, have attempted to allow for establishing safety priorities (Reg. Impact I) and managing the cumulative effect of generic requirements (Reg. Impact II). The "softer" recommendation of Reg. Impact II that NRC increase its sensitivity to the

impact of agency actions on people appears to have been harder to reduce to a specific action. People continue to be impacted.

In fact, industry continues to complain about the impact of NRC activities including increasing standards, new requirements and new interpretations, lack of priority, and unreasonable cumulative impact. It is reasonable to conclude that the specific actions taken in response to these reviews did not fix the underlying problem. At least part of that problem is a culture in which every individual on the NRC staff must be convinced that everything that he/she believes is needed (technically or for regulatory reasons) has been done. This is reflected in the recent conclusion by Arthur Andersen that, "NRC decision-making strives to achieve zero defects when it comes to safety."

Impositions continue to be made on licensees. Processes put in place as a result of these assessments of the agency either fall into disuse (Living Schedules) or are circumvented (compliance with reinterpreted requirements does not require a backfit analysis). To be sure, CRGR remains active in reviewing proposed new generic requirements. The help is limited, because the greatest impositions in recent years are not couched in those terms, at least in part to eliminate the need for CRGR review. They are interpretations resulting in compliance backfits, circumventing CRGR. The RRRC, whose reconstitution was sought by Rogovin, suffered a similar fate and was disbanded before the TMI accident. These kinds of changes, which could be characterized as subversion of the intended reforms, are possible, in part, because there is no external or internal body to which the bulk of the staff is accountable.

Management

Internal accountability could mean management, but this is another area in which response to recommendations for improvement has been weak. The Rogovin Inquiry found the fundamental problem at NRC to be management. Their report introduced its chapter on NRC management with, "We have found in the Nuclear Regulatory Commission an organization that is not so much badly managed as it is not managed at all."

Structural changes have occurred. Most notable among these was the Reorganization Plan of 1980 discussed above (and which Rogovin found inadequate). The position of EDO has been strengthened. Commissions since 1980 have increased their reliance on the EDO as a "general manager" for the staff, at least partially resolving issues of lack of coordination between various offices. The number of such offices involved in reactor regulation has been decreased as well with the consolidation of NRR and I&E.

Recommendations affecting the strength and capabilities of individual managers have met with less success. Rogovin recommended strengthening project managers.

Instead, today's project managers perform less technical review than their counterparts at the time of the Rogovin review. Project management at NRR has become a paper shuffle.

Strengthening of senior managers has also suffered. Rogovin recommended that they be periodically rotated to broaden their experience. This has occurred in limited circumstances and at very high levels, that of Regional Administrator and Director of NRR. In middle management, one's career is still either in Rockville or in the field, and, if in Rockville, generally in a single office. There is no obvious program for NRC managers to obtain practical operating experience (Rogovin). The situation in this area is probably worse than it was, since many of the managers with AEC operational experience have retired since the time of the Rogovin review.

Scheduling of inspection activities is one area in which attempts at improvement may bring positive results. Improved scheduling of these activities was a principal recommendation of the second Regulatory Impact Survey, particularly for team inspections. One result has been the Plant Performance Review process, by which Regions allocate their inspection resources at semi-annual intervals. Licensees are notified, in writing, of the planned inspection activities, allowing them to better plan for the demands that attend large inspections. At least some of the perceived improvement in this area results from a reduction in the number of the most burdensome team inspections. That reduction could prove to be temporary. Several senior NRC managers have stated recently that industry's actions to reconstitute design basis information lagged after NRC stopped doing Safety System Functional Inspections. The comment has been, "if we don't look, industry doesn't act". NRC managers now speak of "deep vertical slice" reviews being needed to find problems like those at Maine Yankee. Increased NRC "looking" could undo improvements which appear to have been realized from the response to Regulatory Impact II.

Licensee Responsibility

Licensees have the principal responsibility for safety. All assessments of NRC have started from this premise. Several have made recommendations which would have allowed greater flexibility for licensees to exercise their responsibility or have changed the way NRC oversees these activities. Results have been mixed.

The greatest success story resulting from the aftermath of TMI is in this category -- training. The need to improve operator training programs was broadly recognized after the accident, and specifically recommended by Rogovin. Industry undertook this effort. Training accreditation had universal support within industry. NRC deferred to industry, at least for a while. Congress sought to require NRC to assure enough was done in this area through language in the Waste Policy Act of 1982. NRC staff responded with a sizable set of proposed rules. Stopping this staff effort, and permitting the accreditation program to be implemented fully, was the first mission of the Nuclear Utilities Management and Resources Committee, the first

NUMARC. With the firm support of 100% of utility Chief Nuclear Officers, the Commissioners were convinced to allow the industry program to proceed, despite the Waste Policy Act language. This action was challenged and ultimately upheld by the courts. It provides a potentially useful precedent: NRC assuring that industry takes appropriate actions, with minimal regulatory action, was found sufficient to comply with specific regulatory action requiring NRC to assure an outcome.

The NUMARC actions also set a pattern of NRC deferring to industry initiatives. No policy statement to that effect was issued (as sought by the Sillin report), but a pattern of deferral was realized. The initiative process was used for several issues in the mid- to late-80s, but has been used infrequently since. Firm industry support for any particular action, similar to that in support of accreditation, has not been apparent. An example is design basis reconstitution. This NUMARC guideline was not the subject of a formal initiative, at least in part because there was not universal agreement it was needed. Lack of implementation of the guideline, or incomplete implementation, has been noted by NRC management in the context of the current design basis issue. It is this non-initiative which was referred to in NRC's charge that industry stops doing when NRC stops looking (discussed above). Today, the pattern is more of individual licensee actions than common initiatives.

The Regulatory Review Group recommendation that 10 CFR 50.54.a be changed to allow licensees to reduce commitments in Quality Assurance programs has not been implemented, nor has the industry petition for such a change been acted on promptly. It can be fairly argued therefore, that industry remains constrained despite recommendations for change. At the same time, however, the counter argument can be made that industry has failed to take advantage of the flexibility that does exist. NRC's program for Cost Beneficial Licensing Actions (CBLA) -- burden reduction at licensee request -- received a lukewarm reception from industry. Some licensees realized significant savings, but many sought little or nothing. The group established within NRR to foster this program has been disbanded as unneeded.

The combination of lack of general industry initiatives, licensee failure to carry out design basis reconstitution (or to demonstrate that it was not, in fact, needed), and limited licensee response to the CBLA program has apparently led NRC to conclude that licensees cannot be counted on to manage appropriately their safety responsibilities. As a regulator, NRC's natural response to such a conclusion is that their control is needed to assure that the right things are done. Achieving changes which run counter to this conclusion and reduce NRC control can be expected to be very difficult.

New Plants

The licensing process for new plants has been reformed, as recommended by the Kemeny Commission, Rogovin Inquiry, and the Regulatory Reform Task Force. Their principal recommendation was to resolve safety issues early in the licensing process. The establishment of "one-step licensing" through 10 CFR Part 52 was responsive to this recommendation. Much of the discussion, however, has been theoretical. The first certification rules are expected to be issued shortly. Reaching this point required addressing several NRC staff attempts to impose requirements or process changes which would have decreased the desired finality of safety issues. Some other issues were intentionally left to later in the process by the designers, to be resolved through Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC).

In addition, major portions of the new licensing process still remain untried, as there has been no application for an early site approval or a combined operating license. Thus, while it appears that efforts in this area have been successful, the demonstration of success is incomplete. The final demonstration of success in reform of the licensing process will be the entry into operation of the first plants licensed under it. That event is not currently on the horizon.

Conclusion

It is impossible to say that nothing has been done in response to recommendations for change at NRC. At the same time, the conclusion that the changes made have not corrected the underlying problem appears inescapable. NRC's conduct of Regulatory Impact Surveys nearly a decade apart with similar conclusions demonstrates this.

The relative lack of real change can be seen by considering the "Supplemental View" of Kemeny Commissioner Thomas Pigford (Chairman, Dept. of Nuclear Engineering, UCal Berkeley). Among many other comments, Dr. Pigford noted that the Kemeny Commission had not addressed "some essential elements of the problem". He reported a belief that some of the more important problems at NRC were:

- Lack of quantified safety goals [Editorial note: now exist but are still not used],
- inability to set priorities and allocate resources in proportion to the estimated risk to the public.
- lack of experienced staff.
- arbitrary requirements,
- a stifling adversarial approach,
- ineffective evaluation of operations,
- lack of a comprehensive systems approach to the whole plant, and
- overwhelming emphasis on conservative models and assumptions.

Similar conclusions could easily be reached today, over seventeen years later.

If the answer can be illuminated by this review, it must lie in the area of accountability. This is the only set of recommendations for which no response has been generated. Lack of accountability permits the agency, at many levels, to decide upon and implement a course of action which can impact licensees, adding to burden and reducing certainty. Establishing an accountability mechanism would not automatically resolve these problems. As noted above, agency critics have suggested an outside oversight board due to concerns that the agency is too lax on industry. Implementing real accountability should, however, reduce the number of changes in direction which add to uncertainty. If the positive safety performance of the industry and the margin to established safety goals is accepted by an oversight body, such a change could improve the overall situation despite the expectations of the critics.

The other conclusion suggested by this review is that piecemeal changes will not accomplish the change industry believes is needed. Specific changes have been made. Many have been directly responsive to well-intentioned reviews of the agency. Agency behavior has changed as a result. That behavior, however, still produces a burdensome and unpredictable outcome.

Assessments Reviewed:

1. Report of the President's Commission on the Accident at Three Mile Island, October 1979 (referred to as the Kemeny Commission),
2. Three Mile Island - A Report to the Commissioners and to the Public. Report of NRC's Special Inquiry Group, January 1980 (referred to as the Rogovin Inquiry),
3. A Survey by Senior NRC Management to Obtain Viewpoints on the Safety Impact of Regulatory Activities from Representative Utilities Operating and Constructing Nuclear Power Plants. NUREG-0839, August 1981 (referred to as Regulatory Impact I),
4. Draft Report of the Regulatory Reform Task Force, SECY-82-447. November 1982.
5. Report of the Edison Electric Institute on Nuclear Power. February 1985 (referred to as EEI - Nuclear Power).
6. Leadership in Achieving Operational Excellence - The Challenge for all Nuclear Utilities, August 1986 (referred to as the Sillin Report),

7. Industry Perceptions of the Impact of the U.S. Nuclear Regulatory Commission on Nuclear Power Plant Activities (Draft Report). NUREG-1395. March 1990 and Regulatory Impact Survey Report - Final. SECY-91-172. June 1991 (jointly referred to as Regulatory Impact II).
8. Regulatory Review Group, Volume One - Summary and Overview, August 1993. and
9. Nuclear Regulatory Review Study - Final Report, October 1994 (referred to as Towers Perrin Report).

Conclusions of Past Reviews of NRC
(Findings -F- and Recommendations -R- related to NRC structure/function)

Description	Type	Group	Study	Date	Remarks
Replace Commission with Single Administrator, move to Executive Branch	R R	Structure	Kemeny Commission Rogovin Inquiry EPC - Nuclear Power ¹	1979 1980	Reorg Plan of 1980 Strengthened Role of Chairman as Chief Executive (Rogovin concluded it was not enough)
Consolidate responsibilities for operating reactors (DOR and I&E)	R	Structure	Rogovin Inquiry	1980	I&E/NRR consolidation renders moot
Establish Independent Oversight Committee	R R	Account.	Kemeny Commission Rogovin Inquiry	1979 1980	No Action. Kemeny would have Board report to Congress/President; Rogovin to Single Administrator
Strengthen ACRS - better staff and authorities, including role in rulemaking	F,R R	Account.	Kemeny Commission Rogovin Inquiry	1979 1980	Essentially no action
Establish group to provide official interpretations of requirements	R	Account.	Regulatory Impact I Towers Perrin (inferred)	1981 1994	No action. Technical groups still decide what requirements "always" meant. Key reason for Thermolag fiasco.
Expand considerations beyond "safety-related"	F,R	Focus	Kemeny Commission	1979	"PRA" not explicitly recommended, but would be responsive
NRC is preoccupied with new plant licensing and has not given priority to overall safety	F	Focus	Kemeny Commission	1979	Is compliance today's preoccupation?
Emergency Planning responsibility to FEMA	R	Focus	Rogovin Inquiry	1980	Responsibility still shared
Transfer non-safety functions from NRC	R	Focus	Rogovin Inquiry	1980	No action. Antitrust and export responsibilities were main elements.
Strengthen I&E Process	F,R R	Focus	Kemeny Commission Rogovin Inquiry	1979 1980	AEOD and SALP are responsive; civil penalty authority increased
NRC does not systematically evaluate operating performance	F	Focus	Kemeny Commission Rogovin Inquiry	1979 1980	AEOD established as response
NRC has no system to measure and improve quality of regulations	F	Focus	Kemeny Commission	1979	Safety Goals supposed to contribute. Not used.
Need clear performance stds for regulatory use of PRA	F	Focus	Reg. Review Group	1993	Current development of SRP/Reg. Guide. Expected to be unreasonable.
Establish risk objective	R	Focus	Rogovin Inquiry	1980	Now have safety goals but don't use them
Transition to risk-based regulation	R	Focus	Rogovin Inquiry	1980	Now have more knowledge and tools (e.g., IPE) but licensing process is unchanged.

Use more performance-based approaches vs. prescriptive	R	Focus	Sillin Report	1986	
Require cost-benefit evals.	R	Impact	Kemeny Commission	1979	Backfit Rule
Promulgate Backfit Rule	R	Impact	NRC Reg Reform TF	1982	Revised 50.109 and CRGR process
pace of regulatory actions has "created a potential safety problem of unknown dimensions"	F	Impact	Regulatory Impact I	1981	
Bring issuance of "requirements" under control	R	Impact	Regulatory Impact I	1981	CRGR. Most significant change resulting from post TMI reviews.
Establish safety priorities, reconsider implementation dates as a result	R	Impact	Regulatory Impact I	1981	"Living Schedule" process was an attempt to address
Increase sensitivity to impact of agency actions on people	R	Impact	Regulatory Impact I	1981	
Manage cumulative effect of generic requirements	R	Impact	Regulatory Impact II	1991	Various programs, including Reg Analysis Guidelines, were to address
Reconstitute "Ratchet" Committee	R	Impact	Rogovin Inquiry	1980	Function served by CRGR.
Make licensees responsible, improve organizational/management standards	R	Licensee	Kemeny Commission	1979	Increased attention to management issues in inspection - SALP process
50.54.a should be modified to allow commitment reduction	F	Licensee	Reg. Review Group	1993	No action. Apparent resistance to change.
NRC/industry must be responsive to burden reduction needs	F	Licensee	Reg. Review Group	1993	Largely overcome by events. NRC's CBLA group disbanded. Industry pursuit never reached full-scale assault.
NRC should support industry rulemaking petitions	F	Licensee	Reg. Review Group	1993	Timely change, as contemplated, has not been realized.
Improve training (emphasize off-normal, increase NRC involvement)	R	Licensee	Rogovin Inquiry	1980	Industry Accreditation program addressed content issues
Issue policy statement in support of industry improvement initiatives. Provide regulatory incentive	R	Licensee	Sillin Report	1986	No policy statement, although pattern of NRC deferring to formal initiatives was realized.
NRC actions intrude on management prerogatives	F	Licensee	Towers Perrin	1994	
Commissioner's are isolated from Staff, don't manage	F	Manage	Kemeny Commission	1979	1980 Reorganization Plan attempted to address, in part
Major NRC Offices act too independently/inconsistently	F	Manage	Kemeny Commission	1979	EIO strengthened in response
Dedicate sufficient staff to assure technical adequacy and completeness of requests	R	Manage	Towers Perrin	1994	
			Regulatory Impact I	1981	

Improve scheduling and control of inspections	R	Manage	Regulatory Impact II	1991	Semi-annual schedules for inspection activities (PIIR)
Improve mgmt control and involvement by sr. mgrs.	R	Manage	Regulatory Impact II	1991	Implemented via training, standards, personnel perf. evaluation process
The fundamental problem at NRC is management	F	Manage	Rogovin Inquiry Towers Perrin	1980 1994	
Strengthen Project Managers	R	Manage	Rogovin Inquiry	1980	Current situation perhaps worse
Periodically Rotate Senior Staff Managers	R	Manage	Rogovin Inquiry	1980	Limited implementation - for Regional Administrators & Director, NRR level
Require/obtain practical operating experience for key staff	R	Manage	Rogovin Inquiry	1980	Not implemented. Situation today is worse since managers with AEC operational experience have retired.
Improve rulemaking - public agenda, deadlines, periodic reevaluation of rules	R	Process	Komony Commission	1979	Regulatory Agenda established; reg. analysis responds in part. No action re: existing rule reviews
Review organization and programs to avoid overlap with industry/others	R	Process	Regulatory Impact I	1981	
Formalize systems to communicate with Licensees, perform Sr. Mgmt reviews	R	Public	Regulatory Impact I	1981	SALP resulted.
Resolve issues and establish policy via rules	R	Public	Rogovin Inquiry	1980	Use of rulemaking for generic issues increased. Policy process unchanged.
NRC uses informal pressures and guidance to pressure licensees	F	Public	Towers Perrin	1994	Requirement to publish draft Generic Letters, etc. for public comment was implemented after this survey.
NRC actions in public arena present distorted/negative picture	F	Public	Towers Perrin	1994	
Resolve safety issues early in licensing process / reform process	R	New Plants	Kemeny Commission EEI - Nuclear Power NRC Reg Reform TF	1979 1985 1982	Part 52 is responsive.

¹ EEI's report states, "It is clear that the Commission-type organization as currently administered by NRC does not result in an efficient and effective decision-making process." The report stopped short of recommending the Commission be abolished, however, deferring that decision to a National Commission on Electricity which it recommended be created for other reasons. EEI is cited here because of the strength of its conclusion and its congruence with the findings and recommendations of Kemeny and Rogovin.

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