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3:45

THE WHITE HOUSE

WASHINGTON

MEETING WITH JOAN BAEZ

Tuesday, October 30, 1979
3:45 p.m. (15 minutes)
The Oval Office

From: Zbigniew Brzezinski ZB

I. PURPOSE

To hear Joan Baez' first hand account of her visit to the refugee camps in Southeast Asia.

II. BACKGROUND, PARTICIPANTS & PRESS ARRANGEMENTS

A. Background: You saw Joan Baez briefly at the White House gate after she announced her opposition to the Vietnamese policy in Kampuchea. She is here to raise money for refugees and Kampuchean victims.

B. Participants: Henry Owen, Lincoln P. Bloomfield, NSC

C. Press Arrangements:

III. ISSUES FOR DISCUSSIONS

1. Ms. Baez' impressions of the situation.

2. The US government response you announced on October 24th.

3. US determination, in cooperation with all voluntary American organizations, to cooperate to the fullest with the international relief effort in Kampuchea.

4. US intake of 14,000 Indochinese refugees per month (total of 168,000 per year), far greater than any other country.

Report Of
The President's Commission On

THE ACCIDENT AT THREE MILE ISLAND

The Need For Change:
The Legacy Of TMI

October 1979 Washington, D.C.

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SUPPLEMENTAL VIEWS

BY MEMBERS OF

PRESIDENT'S COMMISSION ON THE

ACCIDENT AT THREE MILE ISLAND

ADVANCE COPY

NOT FOR PUBLIC RELEASE

BEFORE AMs, WEDNESDAY, OCTOBER 31, 1979

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These Supplemental Views will be included in the permanent edition of the Commission's report.

SUPPLEMENTAL VIEW BY SIX COMMISSIONERS

The Commission has unanimously recommended that: "In order to provide an added contribution to safety, the NRC should be required to the maximum feasible extent to site new power plants in locations remote from concentrations of population. Siting determinations should be based on technical assessments of various classes of accidents which can take place, including those involving releases of low dosages of radiation."

The undersigned six Commissioners voted for and support the following recommendation: "No new limited work authorization permits or construction permits should be issued until such time as the NRC or its successor has adopted siting guidelines consistent with the above recommendation."

Bruce Babbitt
Carolyn D. Lewis
Paul A. Marks
Harry C. McPherson, Jr.
Russell W. Peterson
Theodore B. Taylor

October 22, 1979

SUPPLEMENTAL VIEW BY COMMISSIONER BABBITT

It is with some misgiving that I feel compelled to add separate views to the report, for I find it to be a strong and lucid piece of work in almost every respect. Yet there are two areas where I feel the Commission stopped short of providing meaningful recommendations.

The most serious unresolved issue, in my opinion, of the entire inquiry is: Who should be allowed to run nuclear power plants?

A careful review of the the Commission findings and conclusions, along with the technical and legal staff reports upon which these are based, readily demonstrate that the utility in charge at Three Mile Island was not qualified to do and was not doing an adequate job. The record includes a listing of failures and inadequacies from maintenance to management, from operator's training to a lack of nuclear expertise at higher management levels. Our own findings state that "Met Ed did not have sufficient knowledge, expertise and personnel to operate the plant or maintain it adequately," and that "as a result of these deficiencies the safe operation of the TMI-2 plant was impaired."

This is a far reaching indictment of the utility in charge, the entity given the responsibility for controlling 15 billion curies of radioactivity. By the nature of its charge, the Commission explored in depth the operation capability and performance of just one nuclear utility and found it seriously wanting. But there are many indications that Met Ed is not an aberration, and that there are other nuclear utilities that do not measure up to even minimal standards. Inevitably, this raises serious questions about who should be licensed and entrusted to run our nuclear power plants. In my view, nuclear power is far too complex and dangerous to be left to any utility that wants it -- which has been the case until now. Nor can we allow utilities to go through a learning process at the expense of the public.

As a Commission, we had a real problem coming to grips with this issue because of the time constraints on examining the characteristics of other utilities operating nuclear power plants. I can, therefore, understand the difficulties in formulating a specific recommendation at this time.

Yet I must believe that our findings do support more than what we have said here by way of recommendations. We cannot simply urge the utility, industry, and the Nuclear Regulatory Commission to pay more attention to safety and to establish higher standards.

While this Commission has clearly addressed the institutional shortcomings of the NRC in its recommendations, it has not addressed the institutional problems of the industry.

Met Ed's operating license stems from an unquestioned assumption by the NRC, until now, that any utility that wanted to produce nuclear power could do so -- a policy that no matter how small or unsophisticated the utility, it was eventually entitled to wrap its arms around a nuclear reactor. Nuclear technology continues to proliferate throughout the

industry with some forty utilities now operating reactors and with many more waiting in the wings.

There is no question that the management quality of utilities varies much more -- from very good to very mediocre -- than other major industrial sectors such as large chemical companies or computer manufacturers. And because utilities are necessarily monopolistic in nature, normal laws of competition do not apply; badly managed utilities suffer financial problems but somehow survive.

It is now time to assess this situation and determine which companies are qualified to handle such a technology and which companies are not. It is remarkable that this issue has not been previously confronted, but it is again a product of the "accidents can't happen" syndrome. Discriminating the good from the mediocre, the nuclear goats from the nuclear sheep, however unpalatable to the industry, must be done. One well known nuclear expert, Dr. Alvin Weinberg, has argued persuasively that the generation of nuclear power should be completely separated from the distribution of electricity and entrusted to just a few sophisticated entities with both the resources and the organizational depth to provide safe nuclear energy as their only task.

I believe that this is one area where fewer entities with more depth and expertise might be justified for the sake of public health and safety. Precisely how to control this proliferation of nuclear power management should receive a lot more study and I strongly urge the appropriate over-sight committees to place this issue near the top of their agenda.

Second, the Commission with its limited time and resources did not pursue in detail the issue of whether facts, known by Met Ed on the first day of the accident, were not communicated to NRC and state officials.

It now appears there is evidence to indicate that Met Ed technicians understood, within a few hours of the accident, that the nuclear core had been uncovered and that this specific information was transmitted to supervisory personnel at the plant early Wednesday. There seems to be little question that the technicians who took the temperature readings that morning understood what they found. The real question is what happened to this information and whether it was transmitted to the appropriate management personnel. It certainly did not get transmitted to responsible public officials, including Lt. Governor Scranton during a meeting with Met Ed that afternoon.

This incident again demonstrates the total inadequacy of the utility's internal communication system and raises serious questions about crisis management. As a Governor, it seems to me beyond question that a responsible public official must have immediate access to all available information about the status of a nuclear accident.

There is no question that this information might have influenced state and federal concerns over the need for evacuation then and subsequently. Whether or not an evacuation should have been ordered on the basis of the evidence known at the time is not particularly relevant now but the fact of the matter is that key decision-makers - those

responsible for the public health and safety of the citizens - did not have access to the information that was known to the utility.

This issue should be intensely scrutinized by other investigatory bodies continuing the inquiry into nuclear power and this accident.

There are still unresolved questions about what happened at Three Mile Island, the answers to these may well lead to other recommendations about the responsibilities of utilities operating nuclear reactors.

Bruce Babbitt

October 25, 1979

SUPPLEMENTAL VIEW BY COMMISSIONER KEMENY

The Commission considered three different possible recommendations for a temporary halt on construction permits. Eight different Commissioners voted for at least one of these proposals. Unfortunately, we could not agree on the appropriate criteria for such a halt. Our reasons for failure to reach agreement are complex and may be found by examining the transcripts of our meetings of October 16, 20 and 21.

The following proposed recommendation was discussed extensively by the Commission:

> "No new construction permits should be issued until the reports and recommendations of this Commission, the NRC self-evaluation and the Congressional investigations are complete and until the President and Congress have had an adequate opportunity to consider such recommendations, including the recommendation to restructure the NRC."

I was one of six Commissioners who voted in favor of this recommendation; four voted against it and two abstained. I very much regret that this important recommendation failed to obtain the seven-vote majority necessary to adopt it.

I was also one of four Commissioners who voted for a stronger version of the above recommendation.

John G. Kemeny

October 25, 1979

SUPPLEMENTAL VIEW BY COMMISSIONER PETERSON

Although I believe that our report fulfills well the President's charge and believe that our recommendations, if they were carried out, would reduce the likelihood of accidents, I wish to comment on the work of the Commission in three areas:

I. The Commission failed to summon the 7 votes necessary to adopt the following two resolutions:

A. "No new construction permits should be issued until the reports of this Commission, the NRC self-evaluation, and the Congressional investigations are completed and until the President and Congress have had an adequate opportunity to consider such recommendations including restructuring the NRC."

Six of the ten Commissioners who voted supported this resolution.

B. "No new limited work authorization permits or construction permits should be issued by the present NRC or the restructured NRC that are inconsistent with the siting recommendations in 6 and 6a."

(This reference is to approved recommendations that call for requiring, to the maximum feasible extent, the siting of new power plants in locations remote from concentrations of population.)

Six of the nine Commissioners who voted supported this.

In view of the strong support in our Commission for these two measures, I recommend that the Congress and the President enact them.

A minority within the Commission strongly resisted recommendations that might delay further nuclear plant construction. Neither the Commission nor its staff was free from the mind-set that nuclear energy is adequately safe--the mind-set for which the Commission criticized the NRC and the nuclear industry.

II. The study was not subjected to the penetrating critique which could have been provided by one or more of the highly technically qualified critics of nuclear energy safety available in our country. I recommend that the President and the Congress involve such experts in the continuing appraisal of the safety of nuclear energy. This is especially important when considering the possible accident conditions which can lead to a major release of radioactive material from the plant.

III. The Commission ruled that an investigation of the disposal of the TMI-2 nuclear wastes lay outside its assignment. Yet, in my view, this constitutes, over the long run, the most hazardous aspect of the nuclear power industry. While the industry waits for the government to

finish its decades-long effort to determine how to safely dispose of these long-lived wastes such as plutonium, cesium and strontium, each nuclear power plant continues to store its growing amount of spent fuel containing these wastes in a pool of water immediately adjacent to the containment building.

I recommend that a serious study be undertaken of how such storage may exacerbate the threat from accidents or sabotage and of whether or not such waste should be moved away from the power plants, especially when the plant is located in a heavily populated area.

Although there is no commercial plant today for reprocessing spent fuel and our government refuses to approve one, the accident at TMI-2 has in effect converted that plant to a reprocessing plant. A large-scale chemical processing plant is being built at TMI-2 for handling the huge quantities of highly radioactive waste that have escaped from the disintegrated fuel rods. The safe processing and disposal of these wastes merit prompt and close surveillance by some independent group.

As a final comment, I wish to emphasize my conviction, strongly reinforced by this investigation, that the complexity of a nuclear plant--coupled with the normal shortcomings of human beings so well illustrated in the TMI accident--will lead to a much more serious accident somewhere, sometime. The unprecedented worldwide fear and concern caused by the TMI-2 "near-miss" foretell the probable reaction to an accident where a major release of radioactivity occurs over a wide area. It appears essential to provide humanity with alternate choices of energy supply. Accordingly, I recommend the development by our federal government, before we become more fully committed to the vulnerable nuclear energy path, of a strategy which does not require nuclear fission energy.

Russell W. Peterson

October 25, 1979

SUPPLEMENTAL VIEW BY COMMISSIONER PIGFORD

I generally concur with the conclusions and recommendations of the Presidential Commission on the Accident at Three Mile Island. However, some of the principal results of this investigation need clarification and discussion. Among these are some that warrant immediate, but necessarily limited, comment.

I. The Performance of Equipment and Engineering Systems

The Commission has properly recognized that, with the very heavy emphasis upon equipment to attain reactor safety, there has been too little emphasis upon the adequacy of people to help achieve that safety. The lack of such people emphasis has been properly stressed in this report. However, that stress has now obscured the very important fact that, in spite of the very crucial errors of operators and supervisors at TMI-2, the safety equipment did indeed function. In spite of the open PORV, leaks in the vent gas system, and other equipment failures, the overall system of equipment was sufficiently good that, without the human errors, the accident at TMI-2 would have been only a minor accident.

The reactor containment and its auxiliary equipment did indeed function to protect the public. Except for the small fraction that escaped to the environment, the radioactivity was contained. The off-site radiation doses were small. We have found that the actual release of radioactivity to the atmosphere will have a negligible effect on the physical health of individuals. Equipment failures were not the proximate cause of the TMI-2 accident. The accident was, in fact, a demonstration that the equipment <u>is</u> effective.

Although there has been considerable speculation about how near TMI-2 came to a worse accident, our staff analyses show that even if all of the reactor fuel cladding had been oxidized to form hydrogen, or even if appreciable fuel melting or even a meltdown had occurred, the containment would still have survived and protected the public. The accident demonstrated that the "defense-in-depth" approach towards nuclear reactor safety has indeed yielded significant results.

The emphasis in this report upon equipment vs. people obscures the fact that the equipment itself is only one product of the defense-in-depth or multiple-barrier design approach, which also encompasses the analysis of how equipment components must perform and how systems of equipment must operate. The accident demonstrated that this system of equipment performed better than expected. Earlier assumptions and studies by AEC/NRC (TID-14844 and WASH-1400) have suggested far greater core damage and greater releases of radioactivity from the fuel and into the containment under such degraded cooling conditions.

The accident has also demonstrated many areas wherein equipment modifications can result in further improvements in safety of existing and future reactors in this country.

These are important positive results from our investigation.

2. The People-Related Problem

The nature of the people-related problems needs clarification. One such problem--and a most serious one--was the errors made by operators and operator-supervisors, whose training was insufficient in scope and understanding. Another was the failure of many individuals to respond adequately to the earlier experience from other reactors and to other advance information that might have alerted the operators and avoided the accident.

Another problem was the errors made by some NRC officials, who misinterpreted the release of radioactivity on March 30 and recommended evacuation, and who erroneously concluded on March 31 that the hydrogen bubble might explode. The public trauma from these mistakes resulted in severe but short lived mental stress, which was evidently the only serious health effect of the accident.

Having identified the particular people-problems involved, many of the necessary direct remedies are apparent. There seems to be some unwillingness to recognize that many of these remedies are already being implemented. The NRC and the nuclear industry have taken and are taking steps on a broad basis to analyze and rectify these problems, as evidenced by the post-TMI NRC bulletins and by the establishment of the utilities' Institute for Nuclear Power Operations (INPO) and the reinsurance program. After experiencing the shock and comprehending the cost of this accident, the nuclear industry has clearly set into motion programs to institute many of the remedies that this Commission seeks. The problem with "attitudes" emphasized in the Commission's report must refer largely to pre-TMI attitudes.

It is reasonable to expect that other such human-related problems, not uncovered by this investigation, may exist. That, and the need to instill and continue a strong emphasis upon reactor safety, suggest some of the broader institutional changes recommended in this study.

3. Scope and Limits of the Investigation

The limits of this investigation and the effect thereof upon the Commission conclusions and recommendations need clarification.

This investigation was limited to the accident at TMI-2, and possible variations thereto, and, to a limited extent, similar transients at other places. The many other aspects of reactor safety were not investigated, although we do recommend that these be more systematically studied. The facts of the present investigation provide no basis for concluding that reactors are unsafe. They also show that, although more emphasis is needed on the analysis and planning for small-break accidents, the possibility of an accident of this type was known and had been analyzed and predicted prior to the TMI-2 accident. Therefore, any conclusions as to new fears of reactor safety do not arise from, and imply large extrapolations from, the facts of this investigation.

This investigation has not included a study of reactor siting. Consideration of the calculated "low population zone" occurred only in our consideration of its implication on the specification of radiation

doses for evacuation decisions. Therefore, proposals made by some Commissioners to reverse existing site approvals in favor of more remote sites have no justification with the facts of this study.

We have recognized in this investigation that decisions as to whether or not safety improvements are to be implemented must be based in part upon a weighing of the costs against the benefits. However, we did not evaluate the costs of possible safety modifications, nor did we evaluate the probabilities of some of the large hypothetical releases that have been postulated by some Commissioners. Such proposals, and claims as to risks therefrom, have no basis within the facts of this investigation.

We have not investigated the availability, cost, overall safety, and environmental effects of nuclear energy and of other energy alternatives. Nor have we investigated the effect of various energy alternatives upon the nation's economy and security. We have not examined the effect of a speed-up or delay of nuclear power upon the many energy problems which affect the nation. Therefore, proposals by some Commissioners to impose sanctions which affect the availability of nuclear energy as an option are based upon their own personal extrapolations, which leap far beyond the facts of this investigation. The Commission, in its final consideration of the moratorium proposals, repudiated the issue by a vote of 8 to 4.

4. Lack of Input from Those Parts of the Nuclear Industry Not Involved Directly in TMI-2

Through its investigation of the Nuclear Regulatory Commission, the Commission staff has uncovered problems and practices which have suggested extrapolations to those many parts of the nuclear industry not involved directly with the TMI-2 accident. However, little proof of the validity of these extrapolations has been established. Moreover, to my knowledge, no representatives of those other parts of the nuclear industry were interrogated or asked to present evidence on any of the relevant issues, except for one company interrogated within the narrow issue of the Beznau incident. This further limits the validity of the industry-wide extrapolations that are implied in many places in the report and that are implied in some of the moratorium recommendations still endorsed by some of the Commissioners.

5. Attitudes

The framing of the Commission's overall conclusion around the question of

> "attitudes of the Nuclear Regulatory Commission, and to the extent that the institutions that we investigated are typical, of the nuclear industry"

requires comment and interpretation. "Attitudes", especially prior to TMI-2, were not directly examined, nor could they be. Valid conclusions can only be drawn on actions taken, i.e., problems addressed and not addressed, regulations issued and complied with, and the occurrence of events that reflect upon the adequacy of those processes. Even if

"attitudes" could be assessed, it is not clear how they could be changed by any recommended rule, reorganization, or other mandated influence. It is more constructive to assume that attitudes are symptomatic of the forces at work in the systems, and it is those forces which must be addressed.

The actions already taken by the industry in setting up INPO, the Nuclear Safety Analysis Center, and the program of self insurance against the cost of replacement power, with the self-policing actions thereby implied, signal a genuine, if somewhat belated, recognition of the need for greater effort to prevent nuclear accidents and cope with their consequences. These actions show a significant change in industry attitude which can only be beneficial.

It becomes clear, as the theme of "attitudes" is developed in the Commission report, that what is of concern is an apparent failure of the system to incorporate an effective mechanism to assimilate lessons from plant experience and to incorporate the appropriate up-to-date technology, particularly as it applies to control room design and to develop sufficiently trained and competent people to manage this technology. This is a more manageable and appropriate focus for the overall conclusion of this Commission.

I believe that such technology is being or will be used by the industry and that changes and improvements in design and operating procedure will be effected, not merely to satisfy critics nor to demonstrate attitudinal penitence, but on the basis of sound judgment resting on sound data.

6. Commission Judgments on Overall Safety

In its Overview the Commission acknowledges that it has not examined "how safe is safe enough or the broader question of nuclear vs. other forms of energy," recognizing the complexity of the issue and the limitations of staff. However, the Commission soon leaps this hurdle and speaks of the "risks that are inherently associated with nuclear power," and it holds that "equipment can and should be improved to add further safety." Even the conclusion that "accidents as serious as TMI should not be allowed to occur in the future" may imply that an assessment of risk and safety has been made. This conclusion is more understandable if interpreted in terms of what was really serious about this accident. The only serious health effect was the mental stress resulting from the confusion and public misunderstanding concerning the March 30 release and the March 31 hydrogen bubble. The financial loss to the utility and ultimately to the ratepayer is also serious.

Every technology imposes a finite degree of risk upon society, both in its routine operation and in the occurrence of accidents. Over a long enough time period, even low probability accidents may occur. The essential question is the trade-off between the risks and the benefits. The Commission neither received any evidence nor reached any conclusions that the risks of nuclear power outweigh its benefits.

7. The NRC "Promotional Philosophy"

The NRC's assignment is indeed difficult, but not because of dichotomy of safety, on the one hand, and the industry's convenience on the other. The problem is more complex. There is in each issue the element of how much cost, how many man-years of expert analysis, and how much delay is justifiable to achieve an increment of safety. Seldom are these issues black and white, since the designers and engineers must recognize that absolute absence of risk in any project is unattainable, and that social costs accrue to both inaction and overreaction. Efforts to balance costs and benefits should not be considered evidence per se of a promotional philosophy.

It should be expected that industry will logically resist unwarranted changes proposed in the name of safety.

8. Hydrogen from Small-Break LOCAs

Finding A-10 may be misinterpreted as suggesting that, because of the experience at TMI, the generation of large amounts of hydrogen gas is an inevitable consequence of small-break LOCAs. This misinterpretation leads to the erroneous conclusion that NRC over-emphasis on large-break LOCAs, at the expense of small breaks, is what left the TMI operators unprepared for the hydrogen produced during the accident, since significant amounts of hydrogen are not predicted in the typical analyses of large breaks. Such inference is without basis. Large-break analysis or any-break analysis will predict the generation of large amounts of hydrogen whenever the cooling water added to the reactor core from the emergency systems is reduced to the extent that was done at TMI-2.

9. The Two-Step Licensing Process

Finding G-6 implies that, in the two-step licensing process (Construction Permit and Operating License), safety may be compromised due to the large financial commitment prior to the operating license stage, with the implication that insufficient information is known at the construction permit stage for an in-depth safety review. A review of actual license applications will reveal that major safety features are sufficiently described at the construction permit stage. The issuance of an operating license several years later facilitates consideration of appropriate technological developments and feedback from operating plants which may be factored into the design toward the end of the construction period. Safety review in licensing is not a discrete two-step process. There is, and should be, continuing dialogue between the NRC staff and the applicant during this interim period.

10. Single-Failure Criterion

Finding G-8(a) that applicants "are not required to analyze what happens when two systems or components fail independently of each other" conveys some misunderstanding of the "single-failure" criterion. The requirement is that the applicant must show that applicable off-site radiation exposure limits will not be exceeded in the event of an accident initiated by:

(a) any credible component failure, and in which
(b) either all external or all internal power supply to the plant is lost, and

(c) there is, in addition, failure of that single active component whose failure would most worsen the results of the accident.

Although confusingly called a "single-failure" criterion, it is clear that this criterion requires the assumption of at least three failures.

It is further required that if failure of one component causes failure of other components, the entire series of failures must be regarded as one failure. The single-failure criterion is applied on a system-by-system basis, which implies single-failure tolerance in each of the systems.

11. Safety-Related

Finding G-8(b) concerning NRCs handling of "safety-related" items needs clarification in several respects. First, the well-established practice of the NRC is to require that any component, system, or feature needed for the prevention or mitigation of a serious accident must meet documented requirements of quality, redundancy, testability, environmental qualifications, etc., and must be categorized as "safety-related." Although other components, systems, or features are classed as "non-safety related" they must meet requirements appropriate to their operational function. NRC practice is to subject all "safety related" items to review. Additionally, "non-safety related" items are reviewed by NRC to reassess their possible reclassification.

Second, in analyzing postulated accidents, one is not permitted to assume that an active "non-safety related" item will be capable of performing its function. As a result, either an active item must meet "safety related" requirements of quality, etc., or no credit can be taken for its functioning in an accident.

In the TMI-2 accident it appears that the NRC's pre-occupation with the "safety-related" item list was not the fault, but rather the safety analyses did not take into account the actual lack of training, the inadequate operating procedures and practices, and their potential capability for producing an accident if the PORV stuck open.

Finally, the NRC is in some degree responsible for the level of safety consciousness in the industry. In this sense NRC's emphasis on "safety related" categories has probably been less influential than its reluctance to give credit for safety innovations and its requirement that the industry comply with many technically unreasonable rules. These practices encourage the industry merely to comply with NRC rules.

With regard to Finding G-8(c), it is not the reliance on "artificial categories of safety-related items" which has caused NRC to miss important safety problems. Rather, it was the failure to recognize that some items not part of the safety system may challenge that system at an undesirable frequency. Moreover, the capability of the operators to defeat the safety system was not given sufficient attention. These important issues are apart from safety-system classification and the single-failure criterion.

12. Plant Instrumentation

Finding G-8(f) does not provide a balanced account of all the considerations identified by AIF in its 1978 response to an NRC proposal to institute a new guide requiring a wider range of response for in-plant instrumentation, nor does it recognize the seeming lack of technical basis for the NRC request.

The relevance to the TMI-2 accident of the AIF response is not clear, since the range of the in-plant instrumentation at TMI-2 was adequate for diagnosis and plant control during the accident. Instead, the problem during the TMI-2 accident was that only part of the range of the in-plant instrumentation was displayed to the operators, and the manner of display was in some ways inadequate. Additionally, the operators misinterpreted some instrument readings. However, a greater range of instrument response might have aided the later assessment of the core damage that occurred.

13. Backfitting

Finding G-8(h), that there is no systematic backfitting review on a plant-by-plant basis of operating plants and plants under construction, appears to take too little account of the NRC's Systematic Evaluation Program (SEP), initiated more than three years ago. Under this program, operating plants have been categorized by NRC, issues have been identified by NRC, and information about older plants has been supplied to NRC by the utilities. In a number of cases, physical modifications of operating plants have been made in order to comply with updated NRC requirements. In some areas, such as that of the up-grading of emergency plans cited in the Commission's report, progress does appear to have been somewhat slow.

14. Independent Testing by I&E

In Finding G-9(a) and Recommendation 11(d) the recommended improvement of NRC's inspection and auditing of licensee compliance with regulations and the need for major and unannounced on-site inspections of particular power plants is logical. It calls for NRC to do more of what it already does and to do it better. In fact, NRC has, for over a year, stationed full-time inspectors at some operating nuclear power plants. At some plants, unannounced on-site inspections appear to be so frequent as to be commonplace.

The implication that NRC's I&E inspectors should do a substantial amount of independent testing of construction work and should place little reliance on work done by the utility is clearly impractical because of the enormous resources which would be required. Careful auditing of industry's testing is the only practicable and effective approach.

15. Emergency Procedures

In addition to the fact that some of the existing TMI-2 procedures were unworkable, as indicated in the Commission's report, the procedures did not provide a step-by-step pathway for identifying the problem

implied by the information available in the control room. Given the philosophy that the operators had to adhere closely to written procedures, the unavailability of diagnostic procedures and training in their use was a significant factor among the causes of the TMI-2 accident.

16. The Major Problems with NRC's Approach to Reactor Safety

The Commission report has identified many mistakes by NRC personnel in their handling of the TMI-2 accident and deficieneies in NRC's regulatory practices. However, this criticism does not reach some essential elements of the problem. I believe that the following are some of the more important problems at NRC:

... Lack of quantified safety goals and objective. When a safety concern is postulated, there is no yardstick to judge the adequacy of mitigating measures.

... Inability to set priorities and to allocate resources in proportion to the estimated risk to the public. In my view, a disproportionate effort is being required for some issues which have only a marginal impact upon risk to the public.

... Lack of experienced staff. An undesirably large proportion of NRC staff and management have little or no practical experience in designing or operating the equipment which they regulate.

... Arbitrary requirements. Too many of the NRC requirements are mandated without valid technical back-up and value-impact analysis.

... A stifling adversary approach. The existing process inhibits the interchange of technical information between the NRC and industry. It discourages innovative engineering solutions.

... Ineffective evaluation of operations. NRC has no effective system for evaluating data from operating plants. Data should be analyzed systematically to identify trends and patterns.

... Lack of a comprehensive system approach to the whole plant. A large percentage of the NRC staff are specialists focusing upon narrow topics. There are relatively few systems engineers within NRC who can integrate individual safety features into an overall concept and who can place issues into perspective.

... An overwhelming emphasis on conservative models and assumptions. Realistic analyses are needed to identify the margins of safety and to aid competent decisions.

17. The Staff Report

The tight schedule and deadline for the Commissioners' report has allowed little opportunity for careful review of the Staff reports upon which our findings are to be based. Some Staff reports are not yet completed. There are several parts of some key Staff reports with which I cannot agree, particularly the staff report on the NRC.

18. The Staff Report on the Nuclear Regulatory Commission.

The Staff report on the Nuclear Regulatory Commission is a companion document published in Volume 2 of the Commission Report. Some deficiencies in this report are already reflected in earlier comments on Findings and Conclusions concerning the NRC. Having reviewed that report in search for understanding for many of the findings and conclusions adopted by this Commission, I noted several deficiencies, varying from technical error to unbalance in the investigation. Two examples are given below.

18.1 Performance Characteristics of Large Light-Water Reactors

The Staff report contains generalities by an NRC staff member, who seriously questioned the state of knowledge of the performance characteristics of the larger light-water reactors in this country, an opinion apparently also echoed by some other individuals within NRC. The cited statement was adopted by the authors of this Staff report. However, the Staff report reflects no attempt by the Staff to obtain evidence from the nuclear industry on this issue, even though the various companies in the nuclear industry are the parties impugned by the cited statements.

Statements were recently obtained from Saul Levine, Director of NRC's Office of Nuclear Regulatory Research, and from two different companies which design light-water reactors and which are not connected with the TMI-2 accident. It should not be construed from reference to "economy of scale" that the regulators were being asked to accept reduced safety margins. Rather, the growth was largely achieved by adding more fuel assemblies of the same or similar volumetric and linear power density, and by adding more heat transfer loops having the same mechanical and hydraulic characteristics as in the plants previously licensed. Saul Levine said, "as far as I know, there have been no size-dependent factors found in the operation of large reactors to affect the safety of the plants adversely." There appears no supportable suggestion that safety was compromised as a result of the extrapolation of technology.

The unqualified acceptance of the cited testimony in the Staff report is an indicator of insufficient balance in this part of the investigation.

18.2 Reliance on Books and Magazines

The Staff report relies to a considerable extent upon excerpts from a book authored by E. Rolph without establishing the author's qualifications. Ms. Rolph did not testify in this investigation. The undue reliance upon this secondary source, without first establishing a primary source for its support and without establishing its reliability, is a further example of insufficient balance in this part of the investigation.

In my view, the Rolph book does not express a comprehensive, accurate, and balanced knowledge of the NRC and of the nuclear industry.

19. Concluding Statement

The rather extensive criticism of NRC in the Commission report, and as implied in this supplementary statement, should not obscure the

central issue that primary responsibility for nuclear safety lies with the utility, shared to a large extent with the equipment suppliers and the architect engineers. This also reflects my view of the responsibilities for the TMI-2 accident.

However, these criticisms of both industry and NRC should not obscure the fact that in 480 reactor years of commercial nuclear power operation in the United States there has still been no identifiable effect upon the physical health of the public, and that this record has been achieved by the industry and NRC, the parties that have been criticized and under the system that has been criticized.

It must be emphasized that nothing learned from this investigation suggests that the nuclear power option should be curtailed or abandoned as a result of the TMI-2 accident.

Thomas H. Pigford

October 25, 1979

SUPPLEMENTAL VIEW BY COMMISSIONER TRUNK

The following is a minority view on two issues raised in the report.

ITEM 1:

This item represents the feelings of the undersigned and a majority of her circle of citizens who lived through the TMI accident.

The report concluded that the errors and sensationalism reported by the news media merely reflected the confusion and ignorance of the facts by the official sources of information. It further concluded that the press did a creditable ("more reassuring than alarming") job of news coverage.

In fact, these conclusions are not generally supported by the staff reports. There were reliable news sources available. Too much emphasis was placed on the "what if" rather than the "what is." As a result, the public was pulled into a state of terror, of psychological stress. More so than any other normal source of news, the evening national news reports by the major networks proved to be the most depressing, the most terrifying. Confusion cannot explain away the mismanagement of a news event of this magnitude.

It is requested that the news media undertake a self evaluation on an individual basis and review their role in this accident which was not limited to equipment damage but also included psychological damage.

ITEM 2:

The undersigned could not support a motion for an undefined time frame moratorium on all new construction permits because it was not shown how this could result in a safer plant at TMI nor attain higher standards of safety and performance by the Industry.

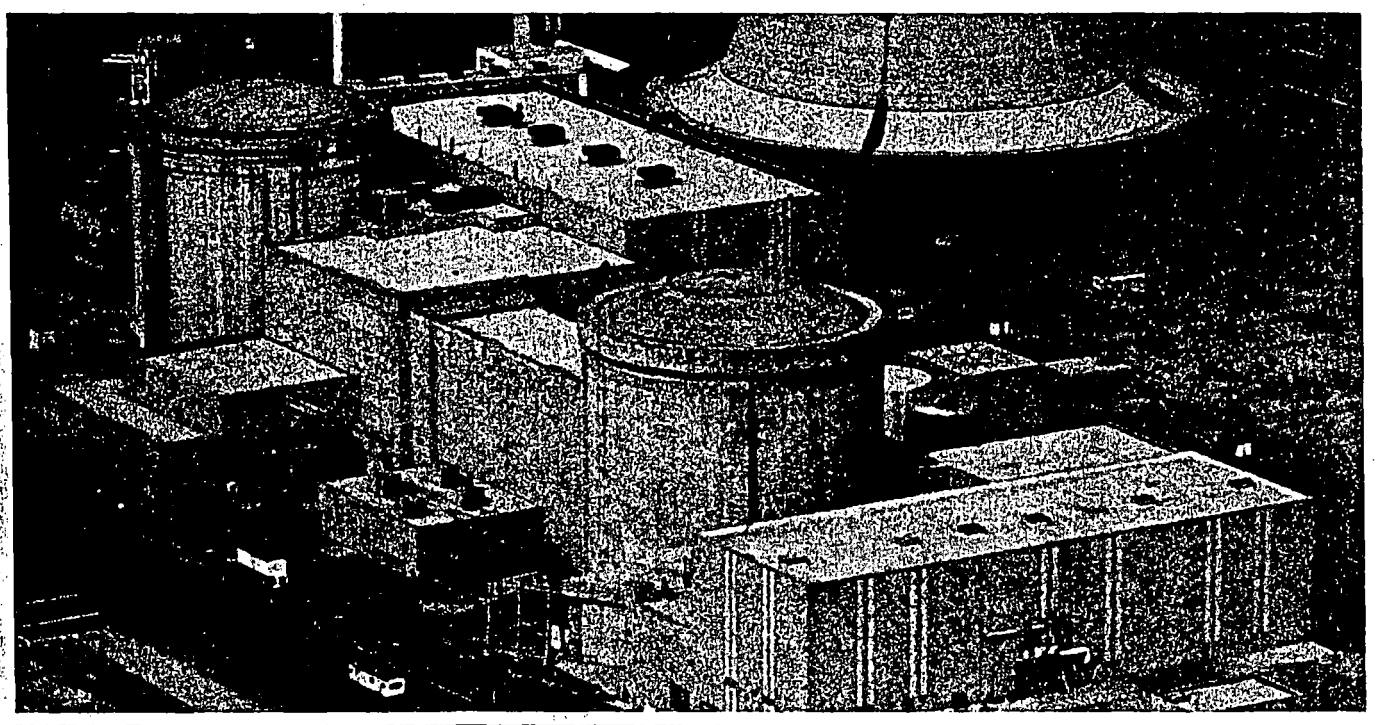
A defined period (say two years) to act on this report's recommendations along with a separate probationary operating period (say five years) for the licensee at TMI could accomplish both the above objectives and is therefore recommended.

Anne D. Trunk

October 25, 1979

Report Of The President's Commission On

THE ACCIDENT AT THREE MILE ISLAND



The Need For Change: The Legacy Of TMI

COMMISSION ON ACCIDENT AT THREE MILE ISLAND 10/30/79 11:00 a.m.

1. I HAVE JUST MET WITH DR. KEMENY AND THE MEMBERS AND STAFF
OF THE COMMISSION ON THE ACCIDENT AT THREE MILE ISLAND
AND HAVE RECEIVED THE COMMISSION'S FINAL REPORT.

2. AS I INDICATED WHEN THE COMMISSION WAS FORMED
ITS TASK IS ONE OF THE MOST IMPORTANT EVER UNDERTAKEN
BY A PRESIDENTIAL COMMISSION,...

3. ITS FINDINGS AND RECOMMENDATIONS
WILL BE STUDIED CAREFULLY IN THIS COUNTRY AND AROUND THE WORLD.

4. THE COMMISSION HAS FULFILLED ITS CHALLENGING TASK WITH CARE AND DISPATCH
AND WE OWE THE MEMBERS AND STAFF OUR DEEPEST APPRECIATION.

(=OVER=) (THE ACCIDENT AT.....)

THE ACCIDENT AT THREE MILE ISLAND
BROUGHT HOME THE NEED TO ASSURE THAT NUCLEAR POWER
IS AS SAFE AS POSSIBLE.
THE REPORT WILL GUIDE US ALL IN LEARNING FROM THE ACCIDENT
AND IN ASSURING THE SAFETY OF OUR CITIZENS.

THROUGHOUT MY PRESIDENCY I HAVE GIVEN PRIORITY ATTENTION
TO FURTHERING THE SAFETY OF NCULEAR ENERGY.
IT HAS BEEN AND WILL CONTINUE TO BE ONE OF THE MOST CRITICAL TASKS
OF OUR GENERATION.

(=NEW CARD=) (THE COMMISSION HAS MADE.....)

1. THE COMMISSION HAS MADE MANY RECOMMENDATIONS TO IMPROVE NUCLEAR SAFETY.
2. THESE FAR-REACHING RECOMMENDATIONS
   DESERVE OUR IMMEDIATE AND CAREFUL ATTENTION
   AND STUDY.
3. AFTER MY ADVISORS COMPLETE THEIR ANALYSIS
   AND MAKE THEIR RECOMMENDATIONS TO ME,
4. I WILL REPORT TO THE CONGRESS AND TO THE NATION
   ON FURTHER STEPS NEEDED TO PROTECT PUBLIC HEALTH AND SAFETY.

# # #