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HEARINGS

Before The

SUBCOMMITTEE ON NUCLEAR REGULATION OF THE  
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS  
AND HOUSE SUBCOMMITTEE ON ENERGY AND THE  
ENVIRONMENT OF THE COMMITTEE ON INTERIOR  
AND INSULAR AFFAIRS

# UNITED STATES SENATE

JOINT HEARING ON

THE PRESIDENT'S COMMISSION ON THE ACCIDENT  
AT THREE MILE ISLAND FINDINGS

OCTOBER 31, 1979

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## C O N T E N T S

STATEMENT OF:

PAGE

JOHN G. KEMENY, Chairman,

29

President's Commission on the Accident at

Three Mile Island

-accompanied by-

HON. BRUCE E. BABBITT, Commissioner

HARRY McPHERSON, Commissioner

PATRICK E. HAGGERTY, Commissioner

CAROLYN LEWIS, Commissioner

PAUL A. MARKS, Commissioner

CORA B. MARRETT, Commissioner

THEODORE B. TAYLOR, Commissioner

1 JOINT HEARING ON  
2 THE PRESIDENT'S COMMISSION ON THE ACCIDENT  
3 AT THREE MILE ISLAND FINDINGS

4 - - -  
5 WEDNESDAY, OCTOBER 31, 1979  
6 - - -

7 United States Senate and United  
8 States House of Representatives,  
9 Senate Subcommittee on Nuclear  
10 Regulation of the Committee on  
11 Environment and Public Works and  
12 House Subcommittee on Energy and  
13 the Environment of the Committee  
14 on Interior and Insular Affairs,  
15 Washington, D. C.

16 The subcommittees met at 2:10 p.m., room 318, Russell  
17 Senate Office Building, Hon. Gary Hart (chairman of the  
18 Subcommittee on Nuclear Regulation) presiding.

19 Present: Senators Randolph, Hart, Moynihan, Stafford,  
20 Domenici and Simpson; Representatives Udall, Bingham, Weaver,  
21 Carr, Markey, Kostmayer, Vento, Huckaby, Symms and Cheney.

22 Senator Hart. This hearing will come to order.

23 Today's hearing is unprecedented in several respects.

24 First, this is the first joint hearing of the principal  
25 nuclear safety oversight committees of the Senate and the House.

1 Second, the subject of the hearing is the report of the  
2 President's Commission on the Accident at Three Mile Island.  
3 The accident was the most serious in the history of the  
4 American nuclear power program -- indeed the most serious such  
5 accident that we know of anywhere in the world. The report  
6 is the most candid and the most independent assessment to  
7 date of nuclear power. It substitutes close scrutiny and  
8 hard criticism for the gloss and the platitudes of past  
9 government studies on the performance and the regulation of  
10 nuclear power plants.

11 And third, this hearing continues a fair but intensive  
12 trial of the nuclear power program. The Presidential  
13 Commission report presents a striking indictment of the  
14 institutions most involved in that program -- principally the  
15 nuclear industry and the Nuclear Regulatory Commission. But  
16 the Congress is also on trial, as is the Executive Branch of  
17 government. Ultimately it is our responsibility as the people's  
18 elected representatives to determine whether nuclear power is,  
19 or can be made, safe enough to embrace as a principal source  
20 of energy. On that overriding issue, the jury is still out.

21 To my mind, although the Commission report squarely  
22 addresses the principal problems that caused and aggravated  
23 the Three Mile Island accident, it does not address the one  
24 question that, in some form is on every American's mind. I  
25 would state the question this way: "Have nuclear power plants

1 become too large and too complex to be operated and regulated  
2 safety?"

3 That is the nub of it. The Commission's report stresses  
4 the uncertainty of the human factor. According to the findings,  
5 the equipment in the plant basically responded, but there  
6 were serious problems in design -- espeically of the control  
7 room -- and there were serious problems in the way plant  
8 operators, industry executives and NRC officials responded  
9 to the accident. Small comfort there, in my view: the  
10 equipment is fine; it is just the people running it that are  
11 flawed.

12 Therefore, I am interested in learning the individual  
13 commissioner's views as to whether Three Mile Island teaches  
14 us that we have gone too far, too fast with our nuclear power  
15 program. Are the latest 1,000 megawatt reactors, like the one  
16 at Three Mile Island, too big and too intricate to control in  
17 an emergency? Would smaller, simpler reactors perform better  
18 in terms of safety even if they are less desirable from the  
19 standpoint of cost effectiveness? Perhaps the American people  
20 are willing to pay more for nuclear-generated electricity if  
21 they can be assured it will be safe electricity as well.

22 Further, I am troubled by the Commission's decision not to  
23 recommend a delay in construction of new plants in light of  
24 its finding that, for safety's sake, the siting of new plants  
25 should be, and I quote the report, "to the maximum extent

feasible...in areas remote from concentrations of population." Since some of the proposed plants now awaiting construction permits do not meet this standard, why didn't the Commission recommend that new construction permits be held up until safe sites can be found?

Finally, I am concerned by the Commission's recommendation that the independent, multimember NRC be transformed into a single-administrator agency within the Executive Branch. There are some serious problems with the structure of the NRC, but I am not convinced we can best overcome these problems by putting the agency in the Executive Branch and eliminating the diversity of views provided by a multimember commission.

I hope the commissioners will provide further insight on this issue today, and I welcome their presentation. It is particularly significant that, I think, as I indicated, this is the first hearing involving jointly the Senate and House oversight committees. We are particularly pleased that the chairman of the House Subcommittee on Energy and Environment of the House Interior Committee, Congressman Morris Udall, could be present with us and members of his subcommittee.

Congressman Udall.

Mr. Udall. Thank you, Senator Hart. It is a pleasure for me to co-chair these hearings with you. I think our two subcommittees together probably bear the major responsibility over the next few months or years in coming up with some answers,

1 because the nuclear dilemma is not going to go away. It is a  
2 set of decisions to be made by all of us.

3 Dr. Kemeny, it is good to see you here today. I remember  
4 being in your home at Dartmouth, the nature of which eludes  
5 me at the moment. But I look forward to discussing your  
6 findings and to having the Commission before us.

7 I find that I am managing a bill at this moment in  
8 the House Chamber, one of these major energy bills, and I am  
9 not going to be able to stay very long. I am going to turn  
10 my gavel over to Mr. Bingham at that time.

11 Let me make a few observations before we turn to your  
12 comments.

13 Following the Three Mile Island accident, our subcommittee  
14 conducted a comprehensive set of hearings on the major nuclear  
15 issues, even as Senator Hart was working at the similar task.  
16 These hearings were completed in September. Early this month  
17 the subcommittee began consideration of concepts that might  
18 be incorporated into legislation. Perhaps the major issue  
19 before us is the question of whether there should be a  
20 moratorium on issuance of construction permits for nuclear  
21 power plants. This is a matter on which our subcommittee  
22 members hold a wide range of views. And I gather your  
23 commissioners are not entirely of a single mind on this issue  
24 either. After some deliberation we decided that before  
25 proceeding to write a national nuclear policy, we would wait

1 and see what words of wisdom you and your associates might  
2 offer on the subject.

3 So that you might understand the basis for some of my  
4 questions, I would say a few words as to where I come down on  
5 the overall moratorium question. After TMI -- and I am  
6 speaking about the last six months -- my position on the issue  
7 has been moving from one of opposition to a moratorium to one  
8 of tentative support, some kind of a conditional moratorium.  
9 Prior to the accident at Three Mile Island I tried to be  
10 intellectually honest and I was beginning to accept assurances  
11 that nuclear power plants could be made sufficiently safe.  
12 After all, we had had 400 reactor years of operation without  
13 a fatality. And I had hoped they would be made safe because  
14 all parties involved had an interest in making sure that  
15 'accident's did not occur. I had believed instead that if  
16 nuclear development were to falter, it would be a result of  
17 adverse economics or a failure to solve the waste problem.

18 Your revelations and those of others have raised so many  
19 questions about the manner in which the nuclear technology  
20 has been managed that I now lean to the conclusion there should  
21 be a pause, a moratorium -- perhaps not a permanent or and  
22 unconditional one, but a moratorium -- until the industry and  
23 regulators both get their houses in order. Not because I am  
24 confident that we will find economic alternatives to nuclear  
25 power -- although I hope that such alternatives will be found



1 rather I am leaning this way because our country may still  
2 decide that there is a long-term need for some component of  
3 nuclear technology. If we so decide -- and that is a judgment  
4 for the people -- we must have assurances that those responsible  
5 for these potentially dangerous machines will do a much better  
6 job than has been done to date.

7 Thank you, Senator Hart.

8 Senator Hart. Thank you, Chairman Udall.

9 The ground rules for the hearing today are that members  
10 of the Senate and House committees will make opening statements  
11 as they desire, hopefully limited to approximately three  
12 minutes, and then we will proceed to the chairman of the  
13 Commission for their report.

14 With that, I would acknowledge the chairman of the  
15 Senate Environment and Public Works Committee, Senator Randolph.

16 Senator Randolph. Chairman Hart, I would prefer the  
17 ranking member of the subcommittee have an opportunity to  
18 speak first and then be given an opportunity to follow.

19 Senator Hart. Senator Simpson.

20 Senator Simpson. Thank you very much, Mr. Chairman.

21 Thank you for your usual courtesy, Senator Randolph.

22 I am very pleased at having this opportunity to share this  
23 opportunity with the House committee and the opportunity to  
24 discuss with Dr. Kemeny and other members of the Commission  
25 their report on the accident at Three Mile Island. I must say

1 I enjoyed my informal time with you yesterday, and I found you  
2 to be a rather spirited and capable group indeed, and I enjoyed  
3 that very much. I was impressed.

4 I feel the members of this Commission are to be commended  
5 for the thorough treatment of this most difficult question.  
6 The seriousness and dedication with which the Commission and  
7 staff approached their responsibilities is quite evident  
8 from the Commission report and supporting staff documents.  
9 Moreover, the Commission's findings and conclusions appear to  
10 me to be a fair and balanced appraisal of the accident and its  
11 implications both of nuclear safety and regulation of nuclear  
12 power in this country. As such, those findings and conclusions,  
13 I think, represent an important addition to the abundance of  
14 information available on Three Mile Island, and they will  
15 certainly receive my careful consideration in this subcommittee.

16 Perhaps equally important, the Commission has presented  
17 its findings and recommendations in understandable form -- in  
18 English, a very commendable attribute here in this community --  
19 and I think yet without oversimplification you have done that.  
20 I believe that is essential if the American people are to  
21 fully understand both what happened at Three Mile Island and  
22 what those events mean for the safety of nuclear power. To me,  
23 this contribution to public understanding is, I think, one of  
24 the greatest benefits that you will perform.

25 Mr. Chairman, our own review of Three Mile Island and this

1 accident confirms many of the findings of this Commission.  
2 We have seen firsthand the human factors which played an  
3 extraordinary and significant part in the accident and in the  
4 utility's and NRC's response to it. We have also observed  
5 the attitudes on nuclear energy and safety which existed  
6 within the industry and regulatory agency prior to the accident.  
7 I would fully agree with the Commission as to the seriousness  
8 of those problems and need for corrective action.

9 Based upon what we have seen this far, I would also  
10 agree with the Commission that there are serious deficiencies  
11 in both the NRC's and industry's treatment of operating  
12 experience. Clearly, there are lessons to be learned and  
13 there are changes to be made.

14 Mr. Chairman, in conclusion, I think that the Commission  
15 has provided the President and public with a sweeping set of  
16 recommendations for change in the way nuclear plants are  
17 operated and regulated in this country. A number of those  
18 recommendations are supportive of changes which may now be  
19 under way as a result of our effort on the NRC authorization  
20 bill, including state emergency planning reforms, changes in  
21 the NRC siting practices and new initiatives in the way of  
22 operator training and qualifications. The other recommendations  
23 I think represent a very novel approach to improving our  
24 government's institutional efforts in this area, and particularly  
25 the Nuclear Regulatory Commission, and those are complex

1 proposals which call for careful review. I will give it, the  
2 subcommittee will give it, the chairman and chairman of the  
3 full committee will give it that review. I look for to the  
4 opportunity to explore this with Senator Hart and the Kemeny  
5 Commission and receiving more of their ideas for improving  
6 nuclear safety and regulation and the reasons and debate  
7 which led them to their significant recommendations.

8 Thank you, Mr. Chairman. Thank you, Chairman Hart.

9 Mr. Udall. Mr. Chairman, I am told they are about to  
10 vote on my bill. Before I leave, I would like to welcome  
11 Governor Babbitt, who has been a valuable member of this  
12 Commission. I hope my colleagues in the Senate and House will  
13 treat him gently. He has been razed by the taxpayers enough  
14 as it is.

15 Senator Hart. Governor, welcome.

16 Congressman Bingham from New York.

17 Mr. Bingham. Thank you, Mr. Chairman.

18 I think this is a memorable day on several counts. First  
19 of all, I would like to commend you, Chairman Hart, and also  
20 Chairman Udall for arranging this joint hearing. It is unusual  
21 for House and Senate committees to meet together. I have long  
22 felt that this was an approach that could save us all a great  
23 deal of time and save the representatives of the Executive  
24 Branch a great deal of time if we did more of it. So I think  
25 this is a splendid precedent.

1 I would also like to say that I think the Commission, the  
2 chairman and the members of the Commission, have performed a  
3 great service for the country and perhaps for the world  
4 community which is interested in nuclear safety problems. I  
5 haven't had a chance to go over the report in detail, but the  
6 extent I have been able to go over it, I think I agree with  
7 about 95 percent of it, and that proves to me it is a very  
8 wise report.

9 I do have some questions, as Chairman Hart indicated he  
10 did, about the recommendations with regard to the setup for  
11 the Nuclear Regulatory Commission. My own feeling about that  
12 is I agree fully with the Commission that there has been a  
13 mindset in the NRC, but I think the problem lies particularly  
14 with the staff, most of whom are holdovers from the old AEC.  
15 I think there is a lot to be said for the multimember commission  
16 at the top of the structure. So I will be pursuing that in  
17 my questions.

18 But I do want to say I think you performed a great service  
19 for all of us, and I commend the Commission. Thank you.

20 Thank you, Mr. Chairman.

21 Senator Hart. Thank you, Congressman.

22 Senator Randolph.

23 Senator Randolph. Chairman Hart and Chairman Udall, in  
24 absentia, I want to take this moment personally, rather than  
25 speaking for the Senate Committee on Environment and Public

1 Works, to indicate that I think this session and possible  
2 further sessions with members of the United States House of  
3 Representatives is wholly meaningful and timely. I feel often  
4 that we could come together on matters that are very crucial  
5 to the passage of legislation or oversight hearings from both  
6 side of the Capitol. We sometimes, I think, are not together  
7 as often as we should be. But the remarks I make are in a  
8 longer version and these are available.

9 I commend the President's Commission for its work. Its  
10 report will be helpful to our committee, the subcommittee,  
11 hopefully to all, as we have an evaluation of the Three Mile  
12 Island problem in the conduct of legislative and oversight  
13 responsibilities. I heartily stress these points. The basic  
14 question is how to create a regulatory structure that  
15 establishes precise responsibility for the safe operation of  
16 nuclear power plants; second, for the Congress to move forward  
17 with corrective legislation that was an obvious need soon  
18 after the Three Mile Island accident. The limited ban on the  
19 construction of new plants is certainly an example. Third,  
20 the reorganization of the Nuclear Regulatory Commission from  
21 a five-member body to a one-member single administrator is  
22 meaningless without other and more fundamental changes in the  
23 regulatory process itself. The greatest need is to determine  
24 roles and responsibilities and clarify the lines of authority.

25 Fourth, I am concerned that the President's Commission did

1 not address -- and I am not a carping critic -- the issues  
2 of disposal of nuclear waste, which is crucial to the recovery  
3 of the Three Mile Island plant and to the future of nuclear  
4 power in general. I have introduced legislation, as my  
5 colleagues in the Senate know, on this subject. It will be  
6 thoroughly considered in the subcommittee and committee.

7 Again, an appreciation to our co-workers from across the  
8 Capitol.

9 Senator Hart. Thank you very much, Senator Randolph.

10 Congressman Weaver of Oregon.

11 Mr. Weaver. Thank you, Mr. Chairman.

12 As chairman of the Three Mile Island Investigative Task  
13 Force appointed by the Chairman of the Interior Committee, I  
14 arrived at one fundamental question, and that is can we  
15 control this force or does it control us? That is why I was  
16 much interested in your report and how you dealt with this  
17 problem.

18 It was clear to me anyway that the operators of Three Mile  
19 Island at the time of the accident were overwhelmed that a  
20 nuclear plant is so technologically cumbersome. There were  
21 a hundred alarms in the first minutes of the accident that the  
22 operators certainly made errors. But they made errors not  
23 because they were incompetent -- I found them highly  
24 competent -- but because the technology was impossible for them  
25 to grasp at the moment. I say something is fundamentally wrong

1 with the technology. With the aversion, problems and horrors  
2 that nuclear holds, the very fact that great numbers of our  
3 people -- and perhaps a majority -- oppose or fear nuclear  
4 power should be enough to prohibit nuclear development. We  
5 are concentrating the very material most dangerous to life,  
6 indeed most threatening to the existence and procreation of  
7 humanity. I hope to develop these question.

8 Thank you very much.

9 Senator Hart. Senator Moynihan.

10 Senator Moynihan. Thank you, Mr. Chairman.

11 Mr. Chairman, the public never says its thanks very well.

12 I would simply like to say to the Commission thank you.

13 Thank you.

14 Senator Hart. Thank you, Senator.

15 Congressman Markey of Massachusetts.

16 Mr. Markey. Thank you, Mr. Chairman.

17 I want to thank you also for the effort and time that you  
18 have committed to this work. Many of your recommendations are  
19 going to be very useful to the committees that have jurisdiction  
20 in the House and Senate over drafting legislation in the  
21 aftermath of the work you have done.

22 But, quite honestly, I am very disappointed in you. I am  
23 disappointed in the way that finally you concluded with a  
24 whimper and not a bang. You did not follow the logic of all  
25 of the recommendations that you present to this committee. You



1 reached the point at which a moratorium was called for. You  
2 tell us that the Nuclear Regulatory Commission is in a shambles.  
3 You tell us you cannot guarantee the public safety is adequately  
4 protected. You tell us that operating procedures, the training  
5 of personnel, that there are design deficiencies present in  
6 the nuclear industry, and yet you do not have the courage of  
7 your convictions. You don't have the ability to come before  
8 us today and tell us that you do indeed recommend a construction  
9 permit moratorium.

10 You have concluded, for example, that to prevent future  
11 accidents as serious as TMI fundamental changes will be  
12 necessary in the organization, procedures, practices and  
13 attitudes of the NRC. You have said with its present  
14 organization, staff and attitudes, the NRC is unable to  
15 fulfill its responsibility for providing an acceptable level  
16 of safety for nuclear power plants.

17 The Commission has further noted that an accident like  
18 Three Mile Island was eventual and inevitable and, moreover,  
19 those fundamental changes are necessary to prevent future  
20 accidents as serious as TMI. You have concluded the accident  
21 was a result of operator training and procedures and the  
22 failure of NRC and industry to respond to clear warnings from  
23 earlier accidents. You blame operator error, the utility, the  
24 reactor vendor and NRC for the serious accident.

25 Now as the House author of the construction permit

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1 moratorium, I can't help but say I have a proprietary interest  
2 in seeing a permanent recommendation from your Commission would  
3 be forthcoming. Our committee voted 32 to 7 in favor of a  
4 construction permit moratorium. You people have been charged  
5 with that responsibility over the last six months to come  
6 forward with recommendations to us. I think to the extent  
7 you did not give us that your report is tragically flawed and  
8 limited. It detracts from the recommendations you make to  
9 us here. You are asking us basically to say there is something  
10 wrong with the automobile, but rather than recall it we are  
11 going to try to repair it while it is still moving. I don't  
12 think that is a wise and logical conclusion from the  
13 recommendations which you make to us today, and I hope as we  
14 go forward here we might be able to elicit from the individual  
15 members what their reasons were for being able to reach some  
16 kind of conclusion. I know at one time there were at least  
17 eight members that supported some kind of moratorium to tell  
18 the American people that we have to end business as usual,  
19 the status quo, and have a moratorium on new nuclear power  
20 plant construction in this country.

21 Thank you, Mr. Chairman.

22 Senator Hart. Thank you, Congressman.

23 Senator Domenici.

24 Senator Domenici. Well, Mr. Chairman, that is another way  
25 to say thank you. I might just say if you had asked us what

1 we wanted individually, you would never have recommended  
2 anything to the American people. So I am glad you recommended  
3 what you feel is in the best interest of the country. Perhaps  
4 it is not what some of us want.

5 To my mind, Mr. Chairman, the report is an objective  
6 analysis by distinguished Americans with no axe to grind. It  
7 deserves more than rhetoric by this group and Congress. It  
8 deserves intelligent study and action.

9 As I see it, the report highlights two things. First,  
10 that the utilities are operating in a horse-and-buggy age when  
11 the nuclear age has arrived. They must update their management  
12 practices to the level of our country's overall level of  
13 management expertise and competence. Secondly, the Commission  
14 found that the Nuclear Regulatory Commission is a rickety  
15 regulatory structure with little emergency response capability.

16 We -- I mean we, the Congress -- must now follow through  
17 with the Commission's recommendations to upgrade and update  
18 the NRC. In my opinion, we can no longer afford to have a  
19 Commission which is fashioned after a group which regulates  
20 trains and trade. This requires one to regulate the nuclear  
21 industry. It must be able to analyze and react to accidents  
22 as well as regulate, and it will not work if we model it after  
23 a commission that is in charge of setting rates for airlines or  
24 that finds fault with certain American trade practices.

25 It appears to me you are significantly correct in analyzing

1 time for a change is here, and you have told us how. Thank you  
2 very much.

3 Senator Hart. Thank you, Senator.

4 Congressman Kostmayer of Pennsylvania.

5 Mr. Kostmayer. Thank you very much, Mr. Chairman.

6 I join my colleagues in the House and Senate in thanking  
7 you for the hard work that you have put in on this task.  
8 Whether we agree or disagree, it is to be commended for the  
9 time you have given the citizens of this country.

10 The report seems to be important not because of the  
11 questions it answers, but because of those it doesn't answer.  
12 More important, it seems to be contradictory in a way. The  
13 Commission states its findings "do not, standing alone, require  
14 the conclusion that nuclear power is inherently too dangerous  
15 to permit its continuation and expansion as a form of power  
16 generation." On the other hand, the report states that its  
17 conclusions "do not suggest that the nation should move forward  
18 aggressively to develop additional nuclear power." We could  
19 stand still or move forward.

20 If the regulatory agency and process is as flawed as the  
21 Commission suggests, how can we possibly proceed until the  
22 Commission's recommendations have been implemented? The  
23 report is an indictment of both the NRC and nuclear industry.  
24 But the report deals exclusively with future actions and  
25 recommendations. What about current operating reactors? And

1 what about those plants that are located in or near major  
2 population areas -- in suburban New York City, in Chicago,  
3 in Cleveland, in San Diego? What assurance can be given today  
4 to the American people that their safety and health are not  
5 in danger?

6 A final point. If this report demonstrates anything, it  
7 is that Congress and the Administration and NRC and industry  
8 have been negligent, and that they have ignored the imminent  
9 danger associated with harnessing nuclear power for commercial  
10 use. Only a short time ago, in fact, the House rejected an  
11 amendment which would have required that new licenses be  
12 contingent upon the state-developed evacuation plan. This is  
13 not a recommendation of the Commission, but it was  
14 overwhelmingly rejected by the pro-nuclear House. Clearly,  
15 the Federal government and industry have been on the wrong  
16 side of the issue. Hopefully this report will put them on  
17 the right side.

18 Thank you, Mr. Chairman.

19 Senator Hart. Thank you, Congressman.

20 Congressman Vento of Minnesota.

21 Mr. Vento. Thank you, Mr. Chairman.

22 I would like to commend the members of the Three Mile  
23 Island task force for their efforts in dealing with this  
24 complex issue.

25 As a member of the House Interior Committee Task Force, I

1 am familiar with the events that occurred here. But the  
2 complexity of the issue which occurred, while your report will  
3 be most useful during the consideration by the Congress and  
4 the President of our national energy policy, it is not a  
5 definitive study of nuclear power and its future limitations.  
6 The directive of your Commission and the time frame under which  
7 you worked limited the scope of your review to key questions.  
8 Disposal of waste, liabilities for accidents in the future at  
9 existing or new power plants weren't undertaken.

10 This is certainly not the final chapter on Three Mile  
11 Island. We still face many questions. What is the full  
12 economic impact of the accident? How is the waste to be  
13 disposed of? What are the full impact of Three Mile Island  
14 on the health of the residents? These questions cannot be  
15 adequately answered at this time. In fact, it will take years  
16 of close evaluation and study before we do reach final decision.

17 While I have not had sufficient time to read completely  
18 your report, there are several issues that come to mind that  
19 were inadequately considered by the Commission. I would like  
20 to raise these issues and hope you will respond by comments  
21 during your testimony.

22 The report states human errors occurred at Three Mile  
23 Island. Such problems did and do continue to exist. It was  
24 mechanical problems that led to the event and the design and  
25 location of the instrument panel that contributed to the crisis.

1     Until a thorough redesign of the mechanics of nuclear power  
2     plants is completed, the possibility of similar events  
3     occurring remains very much.

4             The last point, I would just like to point out this answer  
5     to the question is being begged. We must look at the plant  
6     design, operational procedures and basic current facts, the  
7     way things are in the real world. Mr. Chairman, the question  
8     has not been considered by the Commission or Administration  
9     nor by Congress. But we must develop an answer with regard  
10    to new nuclear power policy. It is an issue that can no  
11    longer be avoided.

12            Thank you very much.

13            Senator Hart. Thank you, Congressman.

14            Congressman Huckaby from Louisiana.

15            Mr. Huckaby. Thank you, Mr. Chairman. I shall be  
16    extremely brief.

17            I, too, would just like to say thank you for the time and  
18    effort that you have given our Nation. I am certain that you  
19    addressed many, many questions to various degrees that are not  
20    really included in your report. I know the issue of a  
21    moratorium had to be discussed for many hours. And I,  
22    personally, feel that, in effect, we have a moratorium until  
23    Congress further reacts.

24            Just my brief review of your report, I was disappointed  
25    that there was not more emphasis on standardization as far as

1 future plants were concerned. At the proper time, I would  
2 like to explore that.

3 I want to commend you on your efforts in these matters.

4 Thank you.

5 Senator Hart. Thank you, Congressman.

6 Senator Stafford.

7 Senator Stafford. Thank you very much, Mr. Chairman.

8 It is a privilege to be here today and I look forward to  
9 participating in this hearing on the report issued by the  
10 President's Commission on the accident at Three Mile Island.  
11 As ranking member of the Senate Environment and Public Works  
12 Committee, I would like first of all to welcome the Kemeny  
13 Commission to this hearing. The Commission was given a  
14 monumental task to complete in a short period of time, and I  
15 commend Chairman Kemeny and the members of the Commission  
16 for the excellent work they have done in carrying out this  
17 mandate. I know the information they have gathered will be  
18 valuable as we continue our own investigation on Three Mile  
19 Island. The events at Three Mile Island on March 28th cannot

20 The events at Three Mile Island on March 28th cannot be  
21 viewed as an isolated incident. The complicated combination  
22 of human and institutional and mechanical failures caused the  
23 accident at Three Mile Island. Serious problems raised by the  
24 accident have national implications. The solutions to these  
25 problems, if they exist, will be complex and will need to be



1 directed toward human failure, institutional failure, mechanical  
2 failure.

3 There is a theme throughout the report. It appears that  
4 fundamental changes will have to be made if the generation  
5 of nuclear power is going to continue -- changes in the  
6 functioning of NRC, changes in emergency planning, changes in  
7 operator training, changes in attitude. I, too, believe that  
8 fundamental changes must be made. The question is what those  
9 changes should be and how they should be implemented? The  
10 Senate Committee on Environment and Public Works will continue  
11 to look carefully at this question during the next several  
12 months. The report issued by the President's Commission is a  
13 substantial contribution to the information available on the  
14 incident at Three Mile Island.

15 Thank you, Mr. Chairman.

16 Senator Hart. Thank you, Senator Stafford.

17 Congressman Moffett, the chairman of the House Government  
18 Operations Subcommittee on Environment, Energy and Natural  
19 Resources.

20 Mr. Moffett. Thank you, Mr. Chairman. On behalf of the  
21 members of my subcommittee, we would like to extend our  
22 appreciation for your having invited me to make a brief  
23 statement and attend these hearings. It is good to see the  
24 House and Senate working together. Senator Domenici and I,  
25 or course, spend time doing that on conference committee, and I

1 think we ought to do much more of that. So I commend you for  
2 this kind of coordination.

3 I simply want to say that, in addition to thanking you,  
4 I must express my envy for any group that gets a chance to  
5 focus on one subject for six months. I think all of us would  
6 be envious of that kind of opportunity.

7 Secondly, having had the chance to speak with the  
8 chairman of the Commission and members of the Commission, I  
9 have nothing but highest regard for your work and dedication.  
10 I think that many of the issues that you have raised are  
11 important ones and can go a long way toward improving safety  
12 at existing nuclear power plants. Many of the issues are those  
13 that have been raised by the subcommittee which I am privileged  
14 to chair, have been raised by both Representative Udall and  
15 Senator Hart in legislation that they have introduced with  
16 regard to emergency planning and siting and operator training  
17 and presence of the NRC at facilities.

18 I must say, however, that I would have preferred that you  
19 had put more bite and teeth into your recommendations by having  
20 approved a short-term moratorium if, in fact, the  
21 recommendations are not improved. In our own report on  
22 emergency planning issued in August, we suggested that existing  
23 plants be given two years to have proper evacuation and other  
24 emergency planning procedures implemented, and if not, that  
25 they be shut down. This is not really your burden. But the

1 fact is that the central question so many Americans, whether  
2 they are in protests or in schools or in gatherings of  
3 scientists, want to know is whether we can begin to push  
4 ourselves away from the nuclear table.

5 I appreciate the fact that the Commission only had six  
6 months, that it did its absolute best in confronting these  
7 issues, that it was one that worked very hard and did with a  
8 great deal of sincerity and honesty. But the fact is we are  
9 still confronted with the very legitimate question is there  
10 another way, a better way? Is there a way to proceed with a  
11 energy future with reduced dependence on nuclear power? I  
12 would submit that there is. And as we consider at this moment  
13 on the House Floor some fast-track legislation, my hope is that  
14 your recommendations will be taken seriously, that they will be  
15 implemented almost in toto, that we consider them seriously,  
16 but that this report not be considered a fast track for  
17 accelerated development of nuclear power in America.

18 Thank you, Mr. Chairman.

19 Senator Hart. Thank you very much, Congressman.

20 Congressman Cheney of Wyoming.

21 Mr. Cheney. Thank you, Mr. Chairman.

22 I would like to join with my colleagues in thanking the  
23 members of the Commission for the effort they obviously  
24 expended on a very difficult task. It seems to me just from  
25 what has transpired in the last 24 hours, both advocates and

1 rejectionists have used your report to buttress their  
2 preconceived notions of what we should do. I think our purpose  
3 would be best served by listening to you.

4 I yield back my time, Mr. Chairman.

5 Senator Hart. Thank you, Congressman.

6 Congressman Symms of Idaho.

7 Mr. Symms. Thank you, Senator Hart.

8 Members of the Commission, I share with all my colleagues  
9 in thanking you for your efforts. I might say further,  
10 Dr. Kemeny, it appears your ability to harmonize several  
11 diverse points of view into a very readable report is certainly  
12 commendable, and I congratulate you for that. I believe that  
13 your work is going to contribute to a great deal of information  
14 that has already been gathered in the development of what  
15 corrective action may need to be taken by the Congress. And  
16 we are all indebted to you for helping us in corroborating  
17 good evidence. It complements a good deal of work that has  
18 been going on both in government and industry since the Three  
19 Mile Island accident.

20 About three or four weeks ago, I proposed to our House  
21 Subcommittee on Energy and Environment, of which I am ranking  
22 Republican member, that we develop a report to present a  
23 summary of the 17 days of testimony that was taken before our  
24 subcommittee. We heard testimony on issues related to nuclear  
25 power that were not covered, nor intended to be covered, by your

1 work, and the information gathered in these hearings clearly  
2 must play an important role in the development of any  
3 legislation that we would propose.

4 I would like to note also that the nuclear industry has  
5 concurred with those recommendations that you have made to  
6 industry, and I believe this acknowledgement is the first step  
7 of a new beginning that we have embarked on. As I am sure you  
8 are all aware, the nuclear industry has proposed in hearings  
9 before our committee to establish several new industrial  
10 bodies, namely, the Institute of Nuclear Power Operation and  
11 Nuclear Safety Analysis Center. These two groups alone  
12 comprise in excess of 250 people dedicated to implementing  
13 many of the recommendations you have made in your report to  
14 the industry.

15 Now, of course, the Congress must undertake to do these  
16 things which can only be accomplished by legislation. These  
17 considerations must be based on the diverse bodies of  
18 information that is both well corroborated and substantiated.

19 Recently, I think it is well to note, in closing, that  
20 the General Accounting Office issued a report to Congress  
21 that demonstrated at least to my mind that both the immediate  
22 and future need of nuclear power for the well-being of this  
23 Nation. Those of the upcoming generations who have claim to  
24 the future of America will not be served if we fail to provide  
25 for them. I hope that the result of your work and this body

1 we will be able to do so in a responsible fashion because also  
2 I would say, in my opinion, the nuclear industry does not need  
3 subsidy from the government, but it does need sponsorship if  
4 it is going to be successful and a future part of our national  
5 energy needs and wean us from dependence on foreign oil. I  
6 think furthermore most of our problems with respect to nuclear  
7 power are political problems and not technical problems that  
8 cannot be worked out. So I look forward to hearing your  
9 report. Thank you again.

10 Senator Hart. Thank you, Congressman.

11 Congressman Carr of Michigan.

12 Mr. Carr. Thank you, Mr. Chairman.

13 I would just simply like to thank the Commission for their  
14 labors, and I would associate myself with the remarks of  
15 Chairman Hart and Chairman Udall.

16 Senator Hart. Thank you.

17 Dr. Kemeny, welcome to Congress. You obviously have  
18 generally the commendation of these committees, and I would  
19 only add my word of thanks to all of you for the work you have  
20 done diligently, and particularly to your fine professional  
21 staff. You have heard a lot of what you did not do. Now we  
22 would like to hear what you did do.  
23  
24  
25

1 STATEMENT OF JOHN G. KEMENY, CHAIRMAN,  
2 PRESIDENT'S COMMISSION ON THE ACCIDENT AT  
3 THREE MILE ISLAND (ACCOMPANIED BY:  
4 HON. BRUCE E. BABBITT, COMMISSIONER;  
5 CAROLYN LEWIS, COMMISSIONER; PATRICK E.  
6 HAGGERTY, COMMISSIONER; PAUL A. MARKS,  
7 COMMISSIONER; CORA B. MARRETT, COMMISSIONER;  
8 HARRY McPHERSON, COMMISSIONER; THEODORE B.  
9 TAYLOR, COMMISSIONER)

10 Dr. Kemeny. Thank you very much, Mr. Chairman and  
11 distinguished Members of Congress. May I first of all say I  
12 am only sorry that all 12 members of the Commission could not  
13 be here. Because of the hurriedly planning for these hearings,  
14 four of them are unavoidably absent today because they could  
15 not change their plans.

16 We are delighted to be here. I have thought very hard  
17 since yesterday about how I could best help you. It is  
18 inevitable that within the first 24 hours of release of a  
19 highly comprehensive report the spotlight is going to focus  
20 on a very small number of issues -- and they were major issues.  
21 Therefore, we have no complaint. We thought we might help by  
22 giving a brief initial statement where I might try to underline  
23 a number of other recommendations we consider at least as  
24 important as those that have been spotlighted so you have a  
25 more balanced picture in front of you.

1 First of all concerning the Nuclear Regulatory Commission,  
2 naturally, the great coverage and discussion was on our  
3 unanimous recommendation on the restructuring of the agency;  
4 but that has to be read in the context of the remaining  
5 recommendations of the Nuclear Regulatory Commission because  
6 it is the rest of the recommendations that speak of the kind  
7 of agency we are looking for. The restructure is a means to  
8 an end to achieve those goals.

9 We have recommended the following, as an example: we  
10 have recommended they should clearly explain to Congress, the  
11 American people, their safety cost trade-offs, that there  
12 should be a ground rule for them if there is any doubt at all;  
13 that is, unless the cost is absolutely overwhelming, the  
14 presumption should always be in the favor of safety.

15 We have recommended a new higher standard for any utility  
16 that wishes to obtain a license. This is one of our most  
17 important recommendations: that they should not be allowed to  
18 receive a license to operate the plant unless they meet much  
19 higher standards than are now required.

20 We have recommended that this agency must have a public  
21 agenda for rule-making. Most importantly, this must include  
22 clear and specified deadlines for resolution of all generic  
23 safety issues, some of which have been around for a very long  
24 time.

25 We have recommended very extensive changes in the arm of



1 the agency through which it carries out its mission, the  
2 Inspection and Enforcement Office. This has to be strengthened  
3 vastly and it must be provided with a system for evaluating  
4 the patterns of problems that show up in nuclear plants. We  
5 found no evidence that any such system existed prior to Three  
6 Mile Island. Therefore, clear patterns of trouble were not  
7 spotted.

8 We also recommended that there should be periodic,  
9 intensive reviews of the licensee to see whether they are  
10 fulfilling the terms of their license.

11 A second area is the area of siting of nuclear power  
12 plants, and I will begin with remarks on emergency planning  
13 and response.

14 You have, of course, heard that we have recommended that,  
15 as far as feasible, they should be sited at locations remote  
16 from populated areas. But we have recommended a good deal  
17 more than that. We feel that siting and emergency planning  
18 must go hand-in-hand, because one test for a site is whether  
19 it is possible to have realistic emergency planning. We have  
20 found the NRC-based criteria on concentration of low population  
21 zone has proved to be totally flawed in the light of the  
22 experience of Three Mile Island. Therefore, we have  
23 recommended a quite different approach under which a number of  
24 accidents in areas have to be analyzed for each plant to have  
25 realistic plans of how you would respond to specific kinds of

1 accidents. The NRC had analyzed the horrendous accidents and  
2 came out with a two-mile zone. We experienced a much less  
3 serious accidents and there are recommendations to have  
4 evacuation as far as 20 miles. But what we need for emergency  
5 planning is clear plans in hand that if an accident should  
6 occur, one knows this calls for plan number four, which may be  
7 evacuation within a small area, protection measures beyond  
8 that and perhaps staying indoors for 24 hours in a larger areas.  
9 We recommended if such clear plans do not exist, the plant  
10 should not be licensed.

11 As you know, we identified operator training as sort of  
12 an Achilles heel of this particular industry. There has been  
13 data from the industry that the particular plant had a way  
14 above average record in terms of the NRC examination for their  
15 operators, and our evidence agrees with that. Yet we heard  
16 from those very same operators that they felt that their  
17 training left them totally unprepared for the accident they  
18 faced. When you put those two facts together, that these  
19 operators were above average nationally and totally unprepared  
20 for the accident they faced, we feel one of the most urgent  
21 needs is a totally new approach to the training of operators.  
22 What we are recommending is that operators first go to an  
23 accredited training institution where they would learn the  
24 fundamentals of nuclear power plants rather than just on-the-job  
25 training. It is only after they have proved they understand

1 the fundamentals would the utility be able to hire them and  
2 give them on-the-job training of running particular plants.

3 We have recommended several vital additional studies,  
4 knowing that in six months we cannot possibly resolve all  
5 issues. I will mention a few of those: an expanded and much  
6 better coordinated research effort on the health effects of  
7 radiation. Secondly, a careful review of all the equipment  
8 problems for handling such accident, particularly to provide  
9 better, more easily available and prompt information to the  
10 operators and their supervisors which would, of course, involve  
11 redesign of control rooms. Thirdly -- and this has received  
12 almost no attention -- in-depth studies of accident scenarios.

13 If I may make a personal remark. One of the things that  
14 really horrified me about our investigation was that in the  
15 midst of this threatening accident, the Nuclear Regulatory  
16 Commission had to call all around the country to find out  
17 whether a hydrogen bubble could or could not blow up in a  
18 reactor. That research should have been done years in advance  
19 and should have been available for just such an eventuality.

20 Fourthly, a piece of good news -- which you may not have  
21 spotted in our report -- which I would like to underline.  
22 About the most dangerous radioactive substance is radioactive  
23 iodine. While other things got out of containment, almost  
24 none of the radioactive iodine escaped. We strongly urge that  
25 somebody conduct an in-depth study of what happened here,

1 because understanding it may help us in other situations.

2 I am down to my final point, Mr. Chairman, the question  
3 of a moratorium -- and you will no doubt ask a great many  
4 questions about moratoria. I would like to comment I don't  
5 think the impact of our recommendation number eight on the  
6 Nuclear Regulatory Commission has been fully appreciated at  
7 least by the public news media. This recommendation, which  
8 was unanimous by the Presidential Commission, that no new  
9 licenses of any form -- either construction permits or  
10 operating licenses -- should be issued unless three things  
11 happen, we recommended that for each of those licenses the  
12 NRC, or its successor, must first check three things: first  
13 of all, whether the new safety improvements that we have  
14 recommended, and other may recommend, have indeed been  
15 incorporated in that plant; secondly, that the licensee lives  
16 up to the new high standards and qualifications that we have  
17 recommended, including the ability to give first-rate training  
18 to operators; and thirdly, that any such license should be  
19 conditional on the approval of a state and local emergency plan.

20 We know at this moment this is in the hands of the present  
21 NRC, but we hope that this recommendation will be taken very  
22 seriously, because if it is -- and Congress could give us a  
23 great deal of backbone -- if it is, it may be our single most  
24 important recommendation.

25 Mr. Chairman, Members of Congress, with those brief

1 remarks, the Presidential Commission recommends our report to  
2 you fully, knowing that what happens to it is in the hands of  
3 the President and the Congress.

4 Thank you.

5 Senator Hart. Thank you, Dr. Kemeny.

6 Under the ground rules we have previously established, we  
7 will now invite individual members of the Commission to make  
8 brief comments as they may desire. Dr. Marks.

9 Dr. Marks. Senator, I would like to join in thanking you  
10 and other members of Congress for scheduling this hearing so  
11 promptly. It clearly indicates a commitment to an expeditious  
12 and thorough evaluation of this Commission's report, which is  
13 what we can hope for.

14 I would like to address my remarks to certain of the  
15 findings which I believe led to recommendations that can and  
16 should be implemented as promptly as possible.

17 As you know, I am a physician and educator. By training  
18 and experience, I would be expected to be particularly  
19 interested in the practices and procedures related to people  
20 and especially as they affect worker and public health and  
21 safety. It is unthinkable to permit a poorly trained surgeon,  
22 working in an inadequately maintained operating room to perform  
23 an operation. Frankly, I was not prepared for what the  
24 Commission found. The Commission identified technical problems  
25 with respect to the design and function of certain components of

1 of equipment. In general, however, the equipment functioned  
2 as designed. The equipment failures and the weak features in  
3 design of equipment which were identified, however important,  
4 do not seem to go to the heart of the concern as to what has  
5 to be done to assure safer operation of nuclear power plants.  
6 It is the findings with regard to widespread inadequacies in  
7 personnel programs and practices that were most disturbing  
8 that should be of greatest concern. These inadequacies were  
9 found at almost every level that the Commission investigated  
10 in relation to the accident at Three Mile Island.

11 There has been inadequate attention to the human factor,  
12 and this is illustrated by the findings of the Commission you  
13 have before you, and I will not now take time to review. But  
14 I would like to say that perhaps the most fundamental nature  
15 of these changes must be the incorporation, in a systematic  
16 manner, of higher standards for the selection, training and  
17 practice of personnel at all levels of responsibility in the  
18 Federal regulatory agency and in the nuclear industry. However  
19 important it is to establish adequate techniques to deal with  
20 emergencies and to mitigate the consequences of accidents, our  
21 primary goal must be to prevent emergencies, to prevent  
22 accidents. It is unlikely that any amount of regulations will  
23 be adequate to eliminate human errors. Indeed, too much  
24 emphasis on regulation may be counterproductive in this regard.

25 A number of the recommendations of this Commission can be

1 implemented without new legislation. An emphasis on safety  
2 as an integral part of the day-to-day activities of regulators,  
3 managers, supervisors and operators can be achieved as a  
4 matter of style, and substantive changes in certain procedures  
5 and practices can be implemented forthwith. Standards for  
6 licensing and relicensing of operators should be based on high  
7 criteria of performance, both on theoretical material as well  
8 as in practical, simulated settings of the control room  
9 operation. Operators should receive a passing grade on all  
10 parts of the examination to qualify to operate a reactor. More  
11 attention should be devoted to writing review and monitoring  
12 of the plant procedures.

13 On-site plant maintenance should be rigorous. NRC  
14 inspections of the power plants should be carried out  
15 periodically and with meticulous care to detail. Improperly  
16 functioning equipment should be attended to promptly. Lessons  
17 learned from an accident should be analyzed and information  
18 generated by such analyses appropriately and promptly applied.

19 We must move promptly to ensure that everything that can  
20 reasonably be done to improve the safety of nuclear plants is  
21 being done if we are to receive the public support for the  
22 nuclear option that we must have to go forward with it.

23 Senator Hart. Thank you, Dr. Marks.

24 Other members of the Commission? Mr. Haggerty.

25 Mr. Haggerty. Although there is some danger to calling

1 attention to two specific recommendations of oversimplification  
2 or making you think they are more significant than they are, I  
3 think there are two of the recommendations which will bear on  
4 how confident we can be as to avoiding the kinds of things  
5 that happened at Three Mile Island. One is relatively  
6 short-term, the other is long-term.

7 The first of these recommendations is under technical  
8 assessment. The first recommendation under technical assessment  
9 is on page 27 and it calls for the creation of a single panel  
10 of significant indicators relating to the conditions of the  
11 reactor and its total coolant system, including the pressurizer.  
12 The absence of something as simple and straightforward as  
13 that both demonstrates an inadequate attention to the overriding  
14 deficiency that caused the accident -- it relates to the  
15 change of the people -- but it also would have prevented it.  
16 It would have been impossible to have that accident if the  
17 pressure and temperature conditions had been clearly portrayed  
18 as they were occurring in the reactor coolant system.

19 Furthermore, if the warnings associated with that had been  
20 grouped on a single panel and distinctive from the others and  
21 if, as we recommend, there had been a second such panel in the  
22 supervisor's office, it is almost impossible to conceive that  
23 the conditions which existed could have been missed.

24 The second is a recommendation which appears on page 66,  
25 and it is recommendation 11(b). It calls for the creation of



1 an overall quality assurance system, one which evaluates the  
2 behavior of what happens in these plants. Now the fact is we  
3 now have enough plants and we have enough years of operation  
4 going on and we have enough identifiable accidents so that if  
5 a proper attention is paid to the total action and if they are  
6 described and identified properly, one can develop, as is  
7 common practice in complex situation, a quantifiable quality  
8 assurance system which will relate the status of the industry  
9 as a whole in terms of the number of such incidents that per  
10 reactor year of operation is going up or down, and one can  
11 relate the technical programs related to both improving  
12 operators' training and performance and equipment itself to  
13 the things that are happening in the system.

14 There is no particular reason for scaling these machines  
15 up. They are still fundamentally the same machines as smaller  
16 machines. There is nothing inherent as being a thousand  
17 megawatts that makes it worse than 500 or 400. What is wrong  
18 is the absence of a comprehensive way of looking at the total  
19 system and of identifying the specific and important signals  
20 that are related to whether the reactor is behaving properly  
21 or not.

22 Senator Hart. Thank you, Mr. Haggerty.

23 Any other brief comments? Dr. Lewis.

24 Dr. Lewis. Thank you, Senator.

25 We have had many of these arguments inside the Commission

1 and Pat and I are always on the opposite side of the fence.

2 I think what you are looking for from us, you have our  
3 report and findings and recommendations, and I think at this  
4 point you seem to be looking to us for our personal views of  
5 where do we go from here? There were a lot of questions we  
6 did not deal with in this Commission. For example, how safe  
7 is safe enough? How do we get from this point to the other  
8 point? So I would like to give you some of my personal  
9 impressions.

10 I came to the Commission with no knowledge at all about  
11 nuclear power. I did a tour of Harrisburg, of the Three Mile  
12 Island No. 1. I was rather horrified to find we had these  
13 large pipes with rags around them and yellow markings on the  
14 floor which said "Contaminated Water." I had had an image of  
15 a high, clean technology that was well looked after and well  
16 run, and I found something that really, frankly, looked like  
17 the underside of a hundred-year old house that I once owned,  
18 which was the plumbing underneath with all the little  
19 knick-knacks there. It was not high technology.

20 As the Commission progressed, we found a lot of things  
21 that showed the whole operation was not run very well. The  
22 thing that really struck me was the admission by those on our  
23 Commission who knew most there is no way to make nuclear power  
24 failsafe, that the only way to make it failsafe is to turn the  
25 reactors off. That means we are going to have to live with the

1 possibility that there will be an accident as long as we have  
2 nuclear power operating in this country.

3 Now perhaps we are willing to accept those risks. But I  
4 think what we need is a public dialogue on what the risks are  
5 in relation to the benefits. And I think the thing that  
6 Congress can do for us is to offer a look at the alternatives.  
7 Is there some other way to give us the electricity we need,  
8 for example, in conservation, in alternatives sources of  
9 energy? The presumption is we have got to have nuclear power.  
10 That obviously was outside the mandate that we had from the  
11 President, but certainly our deliberations make me think I  
12 would rather have another way to have our electric power. I  
13 think conservation is something we ought to try in this country.  
14 So knowing that out there is this possibility no matter how  
15 much we play with the equipment, no matter how much we try to  
16 make the people who supervise it and people who run it better,  
17 there is always going to be a risk of an accident. And when  
18 you have a look at the possibility of that accident and what  
19 it would mean in human terms, not only to this generation but  
20 future generations, I think what the Congress and President  
21 can do is say, "Let's have another look; let's see if we can  
22 find another way to solve our energy problems," and not to  
23 really run off in a panic because we have problems with OPEC,  
24 but let's look at whether there is another way.

25 That is a personal view. I know people like Pat probably

1 won't agree with me. This is what I got from six months on  
2 this Commission.

3 Senator Hart. Thank you, Dr. Lewis. Mr. Taylor.

4 Mr. Taylor. Mr. Chairman, I would like to focus very  
5 briefly on the second recommendation, and that is for the  
6 establishment of an oversight committee on nuclear reactor  
7 safety.

8 The purpose of that recommendation, with very little  
9 debate, which was unanimously approved by the Commission early  
10 on, was to perpetuate a process to which the nuclear industry  
11 and the regulatory process has never been subjected before in  
12 the history of the program in the United States, and that is  
13 careful, thorough public scrutiny. The purpose of that  
14 oversight committee is to examine and report to the President,  
15 the Congress, and, therefore, the American people in plain  
16 English what has been the response of the industry, of the  
17 regulatory process, whether it is a new agency, whether  
18 restructuring of the old one, and to allow the political  
19 process, on which everything of major importance in this country  
20 depends, to work.

21 The first requirement for that system to work is knowledge  
22 of the true situation with respect to any issue. We have not  
23 had that knowledge prior to Three Mile Island.

24 I stress that recommendation because I want to express a  
25 personal opinion. If that is not done, I begin to have some

1 serious questions about placing all the regulatory  
2 responsibility under the authority of one person. If those  
3 are couched together, then the arguments for the collegiate  
4 process I think still hold -- they are strong arguments. Now  
5 if that process were in place, with oversight to the whole  
6 system -- not just the NRC, but the industry itself -- then  
7 I think we have really got something that the public needs.  
8 We need a time of probation for the nuclear industry and we  
9 need to have a probation for the public political process to  
10 determine whether or not the delinquent should be kicked out  
11 of school or allowed to continue.

12 Senator Hart. Thank you, Mr. Taylor.

13 Other Commission comments? If not, then we will go to  
14 questioning. Under the procedures established by the staffs  
15 of the two committees, we will alternate on a 10-minute basis.

16 To begin with, Dr. Kemeny, if, to use your phrase, the  
17 NRC siting policy is entirely flawed, as you stated -- and you  
18 were referring to the low population zone aspect of that  
19 policy -- how can the Commission not call for a moratorium on  
20 new construction permits for plants until that flawed policy  
21 is corrected?

22 Dr. Kemeny. Mr. Chairman, if I may state what happened  
23 to us which is now a matter of public record. Eight of the  
24 twelve commissioners, myself included, voted for at least one  
25 version of a moratorium. Our difficulty was agreeing on common

1 criteria on what would terminate such a moratorium on new  
2 construction permits. We were able to agree unanimously on  
3 recommendation number eight, as we said. The problems that  
4 come out is that it is easy to say "Start the moratorium,"  
5 but we were unable to get a majority vote on how to terminate  
6 one.

7 For example, personally -- I am not arguing I was right  
8 or wrong -- I, personally, favored one that is tied to the  
9 President and Congress having the chance to review our  
10 recommendations and act on them. Other commissioners wished  
11 to tie it to the siting policy. There was one vote that would  
12 have had a flat two-year moratorium. We never could get a  
13 majority vote agreeing on one set of criteria for terminating  
14 a moratorium.

15 Senator Hart. In other words, you all agreed --

16 Dr. Kemeny. Eight out of the twelve, Mr. Chairman,  
17 favored one of the three votes.

18 Senator Hart. But you all agreed, or did the Commission  
19 agree that the siting policy is, to use your terminology,  
20 entirely flawed?

21 Dr. Kemeny. Yes.

22 Senator Hart. But you couldn't agree what to do about it?

23 Dr. Kemeny. No, we had very specific recommendations on  
24 what should be done about the siting policy. But the question  
25 was -- let me tell you the problem of tying the moratorium to

1 the siting policy. It happened to be the one I did not vote  
2 for for the very simple reason the way the vote was, it would  
3 have been the present NRC that would have had the ability to  
4 say, "All right, we now have a new siting policy; therefore,  
5 the moratorium is off." I may have been wrong on that,  
6 Mr. Chairman. That is why I didn't vote for that particular  
7 one, and other commissioners didn't vote for other versions  
8 of it.

9 I must say we did not agree on how to call off a  
10 moratorium once it is started.

11 I wish you would give other commissioners a chance to  
12 speak to this.

13 Senator Hart. These questions are directed to the  
14 Commission at large. Mr. Taylor.

15 Mr. Taylor. I would like to comment briefly. I voted  
16 for all versions of specific moratoria, which I believe would  
17 require congressional action, for reasons which I think have  
18 been given eloquently by a number of members of your committee  
19 and the House side.

20 I do, however, want to emphasize what Dr. Kemeny did, and  
21 that is if you look carefully -- and we looked very carefully  
22 at the wording, this didn't just slip in there -- at  
23 recommendation eight, no more licenses of any kind on existing  
24 reactors that are under construction but don't yet have an  
25 operating license or those that don't have a construction

1 permit until certain things have been done, let me focus on one  
2 of those things. No more licenses until an emergency plan  
3 approved by the state exists. We then look at what we mean  
4 by "an emergency plan." How do you get there? You get there  
5 by analyses which have never been done, a number of different  
6 routes of a possible accident toward the release of radioactive  
7 material that would, under some circumstances, give cause for  
8 an evacuation. This is a requirement that we set down and  
9 strongly recommend, for an emergency plan.

10 The point I am trying to make is that we are, in fact,  
11 calling for what I would call a moratorium on all new licenses  
12 until there are certain actions that are responsive to our  
13 findings, not arbitrarily cast into some time in the future,  
14 although I see some virtue in doing that and saying there is  
15 meaning -- there is political meaning if nothing else -- to  
16 two years or to until such and such happens. But this now  
17 applies to licenses under present consideration. So I view  
18 that as a very strong, I would call, moratorium which received  
19 unanimous and enthusiastic vote in the Commission. There was  
20 very little debate about this when we came down on it.

21 Senator Hart. Mr. McPherson.

22 Mr. McPherson. Mr. Chairman, I will speak as counsel for  
23 some of our absent members. They didn't think they were voting  
24 for a moratorium on recommendation eight.

25 Senator Hart. So the Commission is in disagreement as to



1 what it actually did.

2 Mr. McPherson. No, I don't think so. It is just a matter  
3 of semantics, in my judgment. One thing that we did in number  
4 eight was talk about looking at permits and licenses on a  
5 case-by-case basis, which makes it different from a moratorium,  
6 which I think is commonly sued in the political arena, which  
7 simply means closing her down for a while.

8 Since you have asked us to tell why we did what we did,  
9 I did not vote for either the moratorium proposal that called  
10 for that moratorium until you all and the President had had an  
11 adequate opportunity to consider our recommendations, including  
12 the recommendation to restructure the Commission, because I  
13 frankly didn't know how long that was. I didn't know what  
14 event -- what is "adequate opportunity"? Does it mean voting  
15 up or down? Does it mean three years from next month? I just  
16 didn't know.

17 The other one that came along was a two-year proposal,  
18 a moratorium for two years. That didn't have an event involved.  
19 You all could sit still and do nothing for two years up here,  
20 take no action at all. All we have done is delay for two years  
21 any construction permits for nuclear power plants.

22 The one I recommended is the one that nearly made it, and  
23 it comes from what I thought was a natural development from  
24 the siting recommendation, the siting recommendation that we  
25 agreed to, to my delight. In order to provide an added

1 contribution to safety -- even if you did all the other things  
2 with people and plumbing -- in order to provide an added  
3 contribution to safety, the agency should be required, to the  
4 maximum extent feasible, to locate new power plants in areas  
5 remote from concentrations of population. Siting determinations  
6 should be based on technical assessment of various classes  
7 of accidents that can take place, including those involving  
8 releases of low doses of radiation. My proposal was to say,  
9 having agreed to that, now new construction permits should be  
10 granted in areas that violate that siting proposal. And I  
11 thought it was a pretty good idea, but --

12 Senator Hart. But it failed.

13 Mr. McPherson. Yes.

14 Senator Hart. So in the meantime we have the conclusion  
15 that the siting policy is entirely flawed, but no recommendation  
16 for us to do anything about it.

17 Mr. McPherson. It was an extremely difficult and tough  
18 technical issues, and it does involve technical deliberations  
19 we were not up to.

20 Senator Hart. But from the Commission's point of view,  
21 licenses can go ahead and be issued to plants sited under a  
22 policy that is entirely flawed.

23 Mr. McPherson. Well, we are saying they ought not be near  
24 concentrations of population.

25 Senator Hart. Dr. Marrett.

1 Dr. Marrett. Let me first explain I was never voting  
2 for or against a moratorium. The approach for me was what is  
3 the nature of the recommendation we are reviewing? And I  
4 reviewed each one of those recommendations that independently  
5 all were generally concerned about a moratorium.

6 My own abstention on the votes -- and I will explain  
7 them -- my own absention was based on what I think Chairman  
8 Kemeny expressed as a problem of what are the criteria? What  
9 are the things to be done? The uncertainties about the number  
10 of those, as well as the particular complexity some of the  
11 recommendations involved, led me to be very uncertain about  
12 the wisdom of those recommendations. Thus, I could not in  
13 good conscience say I fully supported a number of the  
14 recommendations.

15 On the other hand, if indeed there was some basis for  
16 something beyond -- that some of the arguments that were made  
17 did seem, in a sense, to carry with them a great deal of weight,  
18 and not being able to reach a conclusion on recommendations, I  
19 found it impossible to vote in favor, but neither this, was I  
20 neither totally opposed to the idea.

21 Let me explain where I had problems with reference to  
22 the siting acception.

23 Senator Hart. Excuse me, before you do it, I shall turn  
24 the microphone and gavel over to Congressman Bingham.

25 Mr. Bingham (presiding). Please continue.

1 Dr. Marrett. With reference to the siting recommendation,  
2 and Commissioner McPherson has indicated we certainly have  
3 recommended siting in remote areas, it is obvious though that  
4 that is a terribly complex issue with reference to what do  
5 we mean by remoteness. As someone pointed out, what is remote  
6 in certain parts of the country in terms of population might  
7 not be the criteria in other parts of the country. We certainly  
8 would not favor something done far too hurriedly, if indeed  
9 it is far more complex than simply having said this should be  
10 an idea. It has to be worked through far more substantially  
11 than we were going to be able to do, and thus, having been left  
12 with these thoughts of certainties, which in part said what  
13 is to be done during the period the moratorium is in effect,  
14 with those things left uncertain for me, I had difficulty  
15 saying that I regard a vote on a moratorium as the most  
16 certainly central thing this Commission should recommend.

17 Mr. Bingham. Mr. Haggerty.

18 Mr. Haggerty. Since I prepared recommendation number  
19 eight, and I voted for none of the so-called moratoria, let  
20 me explain why. It seems to me we had to be responsible. What  
21 did we look at? We looked at Three Mile Island, Met Ed, B&W,  
22 Burns and Roe to a limited extent, and NRC. You know it is  
23 easy to talk from one's emotional background as to what ought  
24 to be done generally. All we know is what we had looked at.  
25 That recommendation says look at every case and weigh it

1 heavily before you issue another license. But it doesn't jump  
2 from emotional commitment and a limited review to a general  
3 castigation of an industry as a whole on which we had  
4 absolutely no facts to base such a recommendation.

5 Mr. Bingham. Dr. Marks.

6 Dr. Marks. I would like to comment on this, too. I  
7 supported the recommendation for a moratorium linked to siting.  
8 But I do think that although only six members of the Commission  
9 supported it, the substance of the intent is in our Commission  
10 report and was supported by all of the commissioners, and that  
11 is on page 64, item six, which starts off "In order to provide  
12 an added contribution to safety," et cetera, which I think  
13 Commissioner McPherson referred to before, and I think the  
14 comment Commissioner Haggerty just made might have been a  
15 factor in why some of the commissioners did not go, if you will,  
16 the next step, which several of you are trying to find out  
17 why didn't we go that next step? If we come this far, why  
18 didn't we go this next step?

19 I think that I, personally, on the one hand, must respect  
20 the fact that we did have a limited mandate and, in fact, we  
21 were extrapolating. On the other hand, the basic recommendation  
22 is there, and if, in fact, an effective regulatory body accepts  
23 and implements that recommendation, I think that we have a very,  
24 very strong proposal with regard to siting. And I think that  
25 it probably may, in fact, be a moratorium, but at least on a

1 case-by-case basis it is a very strong recommendation which  
2 requires examination of every single license.

3 Mr. Bingham. Senator Hart's 10 minutes have expired,  
4 but go ahead, Dr. Lewis.

5 Dr. Lewis. I voted for the moratorium, and I am sorry  
6 that we didn't get enough votes to come to you today and say  
7 we are that serious that we want you to take some action to  
8 stop it until everything is fixed. But I think if you do read  
9 our deliberations, you will have a sense of the anguish in  
10 what we saw. Even as we didn't get the votes, as the rules  
11 were drawn late in the game, you do have six votes involved  
12 for the moratorium. You have three against and three  
13 abstentions. And I think if you just overlook the particular  
14 rules we had, you will recognize that is a majority of this  
15 Commission in favor of a moratorium. It is up to you to read  
16 that. It is not an official statement. But as far as I am  
17 concerned, that is a majority of the vote.

18 Dr. Kemeny. Mr. Chairman, may I have one remark of  
19 personal privilege. There has been that particular statement  
20 that was just made that the rules were drawn late. May I  
21 state for the record that this chairman first proposed rules  
22 for adopting the recommendations for the Presidential  
23 Commission on August 14th. At that time the proposal was eight  
24 votes. At our final meeting, the Commission, having had in  
25 front of us written rules, unanimously adopted those rules.

1 Therefore, I don't think it is fair to blame the outcome on  
2 the rules.

3 Dr. Lewis. Can I answer the chairman?

4 Mr. Bingham. I think we better proceed. I would like to  
5 comment on this matter, and I was about to had Dr. Lewis not  
6 spoken.

7 I would like to say from my point of view, looking at  
8 the recommendation eight and looking at the recommendation which  
9 appears on page six of Commissioner McPherson's supplemental  
10 view, and also the recommendation which is quoted on page  
11 one which six commissioners signed, I think it is a fair  
12 statement that the impression created by the Commission's  
13 report, taking into account the rather rigorous set of rules  
14 that it adopted for itself, amount to what appear to me to be  
15 a recommendation for some form or moratorium, and indeed a  
16 moratorium which might well last substantially longer than the  
17 six months, which is the proposal that is before us in the House  
18 The voting rule which the Commission adopted for itself is more  
19 rigorous than we have in the House or Senate or, for that  
20 matter, the Supreme Court.

21 You had a majority of those voting for two of these  
22 recommendations which clearly amounted to recommendations for  
23 a moratorium. And I would like to call attention also to the  
24 fact that your recommendation eight addresses itself not only  
25 to construction permits, but operating licenses, which I think

1 is a very significant addition. So it is on that basis that I  
2 said earlier I felt the Commission had done a tremendous job.  
3 And I recognize the difficulty that you had, Chairman Kemeny,  
4 in coming to a particular wording that would require the  
5 necessary set of votes.

6 I think it is unfortunate that the media have picked up  
7 the fact that the Commission did not vote formally for a  
8 moratorium. I don't know how many other reporters picked up  
9 the recommendation by the six commissioners, as David Burnham  
10 did writing in The Times. But particularly in view of the  
11 fact that some supporters of the industry have pointed to  
12 this as something of a victory for the industry, I think the  
13 result is unfortunate. But from the point of view of the way  
14 the Congress will look at this report, it seems to me the  
15 significant fact is that eight members of the Commission voted  
16 for a moratorium in one form or another.

17 Now I would like to turn for my question to the  
18 recommendation for a single administrator. It seems to me  
19 that the problem that this Commission confronts is a very  
20 different one from, let's say, the problem confronted by  
21 the civil aviation administrator. The problem is much more  
22 complex, answers are much more subjective, and it is a  
23 protection to all points of view to have different points of  
24 view represented on the supervisory body. Now Dr. Taylor has  
25 indicated that if the kind of oversight committee was created



1 that would provide that type of spectrum of opinion; but if it  
2 is not provided, if that is not created, there is no opportunity  
3 for that. So my question is this: how many of you would agree  
4 with Dr. Taylro, that if the oversight committee recommended  
5 is not established, you should leave the collegial structure  
6 at the top of the Commission?

7 Dr. Kemeny. Mr. Chairman, I believe I speak for the  
8 whole Commission. First of all, both were adopted unanimously,  
9 and during the discussion those two recommendations were  
10 intimately coupled in our mind. Therefore, I think that that  
11 is a package deal, that we would not buy one without the other.

12 May I say one word on that subject, Mr. Chairman?

13 Mr. Bingham. Yes.

14 Dr. Kemeny. Unlike a regulatory commission that sets  
15 rates, which is primarily judgmental in nature, there is a very  
16 large line organization here that must be supervised. Our  
17 findings document amply there is no effective leadership of  
18 this particular agency. Therefore, we tried to come up with a  
19 combination that, on the one hand, would give really strong  
20 day-to-day leadership for inspection and enforcement, for  
21 rule-making, for making sure things don't fall between the  
22 cracks, if I may quote the agency, at the same time keeping  
23 what you are looking for in the collegial body by recommending  
24 an oversight committee. I don't think we would have voted for  
25 one without the other.

1 Mr. Bingham. Might I ask you to comment on the aspect of  
2 this question that arises from the great swing that may occur  
3 from one point to the other, and we see that in the Commission  
4 today in terms that one presidential Administration may favor  
5 one type of appointee and another a different one. As I  
6 recall, you recommend a term of years for the administrator;  
7 you also specify that the administrator can be removed at the  
8 pleasure of the President. Doesn't that permit, in your view,  
9 a very dangerous lack of stability in the operations of the NRC?

10 Dr. Kemeny. That is certainly an issue we discussed at  
11 very great length, and we came out at the end with a judgment  
12 that it has to be the people who determine what the policy  
13 should be on nuclear power. The best place we could tie it to  
14 was a national election. If the people elect a President  
15 whose platform is to have nuclear power, the people have spoken  
16 on that; and if the people vote for one that wishes to terminate  
17 it, then the people have spoken on that. Clearly, it is only  
18 the President and Congress who can speak for the people of the  
19 United States. Therefore, we felt that very fundamental  
20 decision should be tied to the judgment of the people of the  
21 United States.

22 Senator Hart (presiding). Senator Simpson.

23 Senator Simpson. Thank you very much, Mr. Chairman.

24 Apparently I missed some of the in-depth discussions on  
25 moratorium, which you always miss when you walk out of a room

1 on this committee. We have grappled with that heavily. We  
2 have come to some roll call votes on the floor of the United  
3 States Senate on moratorium. I recall the vote on the  
4 moratorium issue which was just flat out. I think it was 55 to  
5 37 not to call for a moratorium on this industry. I won't get  
6 into the various reasons for that, but suffice it to say it  
7 was felt that even before Three Mile Island, there was almost  
8 a moratorium with a 12-year delay time in the construction of  
9 those facilities, with a lead time of, as I say, 12 to 13 years,  
10 change orders at any time, siting regulations, which we deeply  
11 went into on the floor in the authorization bill, state  
12 emergency plans. Senator Hart and I joined in an amendment  
13 which required states to have those emergency plans, and if  
14 they did not, the construction would not begin.

15 So it is easy, so easy, in this business that I have been  
16 involved in as deeply as the chairman and as deeply as the  
17 members of the House committee, so easy to simply reach down  
18 in the bag and pull out the title "moratorium," "meltdown,"  
19 "China syndrome," and the rest of the stuff, and then to get  
20 it all clouded in emotionalism and not deal really with the  
21 tenacious issue itself. And I hope that I can always stay away  
22 from the ritual, which is merely a trial variety here, to slip  
23 over to those terms when all it does is cloud reason and common  
24 sense.

25 Enough of that. I have seven minutes left.

1           Your report identifies a number of events at the Three  
2 Mile Island plant and other plants that were in some way  
3 related to events of the accident which were apparently unheeded  
4 by the utility, the supplier of the system and NRC. If the  
5 industry and NRC, in your mind, had in place an effective  
6 system for identifying and evaluating these operating  
7 experiences prior to this time, do you think that this accident  
8 would have occurred if there had been that system of identifying  
9 and evaluating between those three entities?

10           Dr. Kemeny. I believe again I speak for the whole  
11 Commission. We are quite certain if any one of several things  
12 had been followed through to the end, this accident would have  
13 been a minor incident that we never would have heard of it.

14           Senator Simpson. Your report recommends improvements in  
15 the NRC's and industry's efforts to evaluate the operating  
16 experience and to try to incorporate those experiences into the  
17 design and operation of the plant. What specific means would  
18 be helpful to accomplish those objectives?

19           Dr. Kemeny. I think more in-depth study than we were able  
20 to do of actually what happened in this particular accident and  
21 what were the factors that prevented the operators from  
22 carrying out their task as they should.

23           Could I perhaps ask Commissioner Haggerty to speak to  
24 that because I think he could be most eloquent, and I agree  
25 with everything he is about to say.

1 Mr. Haggerty. Obviously you have the specific incidents,  
2 the Davis-Bessie incident, which was an out and out warning of  
3 almost the identical set of circumstances which subsequently  
4 produced Three Mile Island. But you have a broader problem of  
5 how you evaluate the status of the overall industry? How do  
6 you measure if you are progressing or going back in that status?  
7 Now that we have enough plants and they are operating and have  
8 been operating, there are the LARs, the so-called reports on  
9 incidents that occur. If they were identified and scored as  
10 a part of a system, it would then become possible to measure  
11 progress because the statistical base is big enough, and  
12 programs which are laid out for improvement of training and  
13 equipment could both be related to the progress or failures  
14 against that overall quantitative measure of what one is doing.  
15 You can't have a narrow, purely statistical examination. One  
16 has to know that these numbers have a base, what its meaning  
17 is. It can only be a guide. But it is almost inevitable if  
18 such philosophy existed, there really had been careful  
19 examination of these events, had it been coupled into a system  
20 of quality assurance, it would have been improbable for the  
21 signals at Davis-Bessie and Creswell that pointed to the  
22 incidents to have escaped, and hence avoidance of this  
23 particular accident.

24 Senator Simpson. One of the Congressmen brought up the  
25 issue of standardization, and one of the things I was interested

1 in in the report and the work we are doing too was the aspect  
2 of the custom-made reactor. What did you address in the area  
3 of standardization which might alleviate problems, give us a  
4 better handle on the type? Not saying that one supplier then,  
5 that they would all come together, erect the same type of  
6 facility, but what was your discussion on standardization?

7 Dr. Marrett. There is a specific recommendation on  
8 standardization. I think we need to go back to Commissioner  
9 Haggerty's comment about what we did and what fell within our  
10 mandate. What we did was actually look at a given vendor,  
11 a given plant. For us to extrapolate about standardization  
12 from this experience would seem to be far beyond what we have  
13 the factual data to do.

14 One of the other things that I think should be remembered,  
15 in our investigation entirely, we were fully aware of the  
16 broader kinds of inquiries that are being undertaken here, and  
17 we assumed that others will have a chance to ask those sorts  
18 of questions with a broader base than we had based on the part  
19 of the industry we looked at.

20 Dr. Kemeny. May I add one word, and I agree with what  
21 Professor Marrett said. We had a very brief discussion on  
22 standardization. Let me tell you why, in addition to what  
23 she said, we did not come up with a recommendation. I think we  
24 all feel if those two plants next to each other had the same  
25 kind of control room, it would have happened considering the

1 fact those control rooms were well over 20 years out of date. I  
2 was quoted as saying 20 years. We now know from the most  
3 high NRC official, going back 10 years, even he said it was 20  
4 years out of date. What worries me about standarization is it  
5 could become a recipe for obsolescence. We thought it would  
6 be better to stay clear of that subject.

7 Senator Simpson. That is helpful, because you referred  
8 to it a great deal and you didn't make a recommendation. That  
9 was my inquiry.

10 One other question. Some of the recommendations that you  
11 give place a very high priority on prompt regulatory action by  
12 the NRC in a lot of areas. For example, you call for  
13 development of new siting criteria with population density  
14 fed into that determination; prompt review and approval of  
15 state emergency plans. You talked about the development of  
16 standards for training and qualifications. My question: how  
17 will the progress in accomplishing each of those areas -- and I  
18 think you pointed out as immediate goals -- how will those be  
19 affected by the reorganization proposals for the NRC which you  
20 are suggesting? Will the delays which accompany, from what I  
21 see, those type of reorganizations be a significant factor in  
22 hindering the carrying out of those recommendations with the  
23 immediacy you seem to address?

24 Dr. Marks. This was one of the things that we discussed  
25 at length, this so-called transition period. And I think that

1 the thrust of our recommendations are, to the extent possible,  
2 they be implemented by the present NRC. We feel that there are  
3 recommendations such as you just cited, Senator, which can and  
4 should be implemented now, and the agency that exists is the  
5 agency that we hope feels charged with responsibility to do it  
6 now. The restructuring of the agency certainly is not a  
7 recommendation intended to in any way either remove  
8 responsibility from the present agency to go forward with the  
9 implementation of these recommendations where it is possible  
10 without statutory change, nor hopefully to use it as an excuse  
11 for stalling on going forward with these recommendations.

12 Senator Simpson. Thank you.

13 Senator Hart. Senator Randolph.

14 Senator Randolph. Thank you very much.

15 Dr. Lewis, you are non-nuclear; is that correct?

16 Dr. Lewis. When you say I am "non-nuclear," I came into  
17 the Commission not having a position.

18 Senator Randolph. What is your position now?

19 Dr. Lewis. Now I wish we had never gone in this  
20 direction. Does that clear it up?

21 Senator Randolph. Surely, I understand. I hope that you  
22 will now be very prompt and very positive. How do you feel  
23 about coal?

24 Dr. Lewis. I know you come from a coal state, Senator, so  
25 I think that is a loaded question.



1 I realize that there risks in using coal, and I am very  
2 aware of it. And I know there is a new technology for scrubbers.  
3 I was very interested to see recently Vepco has decided to go  
4 from nuclear to coal. I think whatever we choose has got a  
5 trade-off in terms of health and safety. My own feeling is the  
6 ultimate nuclear power, which I hope never happens, is always  
7 possible, and that kind of danger is of such a magnitude  
8 that I don't personally feel it is comparable to the risks we  
9 have in coal with the scrubbers and with the present technology.  
10 So my feeling is I would rather not have nuclear.

11 I also feel we have to think of tomorrow. I don't like  
12 the idea of having all the waste behind for our children and  
13 grandchildren. I think that we really don't know what is out  
14 there in the future when you have some forms of radioactivity  
15 that have a half-life of 25,000 years. We don't even know if  
16 there will be a United States of America in 25,000 years. Who  
17 is going to guard it? What is going to happen then?

18 I know what you are saying. I know coal has some risk.  
19 I am sure our technology can find a way to make the risk less.  
20 So I would rather go with coal than nuclear.

21 Senator Randolph. You are a champion of a good cause.

22 Dr. Lewis. Thank you.

23 (Laughter.)

24 Senator Hart. Whether you knew it or not.

25 Senator Randolph. Professor Lewis, we do know that not

1 only we can move from nuclear, but we can move from petroleum  
2 and natural gas. We can do it safely and we can do it without  
3 danger to health. We can do it now. Conversion of electric  
4 generating facilities from whatever source they are now  
5 receiving it, they should receive it from coal. There are 34  
6 plants at the present time that can make that change over now.  
7 There are 117 installations that can be changed. We would free  
8 up then petroleum, we would free up natural gas. And this is  
9 necessary to be done. I would not have asked you this question  
10 except that I felt it was important that you yourself had this  
11 attitude of caution toward nuclear power, that I might turn  
12 toward a positive subject -- coal. And you have addressed  
13 yourself beautifully to it and I am grateful. I am not trying  
14 to be facetious. I just feel strongly that what we have we  
15 should use.

16 Now the recommendation, Dr. Kemeny, that the national  
17 picture, as you see it today, calls for the Nuclear Regulatory  
18 Commission to go out of business; is that correct?

19 Dr. Kemeny. At least to be completely restructured.

20 Senator Randolph. Yes, restructured. And that would be  
21 replaced, as I understand, by an Executive agency with a single  
22 administrator; is that correct?

23 Dr. Kemeny. Yes, sir.

24 Senator Randolph. Now I think that history does tell us  
25 something, usually correctly, that such agencies are quite

1 vulnerable to policy direction or political influence from the  
2 White House -- and I don't speak against the White House or  
3 even someone within it or even other Federal agencies. But  
4 let's just take a supposition. Suppose the Secretary of  
5 Energy or a presidential adviser on the subject of energy,  
6 these two individuals, or one of them is very pro-nuclear from  
7 the standpoint of development of that type of power. Now is  
8 it appropriate, is it fair, to have nuclear regulation subject  
9 to such pressures, as I say, might come by what you are  
10 suggesting should be the alternative to the Commission?

11 Dr. Kemeny. Senator, may I respond to that. It was  
12 precisely for that reason that our recommendation says in the  
13 the single administrator should be appointed by the President  
14 subject to the advice and consent of the Senate. It is our  
15 great trust in the United States Senate that enabled us to  
16 make that recommendation.

17 Senator Randolph. Thank you very much, Doctor.

18 When you released your report yesterday -- and again I  
19 commend all of you for this. I am not a carping critic. I  
20 have checked it rather carefully, and I think you deserve  
21 credit. And I think we ought to speak of it more than once at  
22 this table.

23 You have interpreted the situation, I believe, that nuclear  
24 power plants are safe operations. Was that your intention? Are  
25 they safe?

1 Dr. Kemeny. I think that is quite correct. It is just  
2 the people who run them that are not safe, sir.

3 Senator Randolph. The plants are safe. It is the  
4 people operating them that don't do the job correctly.

5 Dr. Kemeny. That is correct.

6 Senator Randolph. How do we get the people to run them  
7 correctly?

8 Dr. Kemeny. That, sir, is the major issue on which the  
9 future of nuclear power will depend. If we get the kind of  
10 organization with the right attitudes that can run these plants  
11 totally safely, as I believe they can be run --

12 Senator Randolph. You believe that can be overcome, the  
13 failure of the operating end of the nuclear power plant?

14 Dr. Kemeny. I believe it is possible. But it depends  
15 on the attitudes and organizational changes that, frankly,  
16 certainly not this Commission, nor even the United States  
17 Congress, can cure completely, because you are talking about  
18 attitudes within the private sector. And I hope the industry  
19 has learned its lesson from Three Mile Island to realize its  
20 future depends on the adoption of these quite changed attitudes.

21 Senator Randolph. The central observation in what we call  
22 the overview chapter is that because of the inherent risk of  
23 nuclear power, fundamental changes in the regulatory programs  
24 will be necessary to keep those risks that you highlight within  
25 tolerable limits. Now don't misunderstand me. What is the

1 tolerable limit?

2 Dr. Kemeny. It is interesting you should pick that  
3 particular phrase because its object left considerable  
4 discussion in this Commission. What we are saying is that the  
5 present situation is not tolerable, and that was sufficient to  
6 make that recommendation, sir.

7 Senator Randolph. So your report, at least with the  
8 current operating plants, you see the risks of nuclear power  
9 as not being within tolerable limits; is that correct?

10 Dr. Kemeny. That is correct.

11 Senator Randolph. That is a fair conclusion, is it not?

12 Dr. Kemeny. Yes.

13 Senator Randolph. I think you, Doctor, very, very much.  
14 And other questions, if I may, perhaps one or two or three,  
15 we would provide in writing with your responding.

16 Dr. Kemeny. Thank you.

17 Senator Hart. Thank you. Without objection, those  
18 questions will be received.

19 Congressman Weaver.

20 Mr. Weaver. Thank you, Mr. Chairman.

21 I would first like to say, Dr. Lewis, I was very pleased  
22 with your remark. Out in the Northwest where I come from, in  
23 Oregon, we are building nuclear plants while at the same time  
24 we have things like wood waste, which will produce energy for  
25 one-half the cost of the energy, but we burn it in the woods.

1 It is really an insane policy, and I am pleased to hear  
2 somebody commenting on the sane fashion.

3 Dr. Kemeny, your Commission voted unanimously for requiring  
4 states to have emergency evacuation plans prior to licensing of  
5 a plant. This is an amendment that I sponsored in the House  
6 Interior Committee and intend to offer on the House floor when  
7 the Nuclear Regulatory Commission authorization bill comes up.  
8 I note that in your findings you say that the NRC has not made  
9 the existence of a state emergency plan a condition of plant  
10 licensing. In your recommendations you say you would want such  
11 a plant to be approved and reviewed by the Federal Emergency  
12 Management Agency.

13 Now the House rules are such I am not able to have the  
14 Federal Emergency Management Agency as the supervising body.  
15 It has got to be the Nuclear Regulatory Commission. The  
16 authorization bill is for one year. Would you feel that it  
17 would be proper to have my amendment adopted or your  
18 recommendation adopted requiring the NRC to do this for one  
19 year? Is that something I could tell the House would be  
20 acceptable to you as an interim measure to get that into effect?

21 Dr. Kemeny. I can't speak for the whole Commission.  
22 Certainly any step in that direction would be a step that we  
23 would favor. As one reason why we didn't recommend FEMA, we  
24 felt it is terribly important to take advantage of the existing  
25 emergency machinery in each state. Once I said during the

1 meetings what happens if you have simultaneously a nuclear  
2 accident and a hurricane?

3 Mr. Weaver. I agree.

4 Dr. Kemeny. Certainly may I say any step in this  
5 direction we would favor. I hope you understand why we thought  
6 the single agency that really is geared to working with  
7 counties and local communities in their response would be the  
8 best one to coordinate it, but not naive enough to think every  
9 word we recommend would come out of the United States Congress.

10 Mr. Weaver. But just as an interim measure, would anyone  
11 object?

12 Dr. Marks. Yes, I think on the basis of the discussions  
13 we had there would be objection to it on the fact that FEMA  
14 does exist and NRC simply does not have the kind of resources  
15 to really effectively put together --

16 Mr. Weaver. Dr. Marks, that isn't the option we have.  
17 The option we have is to do nothing for at least a year or  
18 have the NRC at least be consulted. See, that is my point.

19 Dr. Marks. I support Chairman Kemeny's position that  
20 anything better than what we now have is a move in the right  
21 direction. But I think it would be inaccurate to leave you  
22 with the impression that we would be very enthusiastic about  
23 that incremental measure of significance.

24 Mr. Weaver. I understand. We would get it started. And  
25 I appreciate your comments.

1 I would like to explore the question of the operators. In  
2 my investigation, our task force investigation, we saw some of  
3 the same problems you did, of course; but we felt the operators  
4 were simply overwhelmed in the errors they did make, were  
5 errors that I don't think anyone in the same place would not  
6 have made. We accept it as a flip of the coin. You are not  
7 blaming Three Mile Island directly on the operators. Given  
8 another set of operators, are you saying Three Mile Island  
9 would not have happened?

10 Dr. Kemeny. Excuse me, may I answer that in more than  
11 one sentence. We are not blaming those specific operators  
12 because their training did not prepare them for this. We are  
13 saying either other operators, or the very same operators, if  
14 they had had the right training and right lessons learned  
15 from things like the Davis-Bessie incident, it would have  
16 prevented the accident. But you can't blame individuals if  
17 they do not follow procedures they don't know.

18 Mr. Weaver. In the first four moves in chess, there are  
19 two billion different moves, and in a nuclear plant there are  
20 also not a infinite different number of variations of problems,  
21 but certainly an extremely high finite number. You are not  
22 going to get operators that are going to be able to handle all  
23 of these in any given situation.

24 Dr. Kemeny. Sir, I certainly agree with that. However,  
25 here the errors were so fundamental. If I may say, I say this



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1 as somebody who seven months ago had no idea how a nuclear  
2 plant worked. I have some science background. It is very  
3 elementary you want to keep the combination of temperature  
4 and pressure such that the water doesn't boil out of the  
5 reactor, and the operators were not trained to concentrate on  
6 that and did not realize that when clear signals came on they  
7 ought to be pouring in all the water they can.

8 Mr. Weaver. But there were other signals being send to  
9 them that were read the other way very clearly.

10 Dr. Kemeny. That is correct.

11 Mr. Weaver. If I have a minute of two left, Mr. Chairman,  
12 I also disagree very strongly with another of your findings,  
13 and that is that you were able to determine with a great  
14 degree of certainty the amount of radioactivity that escaped  
15 from Three Mile Island. I find, as a matter of fact, in  
16 conflicting statements from NRC employees that some of the  
17 deficiencies in instrumentation were such that you couldn't  
18 know. You say your staff extrapolates and estimates with a  
19 certain degree of certainty. I can't imagine how you could.  
20 There could have been a great deal of radioactivity that  
21 escaped given the sad lack of proper instrumentation with  
22 which to monitor and measure that.

23 Dr. Kemeny. Could I ask Dr. Marks to address that.

24 Dr. Marks. Mr. Weaver, you are quite correct that there  
25 were very significant deficiencies in monitoring at the

1 initiation of this accident. To the best of our s  
2 ability to ascertain, data starting at about 12:00  
3 o'clock on Wednesday, March 28th, data largely being  
4 by the Department of Energy but also supplemented by several  
5 other agencies at the state and Federal level, gave what they  
6 considered, in their expert opinion, an accurate estimate of  
7 the radioactivity dose to the area within 50 miles of Three  
8 Mile Island. The estimate is based, therefore, on partial  
9 monitoring during the early hours, fairly adequate monitoring  
10 from that time on, and also a calculation of the total amount  
11 of radioactivity that could have been released from the plant.  
12 Now it is their evaluation that the conclusions which we drew  
13 were based on estimates that are, at best, in error not more  
14 than by a factor of two. Now a factor of two in some areas is  
15 a large factor, but with regard to the potential health effects  
16 in this particular case, I don't think would change our  
17 conclusions.

18 Mr. Weaver. Thank you. If I have another round of  
19 questioning, I want to explore this a little more.

20 Senator Hart. Thank you, Congressman.

21 Senator Moynihan.

22 Senator Moynihan. Thank you, Mr. Chairman.

23 Dr. Kemeny and Commissioners, may I first express, once  
24 again, my appreciation for what you have done and especially  
25 the way that you did it. My colleague, Senator Simpson, said

1 you wrote this in English, and that is a large and considerable  
2 achievement. I think that most of you would be very much  
3 familiar with the fact that the advent of science has imposed  
4 a tremendous task upon people who can translate to the very  
5 different worlds that are the scientific, on the one hand,  
6 and political, on the other. As you may know, it is not until  
7 1976 that the United States Senate elected a natural scientist  
8 to its body. I said to Senator Schmitt he was the first  
9 scientist in the Senate since Thomas Jefferson presided, but  
10 he wasn't elected.

11 I am struck by something you said, Dr. Kemeny, which is  
12 that the plants are safe but people who run them are not safe.  
13 That is a very large assertion, and if you are supportive of  
14 nuclear energy a very encouraging one because it is an  
15 organizational problem that is almost familiar.

16 I remember we asked the people who worked at TMI, or  
17 asked the Public Service Commission what was the average  
18 salary of a man who worked at that control panel. "Oh, they  
19 make about \$20,000 a year and the plant supervisor makes about  
20 \$30,000." That is half the salary of an airline pilot. And  
21 you can see what has sort of happened. The culture of steam  
22 generated public utility plants, being stationary engineering,  
23 a technology fully matured a half a century ago, with no  
24 real dangers involved -- you could blow up a few people and  
25 spoil a generator -- and that clearly transferred to a whole

1 management system of the utility itself.

2 Changing it around is not a problem. We had experience  
3 with this not very distant in time. Two new forms of  
4 transporation, one was an automobile and one was airplanes.  
5 Automobiles seemed familiar and safe. Airplanes were obviously  
6 not familiar and thought to be not safe. In fact, they are  
7 inherently about the same -- they are machines. But the way  
8 society approached dealing with safety in airplanes and  
9 automobiles was entirely different, with the result that  
10 automobiles were absolutely deadly instruments, and continue  
11 to be, and airplanes have been relatively innocuous since their  
12 outset. It is just your perception of the old saying if you  
13 can drive a horse and buggy. Well, the fact is you can't  
14 drive a car either unless the systems are worked out. I think  
15 we know a lot about that. That is the kind of thing that a  
16 command and control mechanism is needed somewhere. Essentially,  
17 you have made the judgment it should be an agency. It is a  
18 long way to ask you a question.

19 Could you tell us a litte bit more about your judgment  
20 about why the regulatory mode isn't appropriate here? We are  
21 supposed to at least know something about that. We know very  
22 little about other matters. I haven't fully read the report  
23 of chief counsel on that matter, but it doesn't seem to draw  
24 very much on the political signs of this subject. James Key  
25 Wilson is, I guess, our ranking authority. He has a new book

1 coming out on regulatory agencies. Could you tell us a little  
2 bit about whether you did this guided by judgments of people  
3 who studied regulatory processes as against administrative  
4 and command and control processed, organizational theory, or  
5 did you just decide the present way isn't working very well,  
6 let's change it?

7 Dr. Kemeny. Could I make one brief comment on your first  
8 remarks, because I agree. As someone who always sits on  
9 airplanes chewing his knuckles, I am extremely happy that  
10 pilots get extremely high salaries.

11 I would like to call attention to one of the  
12 recommendations made to the utility on the importance of  
13 attracting really highly qualified candidates for positions,  
14 and setting salaries adequate to attract those.

15 Senator Moynihan. If you can consider that taxi drivers  
16 have just replaced coachmen, airplane pilots seem to be  
17 different.

18 Dr. Kemeny. I will call on Commissioner McPherson to  
19 address your other question.

20 Mr. McPherson. Senator, your question was whether we  
21 had looked at a lot of models when we came to our conclusion  
22 that there ought to be a single administrator instead of the  
23 present five-man Commission. The answer is yes and no. I think  
24 all of us came into it with some knowledge of mixed history, but  
25 as the last commissioner to have gone along with this

1 recommendation, it took me quite a trip to conclude a single  
2 administrator would probably be better. The argument I had  
3 heard for the five-man Commission expressed by a couple of  
4 commissioners was that it gave a superior antenna system for  
5 picking up views and criticisms about the agency and industry.  
6 In other words, if you have a super-nuke as chairman, then you  
7 are likely to have somebody who is sensitive to the anti-nuke  
8 and concerns about safety and so on.

9 We considered that and weighed it against the following.  
10 If you indulge me, I would like to read a bunch of single  
11 sentences that come up in the depositions of commissioners  
12 who presently sit on the NRC.

13 "Commissioner Gilinsky: I would say that it runs in the  
14 way that the collective group wants it to run, to the extent  
15 that the majority develops within that group."

16 "Commissioner Kennedy: I share responsibility with my  
17 colleagues and am responsible for the general administration  
18 and operation of the organization."

19 "Commissioner Gilinsky: The commissioners have been very  
20 much insulated from the licensing process, particularly in  
21 individual cases, which is where most of the ball game goes on."

22 "Commissioner Bradford: We have very little direct  
23 involvement in supervising the day-to-day work of the rank  
24 and file Commission employees."

25 "Commissioner Ahearne: It is certainly true that the

1 commissioners -- and I guess I would have to include myself  
2 too -- are not in what I would regard an immediate, total  
3 control and cognizant situation with regard to all the things  
4 going on in the staff."

5 "Chairman Hendrie: I am nominally the chief executive  
6 officer of the agency and therefore responsible, in effect, for  
7 the whole agency."

8 Counsel asked him twice, "You mentioned you were nominally  
9 in control. What do you mean by that? Do you think you are  
10 the chief executive officer?"

11 "In this agency we really don't have a chief executive  
12 officer in the sense that Cabinet departments have a head and,  
13 for example, the Environmental Protection Agency has a head.  
14 We don't have a chief executive officer in the sense that a  
15 number of other agencies that are headed by commissions are  
16 headed by the chairman where the founding statute for this  
17 agency, in fact, gave pretty full administrative power to the  
18 chairman. Here we operate very much under a collegial system  
19 which derived from the Atomic Energy Act, the original  
20 provision which provided that commission, a body of five equal  
21 members, with the authorities and power of the head of the  
22 agency to preside in the collegial action and not in the  
23 chairman."

24 Commissioner Kennedy, after saying that he thinks it is a  
25 good idea of keep the five, says, "I recognize there is a lot of

1 inefficiency in it."

2 "Commissioner Ahearne: I have tried many times to think  
3 if I were an officer, how would I try to relate having five  
4 somewhat equivalent bosses?" He is talking about the agency  
5 setup. "It makes it very difficult to decide how to interact  
6 with them. I think it is more easy to decide not to."

7 There are several others. But the point is what we find  
8 is that the NRC is not necessarily a mismanaged agency, it is  
9 an unmanaged agency. Nobody is running the show down there.

10 Question: how do you keep getting information, concerns  
11 with safety and so on if you have a single fellow and he is  
12 a strong, tough administrator but he is pro-nuclear? We tried  
13 to resolve it with this oversight committee, with a staff on  
14 the outside, the private citizens who would perform that  
15 listening role, and that inside we would have somebody who  
16 could knock heads together and who could try to get a much  
17 better response from the various division of the NRC.

18 What you have got here is a gigantic management mess, and  
19 it is both in the NRC and in the vendors, the people who make  
20 the steam system, and the utilities. Take this Davis-Bessie  
21 plant that Commissioner Haggerty mentioned. The same type  
22 of transient happened at Davis-Bessie in Toledo, Ohio, 19 months  
23 before TMI. A young engineer went up from Babcock and Wilcox,  
24 which had made the steam system, and wrote a memo and said,  
25 "You know there is something wrong with your pressures, or at



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1 least it could be read to give a wrong indication of the water  
2 on the core. Maybe we ought to tell the people who buy our  
3 system about this." Nothing happened. His boss, a month later,  
4 wrote a memo saying "I think we ought to do something about  
5 this." Nothing happened. They turned the water back on.  
6 Nothing happened. Some fellow who is in another part of B&W  
7 wrote a memo and said, "Well, if you turn the water back on,  
8 the system might go solid." That sounded like all hell was  
9 going to break loose. He asked "What is 'going solid?'" It  
10 seemed like a small consequence to a meltdown. But in any  
11 event, still silence.

12 Six months later, two fellows met in the hall over the  
13 water cooler. Somebody said, "What about that memo?" The  
14 other guy said, "No problem." The guy that said "No problem"  
15 meant the concern about going solid is no problem, so go ahead  
16 and teach them all that. The other guy thought he meant the  
17 pressurizer is no problem so there is no need to tell them.

18 When the NRC Creswell inspector down below out in  
19 Chicago came to the same conclusion about this pressurizer,  
20 he thought something ought to be done about, tried his best  
21 to do something about it, was a pain in the neck to a lot of  
22 people, and finally went to see a couple commissioners of the  
23 NRC, using their open-door policy. Five days before the  
24 accident at TMI a guy from TVA who was familiar with Babcock  
25 and Wilcox plants sent a memo to the NRC saying "Do something

1 about that." Nothing was done.

2 When do you throw up your hands and say something can't  
3 run any better? Our judgment was if you had someone who  
4 endorsed a policy of safety, an all-absorbing concentration on  
5 this agency, and had the executive and managerial power to do  
6 it and was not so absorbed in the quasi-judicial role of  
7 these five guys who sit up there and allegedly decide licensing  
8 decisions and, in fact, are spending an enormous amount of time  
9 on export control decisions and not devoting themselves to  
10 resolution of generic safety issues, that you would do better.  
11 That is why we recommended the change.

12 Senator Moynihan. Mr. Chairman, my time has expired.  
13 Could I just make a point what Mr. McPherson so well described,  
14 we are not talking about two different kinds of organizations  
15 one of which is better than another, we are talking about two  
16 different kinds of organizations. We are talking about, on  
17 the one end, you have the way Dr. Kemeny ran Dartmouth and,  
18 on the other, the way Mr. Haggerty ran Texas Instruments. And  
19 the problem is to match the correct mode to the objective.

20 Thank you.

21 Dr. Kemeny. May I add one word because one portion of your  
22 question was not answered. In addition to the extremely  
23 capable legal staff, we did also have distinguished outside  
24 consultants who helped arrive at this.

25 Senator Hart. Mr. Haggerty, briefly.

1 Mr. Haggerty. Let me just add to that I think it is  
2 important in examining the structure of the NRC you remember  
3 the difference in policy execution. The present policy mixes  
4 the two of them and insists on seeing the role as an adversary  
5 position, and all that does is ensure the kind of confusion  
6 we have over there. Furthermore, it is written into the  
7 department heads, so-called executive director, is in charge  
8 of administration. You not only have five people on top, you  
9 have departments underneath that are not coordinated. The  
10 thing is legislated for confusion.

11 Senator Hart. Congressman Cheney, and I apologize to the  
12 minority side. I have tried to alternate Democrat and  
13 Republican.

14 Mr. Cheney. I thank the chairman.

15 I wonder, Dr. Kemeny, and I would direct the question to  
16 the commissioners at large, let's assume hypothetically for  
17 a minute that all of your recommendations were to be adopted  
18 by the Congress. The President and Congress would look at  
19 them and conclude they are indeed wise. Would you be willing  
20 then to comment as to whether or not you would feel comfortable  
21 having the Nation move forward with respect to nuclear power?

22 Dr. Kemeny. I think it would be best if each of us spoke  
23 to that individually.

24 If I could add one thing to what you say, in addition if  
25 the organizational and attitudinal changes occurred to the

1 industry side, which is equally important, I would personally  
2 feel comfortable. That is a personal opinion.

3 Mr. Cheney. I recognize the Commission didn't really  
4 vote. How would others feels?

5 Dr. Marks. I think I would feel comfortable about the  
6 fact we would have a viable nuclear option. But I would also  
7 feel in common with that there should be no relaxation in  
8 efforts to develop alternative safer forms of energy, because  
9 I think no matter how safe we make it, nuclear energy is a  
10 dangerous technology potentially. And the judgment that I  
11 am giving is one that I, personally, am willing to accept  
12 the risk under the circumstance you descirbe.

13 Mr. Cheney. Thank you.

14 Mr. Haggerty. I think I would answer pretty much the  
15 same as Dr. Marks has. I think the important thing is to  
16 preserve the option. I think the situation is an extraordinary  
17 one in the total energy situation in this country. It is  
18 unnecessary to decide the exact role that nuclear energy is  
19 going to play after the year 2000 and I think irresponsible to  
20 kill it at the present time. All of these other solutions that  
21 sound so good are only partial solutions, and what has to be  
22 preserved is the option, and I think that is the responsibility  
23 that bears on all of us, to preserve the option and decide at  
24 the time when all the alternative sources have had an opportunity  
25 to be evaluated on the same basis. I mean solar energy, for

1 example, I know something about that, too, and there is a lot  
2 of foolishness talk there. Only when we get there with the  
3 same kind of technology will we know what will be accomplished.  
4 I think the answer is I would feel comfortable if we executed  
5 what has been recommended because I think it would preserve  
6 the option with an adequate level of caution and examination  
7 so that overall policy decisions, which were certainly not  
8 for this Commission, can be made, weighing all of the  
9 considerations that are present.

10 Mr. Cheney. Dr. Lewis.

11 Dr. Lewis. I think everybody knows after all my earlier  
12 comments. I don't think I will ever be comfortable as long as  
13 there a nuclear power plants in operation because, as I said  
14 earlier, they cannot be made failsafe. Some people may be  
15 willing to take that one-in-a-million risk. I am not. I would  
16 like to see we eventually reach the point where we do not have  
17 any nuclear power plants operating. I am not so irresponsible  
18 to say we could afford to turn them off now. But you asked if  
19 I would be comfortable, and to be honest, I am not going to be  
20 comfortable as long as those things are out there with all  
21 that radioactive material inside of them.

22 Mr. McPherson. I would agree with Haggerty and Marks.

23 Mr. Taylor. I have a slightly complicated answer. Before  
24 TMI, I was reasonably comfortable with the reactor safety  
25 situation on the ground that I found it inconceivable that the

1 first accident would be a very bad one in which a lot of people  
2 would be killed, and that as long as we remained alert to  
3 signals that something needed to be fixed, whether it had to  
4 do with people or equipment, then I thought we would respond  
5 accordingly and fix things before they sort of leaked or gave  
6 some indication they would leak before they burst. As a result  
7 of our investigation, I am much less confident about reactor  
8 safety on the ground that we have overwhelming evidence that  
9 neither the regulatory process or industry was being alert  
10 in reactors to, in some cases, very strong signals that things  
11 needed to be fixed. They weren't fixed.

12 Nevertheless, my concerns about nuclear power, in spite  
13 of this increased concern about safety that I just mentioned,  
14 are primarily centered on another aspect of nuclear power  
15 development, and that is its connection with the production  
16 of nuclear weapons and their use either by countries in acts  
17 of war or by noncountries, criminals, terrorists, blackmailers.  
18 I have been very discouraged by what we have turned up in the  
19 ability of the Nuclear Regulatory Commission to handle the  
20 safety issues. I have been separately concerned about the  
21 inadequacy of the safeguards against the diversion and theft  
22 of materials still today. They are much better than they were  
23 10 years ago, but I think we still have strong indications  
24 that that problem is not solved either.

25 Mr. Cheney. None of these were really addressed by you.

1           Mr. Taylor. They were not addressed by the Commission.  
2           I am not a particularly well-disciplined person I guess, but I  
3           was proud of the fact during our deliberations I never brought  
4           these up for discussion by the Commission because they were not  
5           our business. I am bringing them up now because you asked a  
6           direct question about how each of us felt about nuclear power.

7           Mr. Cheney. In light of your six months of effort,  
8           perhaps you are entitled to have an opportunity today.

9           Mr. Taylor. I think now we are not deliberating about  
10          a recommendation or vote. I would also like to say that we  
11          do have an enormous opportunity, set of opportunities, in  
12          another direction, and that is the use of renewable forms of  
13          solar energy. I happen to be a maverick in these field. What  
14          you see when you look at the status of solar energy economics  
15          particularly depends on where you look. If you look at the  
16          present Federal program of the United States, and most of  
17          the programs by the advanced industrialized countries  
18          throughout the world, I would say it is not a terribly  
19          optimistic picture. If you look, however, at the reasons why  
20          the cost of solar energy are high, both on the commercial  
21          side, what is available now, if you look in the Yellow Pages  
22          for something to buy, or if you look at the overwhelming  
23          emphasis in the Department of Energy program on solar energy,  
24          you find that it is too expensive, but not for fundamental  
25          reasons. This is not the proper place, I believe, to go into

1 the reasons why we can, as I have over the last three years  
2 developed a conviction that with changes, solar energy does  
3 offer an immediate alternative -- and by "immediate" I mean  
4 certainly on the scale it takes for license and construction  
5 of a nuclear plant to become an operating plant. That is on  
6 the scale of 12 years.

7 Mr. Cheney. Thank you for your response.

8 Dr. Kemeny, did you have an opportunity to look at the  
9 risks associated with other technology for producing energy?

10 Dr. Kemeny. No, we did not. We specifically considered  
11 that, and given the enormous charge and given only six months,  
12 we would have botched that job.

13 Mr. Cheney. But it would be fair to say -- and I don't  
14 mean to criticize -- you did not evaluate the risk connected  
15 with producing coal, for example?

16 Dr. Kemeny. No, we did not.

17 Mr. Cheney. Secondly, I wonder did you have the  
18 opportunity, any members of the Commission, to look at facilities  
19 outside of Three Mile Island to see how other control rooms  
20 might be designed and operated at other utilities, or look at  
21 some of the training facilities now in existence in connection  
22 with training?

23 Dr. Kemeny. We concentrated on Three Mile Island, its  
24 utility and some of its suppliers. We did somewhat accidentally  
25 run across incidents in other areas, and some commissioners



1 looked at other plants, but not in a systematic way. I think  
2 our best view came through our investigation of the Nuclear  
3 Regulatory Commission. Of course, we looked at their overall  
4 charge. For example, the kind of incredible evidence that  
5 their operators, the TMI operators, ran well above average  
6 nationally on their examinations. That says something.

7 Mr. Cheney. One more question. Do you have any sense  
8 at this point, based on your experience, that the goals of  
9 nuclear safety that are sought by the members of this  
10 committee as well as your own Commission are in any way  
11 inconsistent with private ownership of nuclear power?

12 Dr. Kemeny. We have found no evidence that would indicate  
13 that.

14 Mr. Cheney. I thank you.

15 Senator Hart. Thank you, Congressman.

16 Congressman Markey.

17 Mr. Markey. Thank you, Mr. Chairman.

18 At the outset, I would like to add my concurrence with the  
19 feelings of Dr. Lewis and Dr. Taylor on the advisability of  
20 pursuing the other alternative energy sources in our country.  
21 On the whole matter of dialogue on that potential of fulfilling  
22 our energy needs for the remainder of this century, what I would  
23 like to do -- and I wish there were more members still here -- I  
24 would like to pose a question to you. It wasn't specifically  
25 voted upon by the Commission, but it is the question that

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1 Senator Hart and Senator Kennedy posed to the Senate in July  
2 and one that I am the sponsor of that is now pending before  
3 the House, and that is the question of a construction permit  
4 moratorium that would last six months. That would give the  
5 Congress an opportunity to have an exhaustive series of  
6 hearings on the recommendation you have made for restructuring  
7 of the nuclear industry in this country and protection of  
8 people, to give us that chance to end business as usual, to  
9 reclaim that authority in the Congress we have abrogated to  
10 the Nuclear Regulatory Commission and industry for the last  
11 quarter century so we can, if we do send that industry forward  
12 again, we do so with being able to give some assurance to the  
13 American people that we, who are the final repository of that  
14 responsibility, have had that breathing spell, that we stepped  
15 back and did make that exhaustive analysis of nuclear power.  
16 I am not saying that six months is an adequate period of time  
17 to do it, and indeed in that six-month period of time we might  
18 decide we might need an additional period of time.

19 But if you had to vote in Congress tomorrow as to whether  
20 or not we should, on the basis of recommendations that you make  
21 here to us today, that we should take a six-month breathing  
22 spell and say to the Nuclear Regulatory Commission not to  
23 shut down any existing nuclear power plants, but for new plants  
24 that have not yet been given construction permits we are not  
25 going to allow to go forward until they have decided that siting

1 standardized certain portions of nuclear power plants, and  
2 those related questions, that we want to reclaim that authority  
3 just for that brief period of time, and you had to be a member  
4 of Congress and you could not abstain because your  
5 constituents would expect to have you vote, how would you vote  
6 tomorrow? Dr. Lewis.

7 Dr. Lewis. I obviously would vote yes. If I might make  
8 a suggestion to a member of Congress, I hope that every member  
9 of Congress will have a chance to read this report before that  
10 vote and hopefully it will persuade them that six months may  
11 not be enough. But if that is the best you can get, I  
12 certainly would vote that if I were a member of Congress.

13 Mr. Markey. Dr. Marks.

14 Dr. Marks. I would vote yes, too. But I don't think,  
15 with all due respect, that that is a very substantive move in  
16 terms of the thrust of all of our recommendations. You are  
17 not dealing with new operator licensing, you are not dealing  
18 with the existing plants, and I think that, with all due  
19 respect, I could not emphasize more that what goes through  
20 our findings and recommendations speaks to the ongoing operation  
21 of this industry, and I think that anything that would divert  
22 us from moving forward to take care of some of these problems,  
23 and as I say, about a third of them could be done promptly, it  
24 doesn't need a moratorium; or if you want to say get them  
25 done before a moratorium, that is fine. I would say anything  
that would divert us from that kind of thrust, I would vote

1 for it.

2 Mr. Markey. I would add it would not be my intention,  
3 because I would concur with you, we would have to go much  
4 further in any of the recommendations that Congress would  
5 have to make to the Nuclear Regulatory Commission, or a  
6 successor agency. But at the same time, if that was a  
7 consensus of what could get through Congress this year, you  
8 would vote for it.

9 Dr. Kemeny.

10 Dr. Kemeny. Could I answer that in two parts?

11 Mr. Markey. Yes.

12 Dr. Kemeny. Certain I did vote to give the President and  
13 Congress a chance to consider the recommendations. But I  
14 do want to underline what Dr. Marks said. We have absent all  
15 four members who did vote for the proposition. I think I should  
16 point that out.

17 Mr. Markey. Mr. McPherson.

18 Mr. McPherson. No, I wouldn't vote for it. I would vote  
19 for something that had a substantive hooker on it, and I  
20 offered one in our deliberations. In fact, I was called a  
21 few days before these votes by someone connected with the  
22 Union of Concerned Scientists, and I told him my dilemma. I  
23 recognize the strong merit or logic in the proposition that,  
24 having identified a whole lot of things that were wrong in the  
25 industry and regulation of it and so on, as Lyndon Johnson

1 used to say, therefore, what are you going to do about it?  
2 And that would suggest something should be done. But I  
3 couldn't fix for myself any event upon the happening of which  
4 one would feel comfortable in ending the moratorium. It was  
5 as if you were putting a bracket in a sentence and you knew  
6 where the beginning was but not what event ended it. I  
7 invited him to make a suggestion. He made the same one I  
8 have been messing around with, and that is siting. I don't  
9 think of it necessarily as a moratorium, but it was so  
10 identified by other members of this Commission. The notion  
11 was that there would be no more construction licenses or  
12 limited work authorization permits that were in areas that  
13 would violate the siting recommendations. That would take a  
14 long time to develop those siting recommendations. I went on  
15 and said if a plant had a limited work authorization, work  
16 permit, in an area near a populated zone -- in other words, if  
17 it only had scraped the ground and dug a hole, the Commission  
18 ought to be authorized to revoke that permit and buy them out  
19 with your authorization and appropriation; take money and pay  
20 them off for what they had expended in good faith reliance  
21 on the limited work authorization permit they had gotten. And  
22 if they were already into the construction permit phase, that  
23 you ought to throw a whole bunch of heavy what they call  
24 racheting at them; you ought to make them meet higher standards  
25 before they get an operating license. That scheme went down the

1 drain.

2 I still have a problem with six months, not because you  
3 should say it is six months or two years, but simply I don't  
4 know what that means, whether it is six months out of the  
5 Nation and its energy problems coming to a head in the latter  
6 part of the eighties.

7 Mr. Markey. It is basically six months out of the life  
8 of the Nation, where an impartial, blue-ribbon panel says  
9 there is a body responsible for giving us recommendations to  
10 securing the safety of this industry, which they have been  
11 inadequate in doing, and instead of five commissioners we  
12 will have one; we will go back to the Atomic Energy Commission.  
13 I don't know whether five good members of a commission or one  
14 lousy member of a commission is better. I don't know which  
15 procedure is going to give us efficiency or sensitivity or  
16 education or reanalysis by this government. We are the final  
17 repository of that responsibility. That is what it would do.  
18 It would give us at least six months to have you people and  
19 your counterparts who share this responsibility to come before  
20 us again and let us know what we should do in the aftermath.  
21 Just that breathing spell. If you don't think that is an  
22 adequate period of time or a healthy proposition, I can accept  
23 that.

24 Mr. McPherson. It is just I don't see the logic frankly.  
25 I also would point out what Dr. Marks did, you are talking about

1 the construction permit, you are talking about something that  
2 is 10, 11, 12 years away from an operational plant. The more  
3 important thing to do, in my view, is to really reform the  
4 NRC and help the industry reform itself and require true  
5 sanctions that have to do with operating permits.

6 Mr. Markey. As you know, the problem is that we are being  
7 told now we can't shut down the existing power plants because  
8 it would be some form of detriment to the rate payer. The  
9 industry has already made that commitment and we don't want  
10 to shut them down, the people already constructing plants.  
11 I don't know how much of an invasion of their social contract  
12 we can really afford to interject at this point in time, and  
13 we are saying maybe for construction permits, maybe  
14 understanding as they get into the mill, into the pipeline,  
15 that it ought to be initial construction permits; maybe we  
16 want to stop that part of the process to build in assurance so  
17 we are not put in the position of saying, hey, we made a  
18 mistake, you have to pull it down, and having them say, you  
19 let us go forward, let us finish this one.

20 Mr. Taylor. I would vote yes and give two reasons why.  
21 The first is if we are talking of six months, I would be very  
22 surprised if any utility is going to apply for new construction  
23 permit in the next six months anyway.

24 Mr. Markey. We are talking about the ones already in the  
25 mill. There are 30 that have already applied.

1 Mr. Taylor. I see. Then let me say that the penalty of,  
2 let's say, a six-month period of holding up the actual  
3 issuance of such licenses that have been applied for, even if  
4 it applied to all 30, which it does not, I find is well worth  
5 my second reason for voting for such a proposition, and that  
6 is I think it is in the nature of things today that a strong  
7 signal has to be sent out that this particular set of findings  
8 about the nature of the regulatory and the industrial process  
9 having to do with nuclear power is not satisfactory. And I  
10 still have faith in the political process. I think that if  
11 after six months individual members of Congress, in searching  
12 their own consciences and their responsibility to their  
13 constituents, believe questions have not yet been resolved,  
14 then I have faith -- I can only call it that -- that the  
15 Congress would then continue with a high sense of urgency to  
16 examine the question of whether this country should then  
17 proceed with issuing new construction permits.

18 Mr. Markey. If I may add, I agree with you, I think we  
19 have to send forth that signal to the American people. It is  
20 time to call a halt to business as usual. I think the  
21 difficulty is that you say this is a de facto call for a  
22 moratorium. Mr. McPherson says it is a matter of semantics.  
23 It is a political Rorschach, you can see what you want to see.  
24 What we are addressing is the seriousness with which you take  
25 your recommendations, how much attention you want this body



1 that is representative of the American people to pay to it in  
2 the period of time we have to focus on it in the aftermath of  
3 the recommendation.

4 Thank you, Mr. Chairman.

5 Senator Hart. Thank you, Congressman.

6 Dr. Kemeny, I would like to ask you about the seriousness  
7 of this accident. How close did this reactor come to melting  
8 down, in your judgment?

9 Dr. Kemeny. We made our very best attempt to explore  
10 that, and I strongly urge you to very carefully read the written  
11 report starting on the bottom of page 13 of the overview. We  
12 looked at it from the point that so many things went wrong  
13 through the accident, what if one more thing had gone wrong?  
14 We explored a number of alternatives, some of which would have  
15 made it better or worse, and one, leaving off the high pressure  
16 injection system working, could have resulted in a significant  
17 amount of meltdown, sufficient that we weren't sure a meltdown  
18 wouldn't have occurred.

19 Our staff went there and explored if there has been a  
20 melting through the bottom of the reactor vessel. Here is  
21 where I have very carefully to state qualification of what I  
22 am about to say. I think the finding is important, but it has  
23 a large number of qualifications which I urge you to read very  
24 carefully. Under the circumstances of this accident, and this  
25 particular plant, even if it had melted through, it would not

1 have resulted in huge amounts of radiation getting out of the  
2 containment. Therefore, there still were additional safeguards  
3 in the equipment and building in this particular case. For  
4 example, this building is built on hard rock, which is a very  
5 important part of this finding. Please don't read that as  
6 saying there cannot be a meltdown that has results that are  
7 catastrophic under any circumstances. It does not say that.  
8 We are saying in this particular case we may have come close  
9 to total meltdown with cleanup operation of horrendous  
10 proportion, but there were still some safeguards left.

11 Senator Hart. Mr. Taylor, what is your response to that  
12 question?

13 Mr. Taylor. I would like to say a little bit more because  
14 I agree with the chairman's assessment of the result of our  
15 work. I think one needs to distinguish carefully between two  
16 things. First, how close did we come to a meltdown? By a  
17 meltdown, I mean sufficient melting of fuel and core so as to  
18 proceed to work its way through the pressure vessel and on down  
19 to the concrete on the sump beneath and melt through, if you  
20 will. I think we came very close to that. The calculations  
21 that were done to determine what the temperature in the fuel  
22 would have been and how close to the melting temperature of the  
23 fuel were exploring a new technical field in the sense that  
24 they were using calculational techniques that have been  
25 recently developed. We used a computer code of zones. That

1 computer code is not capable of paying any attention to a  
2 situation in which there had been sufficient damage to the  
3 core to allow the fuel pellets -- these little objects about  
4 an inch long and half an inch in diameter -- to fall some  
5 distance, most of them not very far, but have high density of  
6 core and form what is sometimes called a slumped collection  
7 of fuel pellets. That is important because in a situation  
8 like that, one can certainly visualize a situation where  
9 cooling by steam from the water below doesn't take place  
10 significantly. Under those conditions, one can then do a  
11 calculation which is very simple: how much heat is being  
12 released per second by the fuel and how much heat has been  
13 released in the act of accounting for the hydrogen that formed  
14 in the bubble and contributed to this burn or explosion, or  
15 whatever you want to call it, in containment? To account for  
16 that hydrogen, you have to assume that something like half --  
17 there is some uncertainty -- of the zirconium reacted with  
18 water. That releases energy. If you also put that energy  
19 into the fuel, in addition to the decay heat, in a situation  
20 not being cooled, you find that the time to reach the melting  
21 down of the uranium oxide after uncovering of a particular part  
22 of the core is less than the time we know it was uncovered;  
23 therefore, we know if there are places in the core that were  
24 not significantly cooled. We don't know to what extent that  
25 happened. We won't know until we get in there and see the fuel

1     itself. We could have seen a substantial, significant, let's  
2     say percent at least, we could have actually had in the  
3     accident a situation where significant amounts of fuel actually  
4     melted. I am not saying that it did. I am saying that we  
5     can't prove that it didn't. Let's put it that way.

6             If you then further assume that there are places in the  
7     core that were not being adequately cooled and as how long would  
8     it have taken for a majority of the fuel to reach the melting  
9     point of uranium oxide, if there had been delay in turning  
10    emergency core cooling back on, how long would that take, it  
11    is about 15 minutes. I am not suggesting we have done an  
12    analysis if the operators delayed 15 minutes, we would have  
13    had a meltdown. So I am saying I think there is a way of  
14    saying we came close to meltdown.

15            When it then comes to asking what would that do in terms  
16    of releasing radioactive material, there is a popular tendency  
17    to equate a core meltdown with a massive release of radiation.  
18    I think in our explorations of this, which are subject to  
19    lots of caveats, we tried very hard, and I can assure both  
20    committees that we tried very hard to find a route of some  
21    kind following a meltdown to a large release and were not  
22    successful in doing that. I will say that this finding depended  
23    on an assumption that there were no further operator mistakes  
24    purposefully -- it is not purposeful or purposeful -- following  
25    the meltdown. Now we know that if you put on a computer what

1 would happen at TMI if you ignore the operators, we wouldn't  
2 be sitting here. Following a core meltdown, there could -- we  
3 didn't analyze any of these -- manageable mistakes by operators,  
4 and whether anyone would be stupid enough to open the valves  
5 from the sump and let everything out and activate the sump  
6 pump and violate the containment process, and then do things  
7 which I would say were just as inappropriate during the  
8 process of dealing with the accident before substantial  
9 melting happened, that there would have been, under those  
10 circumstances of an assumed set of operators' inappropriate  
11 actions, a very bad accident. In my view, this is not  
12 incompatible with what Dr. Kemeny just said. I am trying to go  
13 a bit further in exhibiting the state of uncertainty in that  
14 finding.

15 Senator Hart. I understand. What were the critical 15  
16 minutes?

17 Mr. Taylor. From about 215 minutes after the start of  
18 the accident, which was the time at which the high pressure  
19 injection system was turned back on. If that had not happened  
20 for another 15 minutes and there were regions of the core not  
21 being cooled by steam or water, then those regions of the  
22 core, I think without question, would have melted.

23 Dr. Kemeny. Could I say the only question is that is how  
24 long. I think we are in agreement if the water had been left  
25 off for a sufficiently long time, certainly there would be

1 enormous meltdown.

2 Mr. Taylor. Two hours and one hour is longer than 15  
3 minutes.

4 Dr. Kemeny. The only reason I stepped in is not to  
5 disagree with Dr. Taylor, but to say if there is any question,  
6 it is how much longer it had to happen.

7 Mr. Taylor. I want to make a further statement about  
8 this. If you look at the analyses in the staff report on the  
9 subject, the calculations that are presented are ones in  
10 which this blocking of fuel cooling capacity are not taken  
11 into account. The answer there, I believe, to rely formally  
12 on the computer printout, to reach 5200 degrees, which is the  
13 melting point of uranium oxide, was 50 minutes. And I am  
14 saying that there are questions about the applicability of  
15 that computer program.

16 Senator Hart. Congressman Symms.

17 Mr. Symms. Dr. Kemeny, it was my understanding -- and you  
18 correct me if I am wrong -- that the Commission did face the  
19 issue of what should be done in the interim period with plants  
20 that are currently operating, and the Commission decided that  
21 these plants operate.

22 Dr. Kemeny. The only recommendation that speaks to that  
23 subject is number eight under the Nuclear Regulatory Commission,  
24 that urging in any licensing action that should take place  
25 certain conditions should be met, most importantly taking in

1 new safety regulations.

2 Mr. Symms. Did you confront that issue then of what  
3 should be done in the interim period with plants now operating?

4 Dr. Kemeny. Only indirectly. We recommend the starting  
5 immediately of a process by which plants would be periodically  
6 reviewed in-depth to see whether they are performing  
7 satisfactorily under their current license.

8 Mr. Symms. I noticed, and I agree with your recommendation  
9 and I quote from what it says "responsibility and accountability  
10 for safe power plant operation, including the management of  
11 a plant during an accident, should be placed on the licensee  
12 in all circumstances." That is on page 63.5 And I assume  
13 from that statement that you would not support a proposal which  
14 would transfer control of a plant in a crisis from the utility  
15 to NRC or its successor?

16 Dr. Kemeny. No, sir. We can out it is up to the utility  
17 to do that, because it is most unlikely someone coming from  
18 outside would know that plant sufficiently well to bring it  
19 under control. If I may add one point. One of the fundamental  
20 reasons for requiring higher standards of the licensee, we felt  
21 if the utility is not capable of managing an accident, they  
22 shouldn't be running a plant in the first place.

23 Mr. Symms. Dr. Kemeny, am I correct in saying deficient  
24 instrumentation to measure radioactivity released as a result  
25 of the accident did not affect the Commission staff's ability

1 to estimate the radiation doses to health effects resulting  
2 from the accident, and do I also understand radiation released  
3 as a result of the accident will have negligible effects on  
4 the physical health of people living in the area?

5 Dr. Kemeny. That is correct.

6 Mr. Symms. I would like to ask you one other question.

7 Mr. Kostmayer. Would the gentleman yield?

8 Mr. Symms. Yes.

9 Mr. Kostmayer. Did you indicate though that the study  
10 to determine whether or not those levels were harmful or  
11 not, as conducted by the NRC, were not adequate?

12 Dr. Kemeny. I think Dr. Marks tried to speak to that. We  
13 had hired our own consultants who were the ablest people in  
14 the world. Although the data is incomplete, they feel they  
15 can determine within a factor of two how much radiation was  
16 released.

17 Mr. Kostmayer. But the data of your own consultants is  
18 incomplete and the studies of the Nuclear Regulatory Commission  
19 on the score are not adequate generally. Do you concur with  
20 that or am I mistaken?

21 Dr. Marks. Technically, you are correct. But our  
22 consultants felt they had enough data to be very comfortable  
23 about the conclusions they reached.

24 Mr. Kostmayer. I thank the gentleman for yielding.

25 Mr. Symms. Thank you. I appreciate the gentleman's



1 contribution.

2 I want to ask you further in this whole area, if I noticed  
3 correctly in the report, it said the only real major health  
4 hazard was the trauma of the concern of people over what might  
5 happen if the worst thing were to happen. I know in these  
6 supplemental views, one of your commissioners who is not here  
7 mentioned the fact that I think she was quite critical of the  
8 handling of the general reporting of it. There was too much  
9 reporting of what might happen, not what was happening to the  
10 American people. After having worked on this Commission and  
11 having reviewed it, Dr. Kemeny, how do you feel overall about  
12 the general responsibility with respect to the news media in  
13 overdramatizing the incident or in not overdramatizing it?  
14 What was your consensus on that, if any?

15 Dr. Kemeny. I think since that task force was chaired by  
16 Dr. Lewis, I will ask her to respond.

17 Dr. Lewis. We did a content analysis of media coverage  
18 of Three Mile Island and found that, contrary to the charges  
19 against the media, there was not sensationalism, with one or  
20 two minor exceptions. Where there was confusion, it was traced  
21 back to the sources. In fact, the NRC itself was confused.  
22 The NRC in Washington was giving out alarming information to  
23 the press, and the press was merely reporting it.

24 Mr. Symms. Dr. Lewis, where do you live?

25 Dr. Lewis. In New York.

1 Mr. Symms. And where does the commissioner who wrote  
2 these views live?

3 Dr. Lewis. In Middletown.

4 Mr. Symms. She lives right at Three Mile Island

5 Dr. Lewis. She was giving her personal view, and I  
6 highly respect it.

7 Mr. Kostmayer. Would the gentleman yield again?

8 Mr. Symms. I don't have much time.

9 Mr. Kostmayer. Dr. Lewis, what is your profession?

10 Dr. Lewis. I am a former Washington reporter. I am now  
11 associate professor of journalism at Columbia.

12 Mr. Kostmayer. I think the gentlman for yielding.

13 Mr. Symms. What I am getting at, there was a great todo  
14 on the national media about the fact that there might be  
15 some kind of explosion that might endanger the lives of  
16 200,000 people, then it was all settled down to confusion. I  
17 agree with the report, due to the confusion on the part of the  
18 NRC and other experts that were in the area that weren't quite  
19 sure it could be safe. But don't you believe that there  
20 was some example of overstating what was happening there and  
21 creating more trauma than necessary?

22 Dr. Lewis. Well, the evidence that we collected,  
23 imperfect as it was, indicated it was not so. In fact, we  
24 found through the content analysis the media gave more  
25 reassuring statements than alarming statements in terms of Three

1 Mile Island. No doubt the overall impact of suddenly living  
2 in a town like Middletown and having the media reporting  
3 basically alarming things is going to frighten people. There  
4 is no doubt about it. Suddenly to be confronted with the  
5 facts of Three Mile Island, it was frightening. But if you  
6 look at what the press did in the scientific way that we did,  
7 that the reporting was not more alarming than was justified  
8 by the information that it was given.

9 Dr. Kemeny. Could I add one word to that. I think that  
10 the study that Professor Lewis quotes was an extremely  
11 thoroughly and professional job. There are some things that I  
12 believe have not been picked up in the news media. This is,  
13 of course, Commissioner Trunk who lives in the area. If I may  
14 recite a very small anecdote, it may show what we are saying.  
15 My hometown newspaper carried a portion of the Times article.  
16 I read very carefully the article in the New York Times on  
17 the study on low level radiation conducted by the National  
18 Academy. It was a story where you had to read to near the end  
19 to get the full picture of it. It appeared in our hometown  
20 newspaper, but only the first third of it was quoted under  
21 a banner headline -- which is very rare -- "2000 Nuclear Deaths  
22 Predicted." That particular kind of incident didn't say  
23 anything wrong, but since it only printed a third of the  
24 article you never found out that was over a period of 25 years  
25 for all states in the United States that would have shown up.

1 Mr. Symms. I thank you very much. I think it is a very  
2 good point.

3 Just one more question. What, in your opinion, if you  
4 could sum it up, were the conclusions in the report on the  
5 viability of nuclear technology to provide part of the answer  
6 for keeping America from being dependent on foreign sources  
7 of energy? Is the technology still a viable technology, after  
8 looking into the report, or not a viable technology?

9 Dr. Kemeny. I think, as several of us spoke, that if  
10 the kind of recommendations that we have said are implemented  
11 both with respect to regulation and industry, that we would  
12 feel that it is an option. I think, as many of us have said,  
13 we hope the United States will explore all options.

14 Mr. Symms. Do you think there is any way when that is  
15 all over, because I am sure this Congress will respond and I  
16 am sure that the industry will respond and the American people  
17 will response, as they always have when confronted with a  
18 necessity, that this incident at Three Mile Island may in some  
19 way make nuclear power safer in the long run rather than going  
20 on as it was, and some day down the road nuclear power will  
21 be much safer than it has been up to this point?

22 Dr. Kemeny. I think the one thing we are all agreed on,  
23 if the right lessons are learned from this particular accident,  
24 that it would lead to a significant increase in the safety of  
25 it, that if the right lessons are learned -- and that is why

1 we titled our report "The Need for Change" -- if that legacy  
2 is that the changes necessary are made, there will be a  
3 significant contribution to make the technology safer.

4 Mr. Symms. Thank you.

5 Mr. Bingham (presiding). Mr. Kostmayer.

6 Mr. Kostmayer. Dr. Kemeny, the editor in today's Times  
7 said the Commission's report is an indictment. Do you concur  
8 with that characterization?

9 Dr. Kemeny. Yes, I do.

10 Mr. Kostmayer. Can you tell me if at any time you think  
11 that Met Ed misled or deceived, either deliberately or not,  
12 putting aside the technology for the moment, but the constant  
13 news conferences that the public relations fellow had up there,  
14 was there a deliberate misleading or deceiving of the people  
15 in by this Met Ed?

16 Dr. Kemeny. Our report says they were certainly very slow  
17 in sharing bad news with the world. We have some partial  
18 evidence in our report. I know your committees are doing a  
19 much more thorough job. We felt there was such a total degree  
20 of confusion there, we did not concentrate on the question of  
21 whether people were deceiving or just didn't know what the  
22 heck was going on.

23 Mr. Kostmayer. Do you didn't really address the question  
24 as to whether it was deliberate or not?

25 Dr. Kemeny. No. We were more concerned about the degree

1 of confusion in what is being done about managing the accident.

2 Mr. Kostmayer. I am concerned about what appears to be  
3 a contradiction. "Our findings do not, standing alone, require  
4 the conclusion that nuclear power is inherently too dangerous  
5 to permit it to be continued and expanded as a form of power  
6 generation." Quoting still, "Neither do they suggest that  
7 the Nation should move forward aggressively to develop  
8 additional nuclear power." I am not exactly sure what we should  
9 do.

10 Dr. Kemeny. We do mean precisely that.

11 Mr. Kostmayer. You seem to be saying two contrary things  
12 at once.

13 Dr. Kemeny. Our report says neither of those.

14 Mr. McPherson. What we were attempting to say, Congressman  
15 Kostmayer, only makes sense if you go on to the next sentence  
16 that says they simply state our findings. "If the country  
17 wishes, for larger reasons, to confront the risks that are  
18 inherently associated with nuclear power, fundamental changes  
19 are necessary if those risks are to be kept within tolerable  
20 limits." That is a highly compacted paragraph.

21 Mr. Kostmayer. You are saying fundamental changes are  
22 necessary before we make that decision?

23 Mr. McPherson. I am saying that you folks have to make  
24 a decision up here.

25 Mr. Kostmayer. But if we do?

1 Mr. McPherson. Knowing that nuclear power has risks in  
2 any event, if you decide nevertheless that for larger reasons,  
3 obviously economic and foreign policy reasons, energy supply  
4 reasons, if you decide that we ought to go ahead with nuclear  
5 power to the extent that it is presently planned to, then  
6 to make that a tolerable decision, to keep those risks within  
7 tolerable limits, there have to be these changes.

8 Mr. Kostmayer. Is that the same, Mr. McPherson, as  
9 saying we should not proceed until these fundamental changes,  
10 namely your recommendations, have been implemented?

11 Mr. McPherson. That would mean I guess --

12 Mr. Kostmayer. Because we are proceeding.

13 Mr. McPherson. Until all these changes are put into  
14 effect.

15 Mr. Kostmayer. No, I don't think so. We are, in fact,  
16 proceeding. I recognize that the practical fact is there  
17 aren't going to be any plants constructed at least in the  
18 immediate future. But we are actually proceeding. Nothing  
19 has changed since Three Mile Island. There is no government  
20 prohibition on the construction of plants. We are proceeding.  
21 Yet you have recommended fundamental changes. There seems to  
22 be a gap in the report between the severity of the report -- and  
23 Dr. Kemeny characterized it as did the Times article -- there  
24 seems to be a gap between the severity of the report and how  
25 far you are willing to go to correct that severity to do

1 something about it. You have said all these things and they  
2 seem to me to be a very damning indictment of the agency, of  
3 the industry, and of us in Congress, of the government's  
4 response. Yet you are proceeding just as we have always.  
5 You are not changing anything.

6 Dr. Kemeny. May I speak to that, please, because I think  
7 you have to realize what we did not do. We did not examine  
8 the alternatives. It has been said some times today that  
9 this risk has risk associated with it, and we all agree with  
10 that. But you have to look at the risks of alternatives. I  
11 don't believe there is a failsafe technology to provide energy  
12 for the United States. I think it would have been irresponsible  
13 of our Commission to take a position on that without taking  
14 a look at the alternatives to decide if it is more risky or  
15 significantly less risky.

16 Mr. Kostmayer. What the alternative is to not simply  
17 shut down the 13 percent of the electric power we currently  
18 generate through nuclear plants.

19 Dr. Kemeny. May I say something on that, then I will  
20 yield.

21 Mr. Kostmayer. You are not recommending any changes.

22 Dr. Kemeny. That means a shift to an alternative, and  
23 if through the political process you determine there is a  
24 safer more desirable alternative, so be it. We did not examine  
25 that question, and therefore were in no position to say that



1 would lead to an alternative that is safer.

2 Dr. Marks. I am having trouble with your question.

3 Mr. Kostmayer. I am having trouble with your answer.

4 Dr. Marks. I hope we come out understanding each other  
5 better. We have 72 operating plants out there now. This  
6 report says that they are not being operated to a level of  
7 safety that we think is acceptable and attainable if the plant  
8 that we visited is typical of the industry as a whole.

9 Mr. Kostmayer. We don't know that.

10 Dr. Marks. We don't know. Our findings do not permit  
11 us to extrapolate beyond a caveat.

12 Mr. Kostmayer. But if we have to make a practical  
13 assumption that these are bad or good, shouldn't we err on the  
14 side of safety and say things today are bad?

15 Dr. Marks. I, personally, think so. For you to think  
16 we are recommending full steam ahead is what I don't understand,  
17 because we are saying quite the opposite -- get on the stick.  
18 I mean one of the things I appreciate about this hearing  
19 today is because you couldn't have been more responsive, in my  
20 opinion as a citizen and member of the Commission. I deeply  
21 appreciate it. Somehow or other the NRC has to be told the  
22 same thing. I don't feel they are getting the message yet.  
23 Much of the message we are delivering here, many of the  
24 recommendations, they don't need a legislative mandate or  
25 Executive Order. They need to read or try to do it. We don't

1 have the power to try, I don't know if the Congress has the  
2 power to make them do it. They can do it if enough pressure is  
3 brought to bear. They can start them today. There is no  
4 reason today in this country there should be anyone in the  
5 operating room who has not passed all parts of the exam.  
6 The NRC does not require that today. An operator can flunk  
7 the part of the exam dealing with emergency equipment and  
8 still pass the whole exam and be in the control room. We  
9 don't think that is a good thing. We think somebody should  
10 do something about it.

11 Mr. Kostmayer. I would say I think you did have the  
12 power. I think you did have enormous power. The whole  
13 country was looking at this responsible, objective, bipartisan  
14 Commission. And I think it is extraordinary that the number  
15 of members did vote for a moratorium that did.

16 Mr. Symms. Would the gentleman yield?

17 Mr. Kostmayer. Yes.

18 Mr. Symms. Dr. Marks, have you had the opportunity to  
19 look at the NRC's report on the lessons learned from Three Mile  
20 Island?

21 Dr. Marks. We did.

22 Mr. Symms. What is your opinion of that? Do you think  
23 they learned anything?

24 Dr. Marks. We think there is some evidence they learned  
25 something, but not enough. And I will say, first of all, I was

1 one of those who supported the moratorium, so all my remarks  
2 are in that context. What I am trying to say, I do think we  
3 have given you a very strong report. If it fell short of  
4 your personal expectations, I understand it and respect it.

5 Mr. Kostmayer. I am just confused on the condemnation  
6 of the standards that exist, yet the reluctance to come out  
7 and say we ought to consider shutting them down completely.  
8 I understand the practical effects. You have acknowledged  
9 if the other 72 existing plants are comparable to the Three  
10 Mile Island plant, there is a good chance they are unsafe  
11 and people living in the areas surrounding them may be subject  
12 to considerable danger. Having said that, having delivered an  
13 indictment, what is the result of that?

14 Dr. Marks. The only thing I can say -- and I am sorry  
15 the other commissioners are not here to speak for themselves,  
16 but I respect their feeling that the mandate was so narrow  
17 that it was interpreted -- and we might have been in error --  
18 but that is the way it was interpreted and consonant with our  
19 advice to us, and they didn't feel they could go beyond where  
20 we come out. On the other hand, there is the unanimous feeling  
21 of this Commission's strong report, with moratorium or no  
22 moratorium, you can go forward with a great deal here.

23 Mr. Kostmayer. It is a good report and strong report.

24 Dr. Marks. I understand what you are saying and respect  
25 that.

1 Mr. Kostmayer. I appreciate that. I have exceeded my  
2 time. I would only say I think at the final moment you shunted  
3 the obvious conclusion.

4 Dr. Marks. I respect that judgment.

5 Mr. McPherson. May we always slip from that final  
6 essentially simplistic action if it is not logical to take. I  
7 think it was described as largely symbolic of a six-month of  
8 two-year moratorium or until enough of you all have had an  
9 adequate opportunity to look at it.

10 Mr. Kostmayer. It seems to be eminently logical. It  
11 seems so logical to proceed. In other words, you did all this,  
12 you said all this, you delivered a damning indictment.

13 Mr. McPherson. It is logical to take a largely symbolic  
14 action, which is saying as far as construction permits on  
15 something 10 or 12 years from operation, we will have a  
16 moratorium.

17 Senator Hart. Gentlemen, in the interest of time.

18 Mr. Kostmayer. Thank you, Mr. Chairman.

19 Senator Hart. I would strong urge since we are in a little  
20 bit of a trial between whether the Commission or the committee  
21 will last longer that we limit ourselves to two or three minutes.

22 Myself, I will ask only one final question. As you know,  
23 there is a current area of controversy which I don't believe  
24 your report addressed whether the possibility of a core melt  
25 accident or a so-called Class IX accident should be considered

1 in the licensing process. Do you or any of the other  
2 commissioners have a believe on that?

3 Dr. Kemeny. Yes. I believe at least indirectly that  
4 is implied in view of the fact the NRC has viewed this as  
5 a Class IX accident, which was defined as an accident that  
6 can't happen, something has to happen to the definition  
7 of Class IX accident. We do have a very strong recommendation  
8 saying that a much larger variety of accidents should be  
9 explored as a part of licensing emergency preparedness.

10 Senator Hart. Congressman Bingham.

11 Mr. Bingham. Thank you, Mr. Chairman. I just have two  
12 questions.

13 If I could call your attention to the wording or  
14 recommendation eight, which you have said, Chairman Kemeny,  
15 is the key recommendation, is it your intention in that  
16 recommendation that all three conditions -- A, B, and C --  
17 should be satisfied before a construction permit is issued?

18 Dr. Kemeny. Yes, that is my understanding, sir.

19 Mr. Bingham. Is there any difference of opinion on that?  
20 That is quite significant I think, because number (b) applies  
21 to operating competence.

22 Dr. Kemeny. I am sorry, may I modify my answer in view  
23 of your pointing that out. Presumably the ability of the  
24 operator training would be more appropriate to the operating  
25 license than construction permit. Certainly the competence of

1 the licensee and its management capability would apply.

2 Mr. Bingham. That is something that should be explored  
3 before a construction permit is issued.

4 Dr. Kemeny. Yes.

5 Mr. Taylor. Mr. Chairman, I am not sure if I heard you  
6 correctly. I would like to point out the last phrase of the  
7 recommendation says before issuing a new construction permit  
8 or operating license; it has included both.

9 Mr. Bingham. Yes, that is significant, too, but my  
10 my question is must A, B and C be found before the construction  
11 permit issues, and Dr. Kemeny says yes.

12 Dr. Kemeny. I believe I answered that correctly. I am  
13 not sure how you would do operator training in the construction  
14 permit stage. What it does say is if a firm that has already  
15 gotten into construction now comes to the operating license  
16 stage, all of these should be checked.

17 Mr. Bingham. I am now somewhat confused as to your  
18 answer, because I think that the competence of the applicant  
19 to operate safely is something that should be examined before  
20 the construction permit is issued.

21 Dr. Kemeny. I agree. All I said is the one phrase in  
22 there about the operator training program, it is unlikely  
23 they would have one in place about that time.

24 Mr. Bingham. The other question, and I know you said you  
25 didn't examine nonproliferation or problems, but did you

1 consider in your recommendations for the change in the structure  
2 of the NRC the fact that it has to deal with export licensing,  
3 nonproliferation problems, or as I have been informally  
4 advised, it was the conclusion of the Commission that the  
5 NRC shouldn't have anything to do with the problems of  
6 export licensing?

7 Dr. Kemeny. I can tell you precisely what happened on  
8 that. We have a recommendation in here now that in the  
9 restructuring Congress should take a careful at what the NRC  
10 could be relieved of so they could concentrate on the safety  
11 of nuclear power plants. In an earlier version of it, which  
12 leaked, we tried listing examples, and we decided in the final  
13 version we did not have the competence to determine which  
14 were the appropriate things to remove. Therefore, it is  
15 not included.

16 Mr. Bingham. Thank you.

17 Senator Hart. Senator Simpson.

18 Senator Simpson. Thank you, Mr. Chairman. Mr. Chairman,  
19 I will have some other questions I will subject in writing and  
20 appreciate those being accepted in the record, and then just  
21 ask one or two more.

22 First, just a comment, again my appreciation and my thanks  
23 for the way in which you shared your thoughts in a most  
24 authentic way. It has helped me. It has firmed my opinion  
25 about your capabilities and your deep desire not to go out of

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1 the mission that you were assigned. That must have been a  
2 tough one, and I think you achieved it. The issues of  
3 symbolism are rich in this area, and I want to commend you  
4 particularly, Harry McPherson, and I understand your remarks  
5 at the White House the other day. Your summary there was a  
6 highly capable presentation of the entire thing in a manner  
7 not to confuse the technology with the use of English.

8 One more question. Your report seems to recommend a  
9 review to identify and remove all unnecessary burdens from  
10 the NRC that are not germane to safety. I was interested in  
11 that part of the comment. In view of any of those, are there  
12 statutory responsibilities that are assigned to the NRC which  
13 ought to be removed, and what are the most flagrant ones that  
14 should be removed because they are not germane to safety?  
15 What were the most flagrant ones that are just baggage?

16 Dr. Kemeny. I would be happy to comment on that with the  
17 preface that in the end the Commission decided we are not  
18 competent to recommend any specific item be removed. But we  
19 found that the commissioners were spending an enormous amount  
20 of time on things like export licensing. We know there is  
21 that difficult but important activity that must lie somewhere.  
22 It was not clear to us it had to be the commissioners of the  
23 NRC. We wished they would spend a lot more time on the safety  
24 questions. Again, as I say, we left the language as is because  
25 in the last analysis we felt we did not have the competence.



1 to make a decision.

2 Mr. Taylor. Mr. Chairman, there was discussion about the  
3 time the commissioners spent on export licenses and some  
4 discussion about whether to suggest that that be removed from  
5 the responsibility of the NRC. I spoke up several times about  
6 that. I certainly would have strongly objected to the  
7 suggestion that the attention that should be given to export  
8 licenses in the nonproliferation context was less important  
9 than safety. I happen to think it is more important. That  
10 is not to say this agency restructure to look at safety  
11 necessarily should not have that responsibility. I must say  
12 I am very grateful for the fact that export licenses have been  
13 reviewed by the NRC. I understand that this has removed  
14 attention perhaps from other issues, but someone in the  
15 government decides the direct line of the process of  
16 implementing foreign policy. I think it is extremely  
17 important.

18 Senator Simpson. I have heard the comments about the  
19 export licensing, and I concur there. But I am thinking of  
20 the other areas. Time is limited. But I was fascinated at  
21 the report when it listed as a nonsafety item the relief  
22 valve and one of the condensers at the root of the problem.  
23 I think we are going to have to deal with that statutorily  
24 through regulation.

25 Senator Hart. Congressman Symms.

1 Mr. Symms. Thank you, Mr. Chairman. I will be brief.  
2 I only would like to say I would hope -- and I appreciate all  
3 of you that have been here -- I would hope we might get the  
4 opportunity to get the remaining part of your commissioners up  
5 here some day so we may continue to discuss this with them.  
6 I appreciate the fact that the Commission actually did go up  
7 to that point, but did not make a recommendation for a  
8 moratorium. I think that is something that will have to be  
9 wrestled with in the Congress.

10 I think when one reviews the overall question of  
11 alternative sources of energy, the number of people killed  
12 when you use coal as a source is important in comparison to  
13 nuclear. There are other factors that have to be considered.  
14 You should be commended you didn't actually make that  
15 recommendation.

16 I may have a few more questions that we would like to  
17 submit so that we could get some answers back for our record,  
18 Mr. Chairman, and then I will yield back my time.

19 Senator Hart. Thank you, Congressman.

20 Congressman Cheney.

21 Mr. Cheney. Mr. Chairman, without asking any questions,  
22 thank you for being kind enough to join in this event. I want  
23 to once again thank the members of the Commission for the work  
24 they have done. I know it has been a difficult task. Clearly,  
25 you are wrestling with the same kind of emotions about the

1 subject that all of us feel.

2 Senator Hart. Thank you.

3 Senator Moynihan.

4 Senator Moynihan. Mr. Chairman, this is late to put  
5 this question, and I won't ask for an answer now, but rather  
6 to ask if it would be intolerable if the Commission might put  
7 something in writing to this general point, which is the key  
8 recommendation of yours about whether nuclear power is  
9 inherently too dangerous, and then your statement fundamental  
10 changes are necessary if those risks are to be kept within  
11 tolerable limits. You assume there are risks, and can they  
12 be kept within tolerable limits. Would it be possible to ask  
13 you to write us something about how you conceive of your  
14 concept of tolerable limits? I am sure you know this is an  
15 extremely difficult question for the political system to deal  
16 with. We encounter them now in the health area. Fifty years  
17 ago influenza removed most of the decisions we had to make in  
18 government today -- how much money will you pay to keep  
19 somebody alive? And there is always a cost. You don't do  
20 something else. How much more pathology would you take for  
21 this form of energy as against another? Is this uniquely  
22 dangerous such as you run the risk as against the grim events  
23 of coal mining? Would you accept coal mining as tolerable  
24 limits, as it were? Am I making myself clear? I see that  
25 Mr. McPherson is nodding.

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1           Mr. McPherson. Always willing to respond to you. I came  
2 out of this with a personal reflection both more nervous about  
3 nuclear energy and less. More nervous about the likelihood of  
4 an accident as serious as TMI happening. The Washington 1400,  
5 the Rasmussen report use figures that I can't embrace, so many  
6 exponential powers of the chances of a major disastrous  
7 accident. This was a small break LOCA, a little bitty thing,  
8 they thought they had bounded, with large consequences of a  
9 large break LOCA. Given all the possibilities for messing  
10 up, operators do in the face of some rather compelling  
11 conditions hit the wrong button and kept the water off for  
12 too long so you have core uncover. That chance seems higher  
13 than it seemed it was when I started on the Commission. I  
14 just assumed they ran them better than that.

15           On the other hand, the result of the study by the team  
16 that we asked to look at the what ifs, all the list of things,  
17 the one other variable, including leaving the water off for  
18 another couple hours than it was, shows no break of containment.  
19 So it makes me feel more comfortable, even with all human  
20 error or breakdown you don't break a breaking or Jane Fonda  
21 Syndrome occurring. Nevertheless, there are lots of other  
22 ways, as our report says, that we didn't cover, lots of ways  
23 in which there could have been releases of major amounts of  
24 radiation from the containment. So it doesn't leave you  
25 terribly comfortable. Even though you are flawed, the initial

1 reliance that goes back to the AEC days on building five-foot  
2 think reinforced concrete walls has some value. They hold.  
3 Going to a 30 pound per square inch pressure spike, you don't  
4 come anywhere near busting open the building.

5 What is tolerable? Obviously we did not do risk analysis.  
6 We didn't try. It will be you and the President who have to  
7 take a whole list into consideration, whether these particular  
8 risks are high enough given the economic and foreign policy  
9 considerations in the world which also affect it, which are  
10 considerable.

11 Senator Moynihan. This is, I guess, my point. I don't  
12 want to pursue it too much, Mr. Chairman, but if you could  
13 hear me on this. Is it possible to make estimates, if we were  
14 to cut the energy consumption in the country by half, you would  
15 raise the mortality rate by some unappreciable amount? A  
16 member of the Canadian Atomic Energy Commission estimated the  
17 risk associated with various forms of energy and came up with  
18 solar power as the most costly in health terms because of the  
19 new of people that correspondingly fell off ladders. I think  
20 it would help us if we were to know, since we have to make  
21 relative decisions, well, we know the system is six people  
22 per thousand, and you are prepared to have six people die per  
23 year. We will get congressmen prepared not to have six people  
24 die per year. That is the difficulty of even raising these  
25 questions, but I think we need to know from you are you talking

1 about a range that would be associated with most other forms  
2 of energy and say this comes within that range or risks of  
3 catastrophe have a sort beyond anything associated with the  
4 now compartmentalized risks of energy?

5 Dr. Kemeny. Senator, could I answer that in two parts.  
6 First of all, we did look at the Canadian study and also  
7 various criticisms of it, and we decided there is no way we  
8 could do a decent assessment. Let me say we, of course,  
9 very strongly urge you to carry out that kind of estimate to  
10 make sure that people are doing it, because I think it is  
11 terribly important for the energy future of the United States  
12 to know the relative risks of sources of energy.

13 I think our statement is really a much more modest one;  
14 that is, we found certain faults that we feel are sort of  
15 underlined there, and there is a constant danger. We also  
16 feel these are things that are correctable. I think we have  
17 come up with eight sets of recipes, but they are correctable  
18 errors that very significantly increased the risk of this  
19 particular technology, and what we addressed is how to correct  
20 that.

21 Dr. Marks. May I comment. I think you have asked the  
22 critical question, in my opinion, and one to which you will,  
23 I think, not be able to get a quantitative answer even of the  
24 sort you suggest. But I certainly would like to be able to  
25 respond to you in writing if I may, because we have done a

1 great deal of thinking about this issue, and you will get some  
2 qualatative parameters within which to make your judgments.  
3 And it is a very difficult call.

4 Mr. Taylor. I would like to say I would like to respond  
5 to Senator Moynihan's question, and the general nature of the  
6 answer is going to be that your question is unanswerable, and,  
7 therefore, there are certain things that need to be done in  
8 setting energy policy in the light of the impossibility of  
9 answering that question to everyone's satisfaction.

10 Senator Moynihan. That is a very important fact.

11 Thank you, Mr. Chairman.

12 Senator Hart. Thank you, Senator.

13 Congressman Weaver.

14 Mr. Weaver. I want to thank the chairman for holding  
15 this hearing, because we have developed here something that the  
16 newspapers this morning missed, as a matter of fact, the  
17 biggest story has become very clear in this hearing, and that  
18 is that you have asked for a moratorium on the operating  
19 licenses of nuclear power plants. You said no operating  
20 licenses will be issued, in your recommendations, unless these  
21 three criteria are met, and they are tough critieria. So this  
22 indictment, which is your word, is, in effect, a moratorium,  
23 and I think the newspapers missed it. It is actually a much  
24 more tough one than Congressman Markey is going to propose in  
25 the House because this could go on for a number of years meeting

1 this criteria. Did anyone in the White House ask you or  
2 suggest to you not to use the word "moratorium," because you  
3 have?

4 Dr. Kemeny. No, sir. As a matter of fact, may I say  
5 for the record, during the entire period of the investigation,  
6 from when we were first appointed, at no point did either the  
7 President or any member of the White House try to influence  
8 on anything that should or should not be there.

9 I wish to say on that particular one, I think it is, within  
10 the Commission, a semantic problem as to what people have their  
11 own feeling about.

12 Mr. Weaver. I see that.

13 Dr. Kemeny. It was a difference between a moratorium  
14 that is across-the-board versus what you are describing as  
15 a moratorium, which is a case-by-case basis, which has a  
16 different effect on which we all agree.

17 Mr. Weaver. On a technical matter, Dr. Kemeny, did you go  
18 into the background of the operators of Three Mile Island?  
19 The one thing in my investigation about this was a very  
20 interesting thing; most of them had the same training.

21 Dr. Kemeny. From the U. S. Navy.

22 Mr. Weaver. In other words, they were highly trained.

23 Dr. Kemeny. Sir, could I say something on that. We did  
24 have, some of us, a conversation with Admiral Rickover, who is  
25 a fascinating person. I will tell you something very



1 interesting, and we have checked this. A company cannot get  
2 the record of an individual in the U. S. Navy without a  
3 release of the employee, and this company does not require  
4 such a release. We were alerted to that by Admiral Rickover,  
5 and, therefore, I know that the Navy program is a superb  
6 training program, from all I have heard about it. And I am  
7 sure there are superb people there. Don't misunderstand me.  
8 I am just saying if you have not looked at the complete  
9 record of an individual, how do you know that was a superb  
10 product of the U. S. Navy or somebody who has flunked out? I  
11 claim they just do not know.

12 Mr. Weaver. Mr. Chairman, I have one final question, and  
13 that is in my estimate more significant. It was something  
14 that came out in my investigation at Three Mile Island, that  
15 came out almost by accident in questioning various people,  
16 the NRC and engineering firm. I was curious to know if you  
17 developed the same thing, because it was almost an accident.  
18 What would happen to a nuclear plant such as Three Mile Island  
19 if there were a power failure, if they lost their electricity?

20 Dr. Kemeny. I believe I am going to have to ask staff  
21 to respond.

22 Mr. Weaver. I know Mr. Taylor knows.

23 Dr. Kemeny. I believe that is one of the things they are  
24 required to check out during the licensing process.

25 Mr. Weaver. Check out? We do have power failures in this

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1 country; they have occurred.

2 Dr. Kemeny. Certainly.

3 Mr. Weaver. I am saying what would happen if you had a  
4 power failure at a nuclear plant in the electricity coming  
5 in, what would happen if that failed and the generator failed,  
6 the standby generator failed or were sabotaged?

7 Mr. Taylro. That is two different things.

8 Mr. Weaver. A power failure is a power failure. One  
9 comes from outside the plant into it, from the utility system;  
10 the other is the standby diesels in the plant. A power  
11 failure comprises both. That is one question, what happens  
12 if you have a power failure?

13 Dr. Kemeny. You are getting into things I learned in  
14 the last six months.

15 Mr. Weaver. It is the same with me.

16 Dr. Kemeny. It seems to me several things. For example,  
17 the control rods, if they lost their power, drop in.

18 Mr. Weaver. The answer -- and I have checked this out with  
19 every single top NRC person -- a core meltdown occurs,  
20 irreversible, absolutely and completely.

21 Mr. Taylor. I think that is correct as long as you assume  
22 that no electric power from any source is available to activate  
23 the pumps, the various emergency control equipment, it is  
24 correct. I think it is very important --

25 Mr. Weaver. It is extremely important. I figure it would

1 take about eight minutes to disrupt the power.

2 Mr. Taylor. I was going to say one aspect of that, that  
3 Dr. Kemeny referred to, if there is a total power failure,  
4 the design of the control rod mechanisms are such that those  
5 drop down.

6 Mr. Weaver. You have still 250 megawatts of power. It  
7 is enough to get that uranium oxide up to 5200 degrees. But  
8 that was the most astounding fact I discovered. I was asking  
9 one of the top people in the NRC this question. I said what  
10 would happen. He said, "We would put on the steam system."  
11 I said, "That would have failed because you have no power."  
12 He said, "My God, that's right." He hadn't thought of that.

13 Mr. Taylor. I guess I would have to put in a slight  
14 caveat. I think your answer is correct, but there are some  
15 directions to the high pressure injection system. It may be  
16 a problem similar to the one of our house in Damascus after  
17 we got five inches of snow. We are heated with oil. The  
18 electric power failure triggered an inability to turn on the  
19 oil furnace. So although we are without electricity, we could  
20 not heat the house.

21 Mr. Weaver. I agree, and I went into this with many on  
22 the steam significance. It turned out it is the same way.

23 Thank you, Mr. Chairman.

24 Senator Hart. Are there any other comments?

25 Dr. Kemeny and ladies and gentlemen, you have served not

1 only the President and this country and, in my judgment, well,  
2 you have served in the highest and best traditions of  
3 democracy as responsible citizens. You have the thanks of  
4 the Congress of the United States.

5 With that, the hearing is adjourned.

6 (Whereupon, at 5:45 p.m., the joint hearing adjourned.)  
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