



**SAFEGUARDS, THE PRESS  
AND THE PUBLIC**

**Proceedings of a Panel Discussion**

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**of**  
**'Safeguards, the Press, and the Public'**  
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A condensed version of the INMM panel in New Orleans has been prepared for more concise presentation as a 55-minute film entitled "Safeguards, the Press and the Public" (Available on 16mm film or three-fourths inch videotape cassette). In this condensation of panel highlights, every effort was made to preserve the content, intent and flavor of the New Orleans panel by including the original comments and salient points made by each individual panelist.

This documentary was prepared as a public information service of the Institute of Nuclear Materials Management, Inc., and is available for loan to educational institutions, service organizations, public interest groups, etc., upon request from the Institute.

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# SAFEGUARDS, THE PRESS AND THE PUBLIC

## **Panel Moderator:**

C. Robert Keepin  
Los Alamos Scientific Laboratory

David Burnham  
The New York Times

Thomas Cochran  
Natural Resources Defense Council, Inc.

Victor Gilinsky  
Commissioner, U.S. Nuclear Regulatory Commission

Edward B. Giller  
Deputy Assistant Administrator for National Security,  
U.S. Energy Research and Development Administration

William Lanouette  
The National Observer

Rudolf Rometsch  
Inspector General, International Atomic Energy Agency

Theodore B. Taylor  
President, International Research & Technological Corporation

Carl Walske  
President, Atomic Industrial Forum

Dennis Wilson  
Nuclear Energy Division, General Electric Company

## **MAJOR AREAS FOR DISCUSSION**

### **I. Perspective**

Record of nuclear safeguards performance to date.  
Projections of future safeguards requirements.

### **II. Public/Congressional Understanding of Safeguards Issues**

Media need for correct information from qualified sources.

Media responsibility for objective coverage.  
Public and congressional understanding/decision-making based on facts rather than emotion.  
Freedom of information; value/limitations.  
Accountability; terminology and jargon (e.g., MUF vs loss vs theft).  
Relation of safeguards to radiological safety.

### **III. Current and Future Safeguards Capabilities**

Physical security; transportation safeguards.  
Safeguarding nuclear facilities; in-plant materials control.  
Role of advancing safeguards technology; new plant design.  
Cost effectiveness of safeguards; risk/benefit considerations.

### **IV. Government Policy & Regulations: Industry Response**

Current regulations for industry, government sectors.  
Safeguards-related issues:  
Federal response to theft/sabotage/threats.  
Federal vs private guards for industry.  
Personnel security; societal/civil rights issues.  
Safeguards and plutonium recycle (GESMO, etc.).  
Siting policy and colocation vs transportation safeguards.

### **V. International/National Safeguards Systems**

Nuclear proliferation issues; IAEA safeguards as a deterrent to proliferation and nuclear material diversion.  
Interface between international and national systems (U.S. export controls).  
National vs subnational diversion; nuclear blackmail, terrorism, etc.

Need for equivalence of safeguards and security measures for economically viable, safeguarded nuclear fuel commerce on international scale.  
IAEA safeguards and inspection in the United States.

**DR. KEEPIN:**

Good afternoon, ladies and gentlemen. I'm Bob Keepin of the Los Alamos Scientific Laboratory; as Panel Moderator I'd like to welcome you to this INMM panel discussion on the timely topic, "Safeguards, the Press and the Public."

Nearly a quarter of a century ago, Albert Einstein said, "The maturity of nuclear power will ultimately be decided in the village square and in the town hall." Indeed the real maturity of almost any system—technical, political, social or whatever—is ultimately dependent upon the level of public acceptance it achieves. Einstein's words turned out to be very prophetic indeed, as witness this public panel for example, and on the larger nation-wide scale, the great debate and controversy that is now raging in our country, and elsewhere around the world, over nuclear power. Although there are other issues in the nuclear power controversy (notably safety and waste management), this Panel will focus directly on the key issue of nuclear safeguards and specifically on the topics that we've delineated on the Panel agenda sheet (see Table I). These are the topic areas with which we will concern ourselves; and I'll be sort of hard-nosed about straying beyond these, because we believe the agenda items as set forth represent a fair and reasonable delineation of topic areas.

At this point I would like to introduce the Panel members. Proceeding from your left to right, first, we have Mr. David Burnham of the New York Times; next, Dr. Thomas Cochran of the Natural Resources Defense Council, Inc.; next, Dr. Victor Gilinsky, Commissioner of the U.S. Nuclear Regulatory Commission; next, General Edward B. Giller, Deputy Assistant Administrator for National Security in the U.S. ERDA; next, myself, Bob Keepin from LASL; next to me, Dr. William Lanouette of the National Observer; then, Dr. Rudolph Rometsch, the Inspector General of the International Atomic Energy Agency; next, Dr. Theodore Taylor, President of International Research and Technological Corporation; after him, Dr. Carl Walske, President of the Atomic Industrial Forum; and lastly, Mr. Dennis Wilson, Nuclear Energy Division of General Electric Company.

Now, a word about the Panel format. We have much material to cover—much too much, in fact, for an hour and 45 minutes, the scheduled time for this Panel. We'll simply try to do the best job we can in the limited time available, and we'll proceed as follows. There will be a 3-minute opening statement from each of the Panelists; this will be followed by a 40-45 minute discussion period among all Panelists, and then for the last 40-45 minutes I'm going to open the Panel to questions from the floor. Now, we are video taping this entire session; and, to ensure an accurate record, we ask that all

questions from the floor be submitted in writing on the forms provided. To ensure that we stick to the subject area, "Safeguards, the Press and the Public," all questions should be in one of the five areas delineated on the agenda sheet (Table I).

We will now proceed from left to right, and I will ask for a 3-minute statement from each of our distinguished Panelists.

**MR. BURNHAM:**

I assume we don't have to follow the numerical order of the agenda sheet, so I will talk about my perception of Topic II including the subtopics: media need for correct information, media responsibility for objective coverage, and freedom of information. Perhaps it would help you a little bit to see the way I see myself. I am not an expert in science and technology. That is not my assignment or my goal. I was assigned to come to Washington to study the government regulatory agencies; how they perform, how they don't perform. The government regulatory agencies obviously include AEC and NRC. Though I have worked in Washington a great deal, my immediate previous experience was reporting, for eight years, on the criminal justice system of New York City. My feeling is that many of the problems of the criminal justice system in New York City—lack of accountability, confused goals, conflicting goals—exist in the same way in the regulatory agencies as they do in the criminal justice system of New York City, which I think everybody knows of by reputation.

Although I don't pretend to be an expert in science and technology, it seems to me that it is possible to raise some very tough questions about the performance of the AEC and NRC over the years. Three of the stories I have done have raised these questions. I did a story about how, for at least the last 10 years, the AEC suppressed, i.e. did not publish, many studies which raised questions about the safety of reactors. Now, many people say this has changed, but almost everyone that I talked to, including Dixy Lee Ray and Schlesinger, agreed that it had been a problem. There had been suppression of information. This raises a question for the newspaper men. If there was suppression, then, is there suppression now? Why is there suppression? Whose interest is being protected?

Another story I did raised questions about enforcement. According to the AEC's records, they investigated 3000 facilities of all kinds last year or the year before. They found one or more violations in half the places, and there were five money fines. Why? Why was there such a drop off? Many of the violations obviously are not important, but according to the AEC's own figures, about 50, as I remember, were in the most serious category of violation, and yet there were only five fines. This, to me, raises questions. There was an enormous amount of discretion and judgment involved, and it didn't seem to me that the AEC had explained very well how they chose who was fined and who wasn't.

Thirdly, I did a piece—this is closest to your heart—on MUF. I went to the AEC—I don't believe anyone else has done this—and I said, "How much MUF is there in the United States right now? What companies have been unable to account for this material? When did they announce it to you? What did you do about it? How much is still unaccounted for?" I asked these questions in December. The AEC, NRC, and National Security Council still refuse to answer it; and, as a newspaper man, that gives me great uneasiness about the performance of this group of agencies.

**DR. COCHRAN:**

Last night at the buffet somebody asked me, "What have you gotten out of the meeting so far?", and I had to answer "little or nothing." This is not an implied criticism; it's simply that the vast majority of the papers were on how to incrementally improve safeguards. These are not, I would submit, issues that are of particular interest to people like myself or members of the public at large.

The questions that I have are, I think, more fundamental questions that can best be explained by reading the safeguards objective, which was presented in a slide at a paper earlier this morning. It was stated that "the safeguards objective is to protect the public against unacceptable risk of death, injury, or property damage from nuclear events produced by malevolent use of nuclear materials or sabotage of nuclear facilities." I submit that, as an operational definition, this is not a very useful objective. It doesn't tell you what is an acceptable level of risk, particularly in terms of providing adequate safeguards.

One has to look for answers to more fundamental questions, and I jotted down last night a few questions which I will review in the remainder of my time. They are by no means conclusive.

What is the nature and magnitude of the threat posed by terrorists and black marketeers? What are the factors making terrorists' threats increasingly real and potent? What efforts have been or are being undertaken to systematically investigate terrorism as an aspect of politics? What's in store for the public if the industry's or the NRC's untested proposals do not work? What efforts are being undertaken to systematically investigate the difficulties in developing adequate safeguards? What will be the effect of adequate safeguards on personal privacy and civil liberties? Will the NRC after one or two years of study be able to state with clarity and precision exactly what additional safeguards measures it considers essential and the level of protection such safeguards would provide for the public? With respect to the latter, how much missing or stolen plutonium is acceptable? How large a plutonium black market is acceptable? How many illicit nuclear weapons and nuclear bomb threats are acceptable? How many nuclear explosions are acceptable? In other words, are we promoting an industry with a zero-risk safeguards system? If the answer is negative, if we're promoting an industry with greater than zero risk, what

level of risk is considered acceptable in terms of the amount of plutonium stolen, the size of a plutonium black market, the number of terrorist and other incidents involving illicit uses of plutonium and other radionuclides? Assuming an adequate safeguards program can ultimately be designed on paper, what assurance can be offered that such a program will be implemented with perpetual vigilance and without corruption? With respect to the safeguards force needed, including the secretaries, chemical workers, guards, electricians, black-hat forces and supervisors, et cetera, can such a group be expected to maintain a high level of commitment and dedication indefinitely? How can these groups avoid the corruption that has plagued our police departments and the highest levels of government? Does anyone really believe that simply higher salaries is the answer? Will the Federal Government need to establish a fund to buy back stolen plutonium most likely above black-market prices? Will this further stimulate a market for plutonium?

I could write a similar list of questions on the International Safeguards issue. These types of questions go to the heart of defining operationally an adequate safeguards system. The public, at least I, would prefer to see the members of this Society address these issues, in addition to the issues addressed at this meeting. One might interpret the issues presently being addressed as being limited to fulfilling an NRC ratcheting process of upgrading the safeguards program.

**DR. GILINSKY:**

Because I sense some uncertainty in the mind of the public concerning where our writ begins and where it ends, I think it would be most useful if I would briefly outline the statutory responsibilities of the Nuclear Regulatory Commission. It is, as you know, an independent regulatory commission, partly a creature of the Executive Branch, partly a creature of Congress. We're still a new organization. We came into being in January of this year, upon the demise of the Atomic Energy Commission and simultaneously with the Energy Research and Development Administration represented here by General Giller. The Energy Reorganization Act of 1974, our version of Genesis, stated first: "The Congress finds it is in the public interest that the licensing and related regulatory functions of the Atomic Energy Commission be separated from the performance of other functions of the Commission." The Act goes on to say, "There are hereby transferred to the Commission (that is, to the Nuclear Regulatory Commission) all the licensing and related regulatory functions of the Atomic Energy Commission."

Most of these functions are fairly obvious; the licensing of reactors, fuel-cycle facilities and materials, with regard to safety; protection of the environment and safeguards—safeguards being the matter of most interest to us here today. Since the matter of U.S. nuclear exports has been mentioned by a number of speakers at this meeting, I think it's useful to indicate

that the NRC has also inherited the export licensing function. We expect to rely to a considerable extent on information supplied to us by the Executive Branch, and the collective views of the Executive Branch, as transmitted to us by the State Department. However, the law charges us with making an independent and final judgment on each license. Altogether, if I may oversimplify somewhat, in safeguards, as in other matters, the NRC has responsibility for the commercial sector, ERDA has responsibility for the government sector. There are some exceptions. For example, the NRC has licensing authority for the breeder demonstration plants and other ERDA demonstration reactors, as well as high-level waste-storage facilities. Finally, we have been charged by the Act with a sweeping review of safeguards, broadly defined, in the license sector. We have several studies underway in this regard. In particular, we have been asked to report back to the Congress in January 1976 with an assessment of the need for, and the feasibility of, establishing a security agency within the NRC for the purpose of performing the safeguards function. There are a number of other details, but I think that pretty well sums up our role.

**GEN. GILLER:**

I thought I might try to summarize the basic points of my somewhat longer presentation on Wednesday morning regarding the interlocked nature of domestic and international nuclear power. I would like to start with the fact that there is an energy shortage of growing proportions in the world. It seems well accepted that the present cost and the present forecast of the shortage of fossil fuel is such that there can be little doubt that many nations must increase their reliance on nuclear power. There seems to be little other choice, certainly before the year 2000. I think Japan is a prime example. Where else are you going to find an independent source of energy on the island of Japan? Italy is another country following suit.

Such a growing energy generation system obviously requires availability of very sophisticated machinery, such as uranium ore enrichment, reprocessing, besides the reactors and the support machinery that goes with it. Many nations, even though they might desire a complete domestic fuel cycle, do not have the wherewithal in money, technical or natural resources. There has developed a very large interlocked international trade, and it can only grow larger, and it is going to be in the scores of billions of dollars.

All of the above is certainly overshadowed by the international concern for weapon proliferation by both national and subnational groups. The not-inconsequential matters of waste disposal, safety and environment are also involved. This situation has generated, and requires the generation of more, complicated treaties and agreements with all the attendant national controls which are based on differing perceptions of the seriousness of the problem. We must understand that the rest of the world does not think like

we do, and all our logic is, in some cases, of little avail across the ocean.

The U.S. has been, and is, a world leader in ideas for the exploitation of nuclear energy, starting with the atoms for peace program, and our promises in Article 4 for the NPT, for instance, and our major support to IAEA. These are some examples. We are also a major supplier of reactors and enrichment services; and we have also made available a considerable amount of nuclear technology, especially in basic research matters. Our largess, and time, have enabled most of the national industrial centers of the world to obtain a similar capability. The rest of the world is now capable of supplying itself with all the requirements for the nuclear fuel cycle.

Our President has recently re-stated the U.S. policy of having a large influence in international matters. This is clearly in the best interests of the U.S. Nuclear power and its attendant questions occupy a major portion of many international activities. These activities are both governmental and private for the U.S., but all of the private programs, as far as the international aspects, have some form of government control through the licensing process or through some other means. Now it seems clear to me, and to lots of others, that if the U.S. wishes to play a leadership role on the international scene, it will have to participate actively in all international nuclear matters. This will require an active domestic industry and the use of nuclear power in the U.S. itself. This requires the U.S. to have joint international policies in export and import of uranium enrichment services. The international policies of waste management and fuel reprocessing are also associated, in a way, with U.S. activities in the same area.

I feel, speaking personally, that there is a lack of understanding of the interlock between domestic and international nuclear matters. It's my belief that when our Congress and the public perceive and understand that the rest of the world can and will go nuclear, this will provide a powerful support to the use of nuclear power in this country. The alternative is to retire from the world nuclear scene and take the consequences of this action, which, in my view, would be much more hazardous than the present course.

As a final reminder, when we talk about international nuclear matters, we become focused on that thought as if all foreign policy revolved around the subject of nuclear matters. We must remember that in dealing with a country, you are dealing with a sovereign state in which that's one of perhaps a dozen major problems or major interface areas and foreign policy is made up of a mixture of all of these. You can't have one foreign policy on nuclear matters, another on military arms, another on agriculture and another one on something else. You must blend these and this requires a very complicated, joint role between the Executive Branch headed by the President, and the Congress. Thus, sometimes policy will not be clear and sometimes mistakes will be made.

**DR. LANOUILLE:**

I'm delighted to be here at what I think is a very important conference. You ladies and gentlemen have a unique stewardship which is very important to the balance that is obviously being struck now over safeguards, the press and the public. I see myself as a translator in this enterprise. I'm not a specialist, but I do try to understand a technical subject and then translate it to readers—telling why it's important that they be interested in this area. I'm going to toss out a few ideas from my side of the pad and pencil about how some kind of mutual trust ought to be developed between the professional journalist and members of the nuclear establishment.

First, I don't think you should lump the press or the media together. They contain very separate and very distinct messengers of very different messages. The half-hourly radio news, the TV with a need for visual coverage, the daily or weekly or monthly publications all have different audiences, different problems in covering stories, and different services. They also popularize at very different levels. Each has to try to take a familiar topic and then translate it to a very different audience.

Second, try to take time with interviews. If you don't want to discuss something for security or personal reasons, just say so. A cock-and-bull story or a vague reply will usually lead a good reporter to dig deeper and to mistrust everything you say after that. Trust is the most important thing that the nuclear materials managers and the press have going. Let's not abuse it. We must have mutual trust on a day-to-day basis while covering routine stories, because if we ever do face a serious terrorist or accidental situation, then our work together is going to be one of the most important aspects of protecting the public. I think that personal and professional integrity and trust for one another can only be built up in routine ways. It's not going to come all of a sudden when there is a threat on New Orleans from some terrorist group.

Third, when you're through answering a reporter's questions, try to ask a few. This will let you know how well he's understood your answers, what his level of understanding is in the field, and what his personal views are. Also, he's probably talked to a wider variety of people about your subject than you usually do, and he might fill you in on what the heads of other departments or congressmen or private industry spokesmen or nuclear critics are thinking. Your dealing with the press should be a two-way exercise.

Fourth, if you think a reporter is doing a good job or a lousy job, then tell him and his editor about it. Most reporters take great pride in their work and try hard to understand your technical field. Any letter to the editor, who is his boss, will probably have impact. On the other hand, if you dislike what a good reporter is saying, I wouldn't try to mount a campaign trying to discredit him the way, say, President Kennedy did when he was having trouble with the New York Times'

Vietnam coverage back in the last decade. That can backfire in a very painful way. Most reporters, as I say, take great pride in their work. They consider themselves professionals, and they are judged by their peers on professional standards. Your praise or censure of a reporter's work is important, not only to him, but to maintaining a high standard of news coverage.

Fifth, avoid professional arrogance. The technology-fix mentality has led us into a lot of trouble in the past, and I don't think we need it now. "If we spend enough money and study this issue hard enough and put enough people on it, we're bound to come up with a technical solution." We've heard that for a long time. Sometimes it has worked and sometimes it hasn't. This mentality can allow you or other professional people to mislead policy makers by putting them out on a limb, by saying, "Let's get another appropriation and we'll oversell this program and Congress will be with us." You may find yourself being called up on the carpet 10 years later with a program that doesn't work.

Sixth, be careful with initials, shorthand phrases and technical jargon. To the public these words can be scary when they should be reassuring and innocuous. If you're trying to describe something that's terrible, describe it as something that's terrible. Don't use some euphemism so the the public is misled. Similarly, if a reporter is using a loaded word when it's really a rather innocuous subject, try to make sure that he understands the difference. Try to explain what these terms mean to you as a professional. Whether or not they have much impact on the public, the reporter will at least understand how you're using the jargon. He'll then decide whether it's important to use these words in a story.

Recognize the reporter as a translator from one world to another. Tell him the problems of your job and also respect the problems of his: limitations of time, limitations of space, and the need to appeal to a diverse audience. Ideally we try to write a story on several levels at the Observer, so that the general public can understand a topic but the professional can also learn something that he probably hasn't picked up in his journals. I think if you help a reporter see the popular, the technical and the professional levels of a topic, it's a big help.

**DR. ROMETSCH:**

Being responsible for the implementation of safeguards by the International Atomic Energy Agency, I feel the need to explain the difference between these international safeguards and what in this country is normally meant by the term "safeguards" and often called "domestic safeguards." A state's action to control and protect nuclear material may go as far as the power of the government reaches; it is designed to prevent any misuse of nuclear material and includes its physical protection. International safeguards and inspection have, naturally, quite some other limitations, mainly those related to national

sovereignty. They are designed to detect diversion of nuclear material from peaceful utilization. In fact, international safeguards of nuclear activities provide for the first time in history an important peaceful infringement of national sovereignty by allowing international civil servants to inspect regularly an essential part of the power industry in many countries all over the world. It was and is, therefore, necessary to lay down in safeguards agreements, carefully and in great detail, the rights and obligations of both the states and of the International Atomic Energy Agency which is doing this inspection work.

We have, this year, some 80 such safeguards agreements in force. About half of them are with states party to the nonproliferation treaty; and the safeguards agreements have taken, accordingly, the form as required by that treaty. In 1974, nearly 600 inspections at 172 facilities and over 100 other locations where nuclear material is kept have been done by Agency inspectors. These inspections covered some 6000 kilograms of plutonium in different forms, some two million kilograms of enriched uranium and some four million kilograms of natural uranium. In some cases we did detect statistically significant amounts of nuclear material missing. None of those cases, however, was considered to be of such importance that it triggered the non-compliance procedure ending up in a discussion in the Security Council with the necessary world-wide publicity. But of course, that involves judgment: what amount is sufficiently important to make a non-compliance case?

I can give you an example: We have detected that about half a kilogram of enriched uranium, containing some 100 grams of  $^{235}\text{U}$  is missing at a certain facility. We have proven, by investigation and re-investigation, that it is really missing and has, in fact, disappeared. We have taken the necessary action to inform the State about it, but we have not considered it necessary to make out of that a non-compliance case.

**DR. TAYLOR:**

I want to focus on two closely related issues that fit squarely under the title of this panel discussion. The first is this. How effective should national and international safeguards of special nuclear materials be? I'm convinced, on the basis of rather detailed study, that at costs less than 2% of the cost of nuclear electric power, all prospective nuclear power fuel cycles world-wide could be effectively safeguarded. By this I mean that the risks of theft by terrorists or criminals of sufficient quantities of special nuclear material for efficient explosives, or of undetected diversion of a weapon quantity of special nuclear material by nations, or of sabotage of nuclear facilities that would release large amounts of radioactivity that would endanger the public, could all be reduced to levels that I would find acceptable.

But what about other people? Given the same facts, others may disagree. What risks are acceptable? I echo the question that was raised by Tom Cochran. How can

the general public arrive at a consensus of specific objectives of safeguards and whether or not these objectives are being met world-wide? If there is no clear consensus, who should actually decide what to do and under what authority? I have no definite answers, but I am convinced that there is no way that these issues can be resolved without public discussion of detailed, accurate information. This information will be provided largely by responsible reports from the different components of the media concerning these risks; what has actually been done to deal with them and what actions are being proposed to reduce them further.

The second issue is this. The hazards of terrorism, blackmail and war could all escalate greatly by the use of any of a large number of modern products of technology. In some cases even naturally occurring materials that are potential chemical, biological or radioactive (but not special nuclear material) agents of destruction could be used. Plutonium is highly toxic, but not as much so, or as easy to acquire, as a large number of other potential agents for producing extensive casualties and property damage over large enough areas so that they qualify, I believe, as weapons of mass destruction. Some of these agents occur naturally or could be made easily by clandestinely run operations. Others would have to be stolen but are not now subject to physical security safeguards of any kind.

What is to be done about such materials? If this is to be a subject of public debate, as I believe it is, how much information concerning the possibilities for destructive use of anthrax, nerve gases, cobalt-60, plutonium, or a long, long list of other possible agents should be presented to the public in forms that will allow easy quantitative comparison between them. A great deal of this information, though often fragmented, is already in the public domain. Perhaps I'm too pessimistic, but I believe that some of these agents will be used, as they have not been before, for destructive purposes in the future. If we are to reduce this likelihood by actions that are practical and rationally balanced, we must not focus on only one or two of the risks and ignore all the others. This is an immense and very complicated job, but I believe it must be done. Responsible accurate reporting by the different components of the media can play a critical role in this task.

**DR. WALSKE:**

I believe that the industry is now working, in partnership with the government, to move as rapidly as possible toward the safeguards system which will satisfy our nuclear power requirements in the mid-80s and 90s and beyond. Surely we have more to do, and I believe that we know what must be done. It's a matter of doing it and getting it in place in time so that it will be there when we need it. The record to date, with regard to safeguards, is essentially perfect. We have had no diversions; we have had no attacks; nothing is missing. I think that's important. It applies to an ex-



perience of some 30-odd years in the military and many fewer years on the civil side. At the same time, that's not a record on which we can stand. We have to realize that in the future the nature of the problem will grow. There will be more materials to deal with, more shipments to deal with, and more must be done in order to meet the requirements of the increased risks that will accompany that situation.

Now, the basic question that we all face is, is it possible to design an adequate safeguards system at an acceptable economic cost? Ted Taylor has just given you his opinion that it could be done for something less than 2% of the cost of the electricity produced. I might point out in that connection that the benefits from reprocessing fuel from light-water reactors and recycling the plutonium from the fuel back into the reactors, as well as recycling the unburned enriched uranium, is equivalent to about 5% of the value of the electricity produced. If we put those two numbers together, this would say that adequate safeguards at a reasonable cost are possible. I believe it's terribly important that we settle this question to the satisfaction of the public and the satisfaction of the people who are involved in the design of safeguards systems so that it's not an issue for any undue length of time. The Atomic Industrial Forum, with which I am associated, is going to do all that it can to try to settle that issue just as soon as we can.

The question has been raised as to what risk is acceptable. It's a very difficult question. Obviously a zero risk is acceptable, but in all of life, and particularly in modern life, zero risks are very unusual. I believe that an acceptable risk should be a risk of such low probability that it does not in itself greatly increase the hazards that we have from other sources. Furthermore, before we accept any risk over which we have a control, we should determine that the benefits associated with that risk justify it.

**MR. WILSON:**

By now it is obvious that among the more pressing issues in the evaluation of the nuclear industry is the question of the nuclear community's ability to safeguard, control and manage special nuclear material (SNM) and especially plutonium, in today's political and social environment. While technology for the commercial use of SNM is being developed at space-age speeds, it is not evident that public assurance has been obtained that the benefits associated with its use are sufficiently great to overcome any risks involved. Therefore, it is an absolute necessity that we, in the industry, provide the proper technical assurances that the use of SNM can be accomplished with reasonable certainty of overall benefit to society. With this charge comes the responsibility to provide factual and appropriate information for use by competent non-industry reviewers. Of equal importance is the role of these competent reviewers or critics who can provide independent and responsible comment, either criticism or praise. It is absolutely incumbent upon these

reviewers to be knowledgeable in the subject and in turn to be factual and objective in offering comments or criticisms.

Now, in a position somewhere between the knowledgeable safeguards technician and the capable safeguards watchdog lies a vast majority of our society. They have a right to be made aware of things which can affect their lives for good or for bad. It is mandatory, therefore, that fair and factual information reach them through the news media, and herein lies a great challenge for the professional reporter. Sensationalism and scare tactics usually make bigger headlines (and probably should do so, if factual), but they frequently provide a grossly distorted picture. On the reverse side, milquetoast optimism may provide an equally distorted picture, although there may be insufficient data on this approach from which to derive a conclusion!

Clearly, then, it seems necessary that the problems, as well as the benefits, of using special nuclear material be made known to interested people. While it is important to understand the problems and risks, it is just as important to place in perspective the massive efforts underway to provide solutions and that solutions are, in fact, being found. The industry must provide continuous factual information, the critics should provide continuous and responsible review, and the press should keep everyone informed as to the correct score. We in industry believe that this system will serve the best interests of society. It is absolutely essential to understand that the problems associated with using SNM are being vigorously attacked and that sound and acceptable solutions have and are being found. Our whole efforts are dedicated to this goal. After all, we too are part of society.

**DR. KEEPIN:**

Now that you've had a chance to hear briefly from each of our panelists, I'd like to open the discussion to direct panelist-to-panelist interchange. Who wants to lead off?

**DR. COCHRAN:**

I might comment on one statement made by Dr. Walske that the record to date has been essentially perfect. This reminds me of the first little piggy in the straw house before the big bad wolf came. As I read the record, it's not perfect. The industry received a series of bad report cards within a two-year period. Starting with the GAO report of 7 November 1973, there was a subsequent GAO report in April of '74, the Taylor-Wilrich study for the Ford Foundation, the GAO report of October 16, 1974, and the Rosenbaum report of the AEC. All of these reports shared, more or less, a common conclusion; that safeguards were not adequate. So the way I read the record to date is a bit different from the way Dr. Walske reads it.

**DR. KEEPIN:**

Any other questions or comments in the area of the record, or the projections of safeguards demands and requirements in the future? It's not really important in

what order we consider agenda items, but it seems logical that we try to get Item 1,—“the record,”—out of the way first, and then proceed to the other areas, at the panel’s discretion.

**DR. LANOUILLE:**

I have just one recommendation. I feel like a Bible salesman coming up here, but I don’t know how many of you have seen this (holding book aloft). I’m starting to consider it a bible. It was put out by Senator Ribicoff’s committee. It’s called “Peaceful Nuclear Exports and Weapons Proliferation” and the price is right—I think it’s free if you write to the committee. It’s something like 1300 pages and contains some of the essential documents and background articles on this subject. A very heated debate is obviously developing over how we should control nuclear exports. I would recommend to any of you who are interested, not only in the terms of the treaty, but also in some general background outside of your own technical area, that you write to Senator Ribicoff and pick one up. When I say pick one up, it’s a big job (namely, it’s heavy!), but it seems to me the best compendium of related information around. It came out about two weeks ago.

**DR. KEEPIN:**

On this matter of “perfect record,” of course no record in the real world can be absolutely perfect, but I think that anyone who looks at the actual performance record to date has got to give safeguards pretty high marks. That is not say that we don’t face an unprecedented safeguards challenge in terms of exponentially increasing plutonium production, in terms of highly enriched weapons-grade material used in high-temperature gas-cooled reactors and so forth. I think we recognize this challenge and there can be no resting on oars or laurels of the past, however good the safeguards record has been. Maybe it’s not perfect, but it certainly has been pretty darned good.

Now is there anything else that needs to be brought out as regards the record of nuclear safeguards performance to date?

**MR. BURNHAM:**

Isn’t it pretty hard to measure performance if the AEC-NRC won’t tell us what the MUF is? We don’t know. You may know concerning one plant. These people may know according to one plant, but it’s very hard to make the judgment that the record is good.

**DR. ROMETSCH:**

It is quite true that it is hard to judge a record to be good when this judgment has to be based on the absence of a record. This is not very satisfactory, but such is the scheme with respect to international safeguards: only when non-compliance is detected would there be an action leading to informing of the public.

In order to have a more satisfactory public record of positive findings of the safeguards inspectorate, we are studying the possibility of releasing, for instance, a yearly or half-yearly report on the amount of nuclear

material under control, explaining also the accuracy with which such amounts have been verified. Of course, this would not be without danger. The accuracy of verification could be misinterpreted. And we could never give information related to a particular facility; that might betray proprietary or otherwise confidential information. Therefore, we are trying to group the results together in one amount. In this way we hope to be able soon to provide quantitative information on positive safeguards findings which should be known to the public.

**DR. TAYLOR:**

Bob, may I also comment on this matter of the record?

**DR. KEEPIN:**

Please.

**DR. TAYLOR:**

I think there is something of a semantic difficulty in this discussion. I believe that the record is perfect insofar as I’m aware of no actual thefts or national diversions of any material. In another way, however, the record is quite imperfect, and let me illustrate that by an analogy. Suppose that you live in a house in an area with a very high burglary rate. You leave your doors open and you don’t take any measures to keep the house secure. Houses all around you get periodically robbed, but you don’t, in spite of the fact that you violated all the rules of sensible behavior with respect to preventing burglary. Well, I would say you’re simply lucky. I think it is a matter of record that with respect to the actual implanted physical security measures at nuclear facilities in the United States there has been a level of security that would not have stopped, by any stretch of the imagination, the kinds of attacks that have taken place in the past on other valuables. The fact that, as far as I know, no material has been stolen means that, basically, we have been very lucky. That situation is changing dramatically and we’re now relying on a great deal more than luck. But we have a long way to go, and all I keep urging is: let’s not push our luck too far!

**DR. KEEPIN:**

On the question of MUF—the record, the significance of it—do we have other commentary?

**DR. COCHRAN:**

I would like to ask Dr. Rometsch to tell us a little more about his one kilogram. What was the enrichment, what country, what facility? What can you tell us about it, so we can find out how perfect the record is?

**DR. ROMETSCH:**

What I’m able to tell you, I have told you. It was not one kilogram; it was 500 grams. It contained 100 grams of <sup>235</sup>U. I certainly am not allowed to tell you which country and what kind of facility. I can tell you that it is clearly established that our inspector has detected that this material is missing and has, after re-investigation,

the proof that it could not be found again. Judging from the quantity, we have decided that no further action is necessary.

**DR. COCHRAN:**

Was it the United States?

**DR. ROMETSCH:**

No.

**DR. GILINSKY:**

The whole question of MUF is a difficult one, and I think it's useful to keep in mind that one is talking about inventory discrepancies—the difference between what is supposed to be on hand on the basis of book values, and what is actually measured through physical measurement. I think one has to admit frankly that there are many deficiencies in the accounting systems we have had in the facilities, at least in the licensed facilities. For the moment we are, in effect, relying on a combination of measures, partly material accountability (which, incidentally, is becoming greatly improved) and partly physical security measures (controlling access to the material, controlling people coming in and out of the facilities and so on). Our confidence about whether or not material has been misappropriated is a combination of what we know from material accountability and what we know about the control of the facilities. Again, I would stress that we are really talking about inventory discrepancies. MUF somehow has an extra ring to it, which perhaps is unnecessary. In regard to what Dr. Rometsch said, I think it would be appropriate if we followed a similar practice here. I think that the public certainly deserves to know the state of affairs with regard to material accountability in our licensed sector. I think it would be appropriate for there to be, say, an annual or semi-annual report in this regard.

**MR. BURNHAM:**

Company by company, sir?

**DR. GILINSKY:**

Well, it's interesting that you ask that because whether it's facility by facility, or company by company is something that one needs to discuss. But I think it is important that people have an idea of what the state of affairs is to an extent such that they can reasonably make decisions about nuclear energy and continued reliance on nuclear power.

**DR. KEEPIN:**

On this matter of MUF, we have received a question from the floor which deals specifically with MUF. The question, which is addressed to me, reads as follows: "Does the terminology MUF—materials unaccounted for—really mean what it says?" Well, frankly, I have always felt that MUF, and the connotation it carries, is a very unfortunate misnomer, and I much prefer the term BPID—for Book Physical Inventory Difference—that

was used back in the 50s by the AEC for this quantity. The term MUF (of BPID) is defined as the difference between the book inventory and the physical inventory in a given material balance area, or the aggregate in an entire plant. Now the book inventory is what you're "supposed to have" in a plant, taking account of what you had at the beginning of the inventory period, plus the receipts, minus the shipments during the inventory period. The physical inventory, on the other hand, is what measurement shows you "actually do have." Generally there will be a difference between these two quantities because everything has to be measured in taking a physical inventory and there will be associated measurement uncertainties. There will also be in-plant holdup of material, some of which may not be measured, and herein lies the biggest bugaboo and misunderstood part of MUF. Let me illustrate by reference to a chocolate factory; clearly you are going to have chocolate sticking to the sides of the vats and to the beaters and the process equipment generally—and that's what we call in-plant holdup. Clearly this chocolate isn't easy to get at, much less steal, because it is thinly smeared inside the process equipment in the plant. Consider now a nuclear plant which handles material that is vastly more valuable and strategic than chocolate; if any in-plant material (e.g., holdup) is unmeasured for any reason, it becomes, by definition, a part of the plant MUF (or BPID). In fact, one of the largest components of MUF can be, and often is, just this type of unmeasured in-plant holdup. It is clear, therefore, that such holdup material must be quantitatively measured in order to reduce MUF and close an accurate material balance. Again, by way of illustration, in a gold or platinum casting plant there must likewise be very careful measurement and accounting for the valuable residues and smearings inside the plant's casting and processing equipment.

Besides the two sources of MUF I've just described, namely measurement uncertainties and in-plant holdup, there is a third source of MUF, which is called "unauthorized removals." If the first two sources are carefully determined through effective in-plant measurement, then one has an incisive handle on the third source, namely unauthorized removals—i.e. material which has, one way or another, gotten outside the plant (through theft, diversion, human error, etc.). Thus by taking full advantage of timely and detailed in-plant materials measurement and control systems, the plant manager can pinpoint any lost, stolen, or diverted material in an accurate and timely fashion.

Clearly then, MUF shouldn't *a priori* be equated to "material unaccountable for" or material "lost," or "stolen," or material that is "ready to be made into bombs," or any other such highly pejorative connotation. As already noted, MUF, by definition, is simply the difference between book inventory and physical inventory, hence the literal term BPID—Book Physical Inventory Difference—is strongly recommended to replace the misnomer, MUF, because BPID

tells exactly what we're talking about with no overtones or connotations—pro or con.

Well, moving on to other areas, questions?

**MR. WILSON:**

I would like to direct a question, if I may, to Dr. Lanouette or Mr. Burnham regarding the sources of information that are sometimes used by the information media. The question I have is, how does one know from a reporting standpoint whom to go to to get an answer, and how when one gets the answer, that it gets translated as we'd like it to be translated, in factual form? Dr. Lanouette gave us some suggestions in his opening remarks, but he didn't really address the issue of finding the right source and verification of the sources. Could one of you comment on that please?

**DR. LANOUETTE:**

I'll start. I think what you have to do is separate the job of reporting into several distinct phases. First of all, you have to understand the jargon of the people you're writing about and that's true with international bankers as well as with nuclear materials managers. After you're relatively familiar with what language they're speaking, you try to figure out exactly what questions you want to ask the specific person you're going to. His title may tell you something. What you've read from newspaper clips or files may tell you something about his area of expertise. So you try, just to save time and not to confuse yourself, to line up the types of questions you're after with the people who you think are best capable of answering them. At the same time, one technique that I find very useful is to ask people, "Who disagrees with you? Who do you think is out on a limb? Who's wrong here?" Or I say, "Well, so and so has said this; what do you think?" In this way I understand where, in the spectrum of information I'm after, this person stands. Everybody has his own axe to grind, has his own job to protect or his own appropriation to enhance or whatever he's trying to do. Obviously you're not going to get somebody spilling his guts out and confessing, "Well, yes, I've been withholding this information for so long and here it is." That's not how investigative stories come about. But if you find a great discrepancy such as somebody who, by his title, by his professional training, ought to know this and instead he's talking like a two-year-old; then obviously either he shouldn't be in the job or he's hiding something. It's a matter, I guess, of trial and error; of trying to seek out the best person for the best answer; trying to compartmentalize the process of informing yourself and then turning around and trying to translate it.

I have one big problem in trying to decide in any presentation, pro and con, what criticism is valid and what defense is valid in reply. This is probably where I spend most of my time just poring over the material and re-reading quotes I've picked up from people. I think an ill-founded criticism doesn't deserve an answer, at least not in the pages of the National Observer. Similarly, I think a well founded criticism does, and if a person doesn't answer what I consider to be a good

question, then I'll do my best to point out that for some reason he did not answer the question. It's a matter of gathering and sifting the material; weighing in your own mind what's a reasonable question, what's a reasonable answer and then turning around with the craft of writing and trying to present it in a way that a reader will be able to follow you. I find one of the best techniques is to show it to my wife. She asks me about stories, and I say I'm not going to tell her until I finish writing it. Then, if she as a general reader finds it makes sense, I try it out on the editor, and we go from there. But it's a matter, to reiterate, of trying to be as specific as you can in going after the material and trying to be as specific as you can in using it when you assemble a story.

**MR. BURNHAM:**

I would answer that you need multiple sources. I distrust any story I see which has only one source. If the reporter has talked to several people, he hopefully has several different views. My basic stance, and this is not meant in a hostile way, is one of distrust of everyone. And I say this about myself. I'm going to put my best foot forward; and, if you come to me and say, "How are you?", I will probably say, "I'm great." I may have had a huge fight with my wife and maybe I just bounced a check, but I'm not going to tell you that. That's a human, natural, thing. It's not a wicked thing; it's not an evil thing; it just happens. So when I have an interview with anybody who's defending his bureaucracy or his family, I really look at him with some distrust.

**DR. TAYLOR:**

May I ask a question? On this last point you made, Dave, I have an impression and I'm not certain it's right. If it is, I'd like to get some comment from you and Bill (Lanouette) about why it's true; or if it isn't, maybe some comment about that. I have a very strong impression that when someone sounds defensive about his record, he's mistrusted, but that when he attacks someone else's record, he is not quite so mistrusted. I think we have all been exposed to this to the point that most of us are sick of it: this polarized state that people are in when they face each other as antagonists on television screens, and things turn into a shouting match, and so on. I'm very curious about how, as reporters, you deal with situations where someone says, "Our record has been great," and someone else says, "It's been awful; and the public interest has not been served; and, in fact, some of these people are just plain evil." How do you cope with those situations?

**MR. BURNHAM:**

It's very, very difficult. Your point about not being too defensive was exemplified, it seemed to me, by Pres. Ford last week when he announced the CIA report. He was asked, "Are you withholding the business on assassinations because it's politically difficult?", and he said, "Yes. Yes, it's politically difficult. I don't want to offend the Kennedys." He said it on national television. That totally defused that issue.

It was, I think, a remarkably canny way of handling that problem.

**DR. LANOUILLE:**

I'd like to second Dave's comment about mistrusting everyone and also answer Ted Taylor's question. I think if anybody strikes either extreme, if he is either too defensive or too antagonistic, you begin to think of him as a kind of "true believer," and you would mistrust that. I think you can pick this up in the idiom of speech, in the adjectives a person uses, how often he smiles at you, and whether he looks you in the eye. This is where journalism becomes very personal. But if somebody makes a very strong attack, and then you ask him two or three more questions and he repeats his very strong attack; then you feel that you've got a bit of a showman on your hands and you'd like a little more information. The same is true when somebody is too defensive: "Well, we told you so because we're the experts. You have to believe us. We keep the books," that sort of thing. So I think that it then becomes a very personal, and as Dave (Burnham) said, a very difficult job of deciding how credible this person is. I don't think, though, that just because somebody's defending, he's mistrusted more than if he's attacking. It's usually a better news story if somebody's attacking, and people under deadline might take an attack and make a news story out of that and then let somebody else catch up with the defense. I think that's probably why attacks are given more attention; they're easier to report; but I don't think that you're mistrusted less if you attack than if you defend.

**GEN. GILLER:**

I'd like to comment from the other end of the telescope. As you said before, the press comes in all versions. There are those who are sincerely trying to understand a complex issue and want to separate the technology and the jargon and the issues and go about making stops at lots of places to understand it. There are also those who come with their minds made up, and the first question is, "When are you going to stop beating your wife?" From then on, you're going downhill. Now, our job as public servants, I guess, is to give equal time to everybody, but it is very difficult to continue to keep your cool and to communicate with someone who is very clearly going away to write something that bears very little relationship to what you think you said. This occurs both in the written word and in the case of television programs. In television most of the story is on the cutting room floor and it becomes even more troublesome there. Should you give your time to various kinds of television scenarios that run 30 minutes in your office for which one minute appears buried in the middle of a program you never see? When you do see it, occasionally, you're so out of context that you say, "That's the last time another bunch will get in my office." Now, I don't know what to do with this problem, but those of us on this end of it have it. Remember there are several thousand of you,

not that we get all thousand of you in our office, but you come every week in one form or another. Maybe that's a plea for mercy. (Laughter)

**MR. BURNHAM:**

I truly appreciate your problem and there, of course, is one solution. Don't be a public servant. (Laughter)

**GEN. GILLER:**

I'm sorry, that's not a solution because there might not be any public servants; or do you want servants that don't say anything? You don't want either one, do you, really?

**MR. BURNHAM:**

No, but I mean the public servant does have a special problem. He is spending public money, and he is responsible to the public. I know we (the press) weren't elected, and there's a lot of problems with us. I didn't mean to be facetious about it. I can understand how annoying it must be, but that seems to be one of the burdens of government.

**DR. LANOUILLE:**

Could I just suggest that maybe you put the shoe on the other foot. What if you had people (e.g., some of the trade journals and some of the in-house organs of the various contractors) coming into your office who constantly had their minds made up that nuclear is the greatest thing since sliced bread. Obviously, they are members of the press too. I think, as far as the responsibility of the government is concerned, that in terms of giving up time to meet with somebody who's going to turn around and report to the public, that maybe it's a kind of onerous but necessary burden that you spend more time with the person who has his mind made up either way. The guy who's going to write about how terrific the breeder is for his contractor's monthly, might be told that some of the stuff that's come out against it might be included in his article too. I think that people with a story to tell tend to find they're telling one side of a story. I think that regulatory agencies are kind of up-against-the-wall in trying to tell a positive story to people who are being negative. But you should spend just as much time, maybe more time, with the person who you think has his mind made up against you than you do with the person who has his mind made up for you, because his story is going to be at such variance with the other story it will look as if they hadn't talked to the same man.

**DR. COCHRAN:**

Could we get on to another subject?

**DR. KEEPIN:**

Yes, Tom, and then I'm going to open the panel to questions from the floor. Many are rolling in and after your comment or question, I will start with the submittals from the floor of the meeting.

**DR. COCHRAN:**

I'd like to ask a couple of questions of Dr. Taylor, who has an adequate safeguards program in his head. First, I would like you to answer the question, "How many illicit nuclear weapons and explosions and nuclear bomb threats are acceptable, in your mind?", and secondly, "What assurances can you offer that your program, that's in your head, will be implemented?"

**DR. TAYLOR:**

Let me try the second one first. It's a little easier. I'm much more optimistic than I've ever been, even more so than two months ago, that the kind of physical security and materials-accountability technical approaches to solving the problem that have looked attractive for a number of years will, in fact, be implemented. I say that because there seems to be a determination on the part of the Nuclear Regulatory Commission, and ERDA, and the general public, that this is something that has to be done. The studies that are in progress for NRC are revealing a lot of opportunities that people hadn't thought of before. This buttresses my own feeling that we can have a very high level of security without infringing on other people's efforts. Now that's a very broad statement, and I'd like to talk very specific examples, but I think we must hold that off.

On the first question of how many real bomb threats I would find acceptable, I would accept a few, in the sense that if it develops across the next 40 or 50 years that nuclear energy is basically quite safe and economical and environmentally attractive. If one or two nuclear explosives go off every now and then as a result, I would find that acceptable **if there are no other much better alternatives that have been pushed out of the way.**

**DR. GILINSKY:**

I wonder if we could turn that around and ask Tom Cochran his point of view on those questions?

**DR. COCHRAN:**

Well, I think we should get the bureaucrat's answer first. That's what we pay you for, you know. (Laughter) My feeling is, I would find one such explosion in a metropolitan area unacceptable.

**DR. KEEPIN:**

Now we'll move on to questions from the floor. This one is directed to Tom Cochran. "I find it puzzling that the media is greatly preoccupied with the safeguarding of nuclear materials used by industry for peaceful purposes, which, for the most part of the fuel cycle, is inaccessible or worthless as weapon material; whereas little is heard about the safeguarding of weapons material by the Federal government."

That, perhaps, should be directed to someone besides Tom. That's to whom it's directed.

**DR. COCHRAN:**

Maybe Gen. Giller could comment on that also. I do not have access to the type of information or the

forums to make changes that I believe are desirable in the military program. There is information available, not very much, that indicates that military safeguards are at least as deplorable as civilian safeguards. Some of this information has been publicized by Senator Symington over the last year. There is really very little I can do about it, because you're always confronted with the classification barrier that prohibits you from delving into the military programs.

**DR. KEEPIN:**

I think you'd agree, Tom, that there has to be some segment of activity where it is necessary, for national security reasons, not to give out production information and even MUF and LEMUF data on, for example, military materials production. That isn't contested, is it?

**DR. COCHRAN:**

I would agree with that, but I don't agree that military safeguards are adequate. I would like to do something about it, but I don't have a forum in which I can.

**GEN. GILLER:**

Well, as one who's been a party to safeguards decisions, I'll have to defend the activities, I guess. Most of the information concerning protection of the military programs is probably in the minutes of the Congress, as well as in statements by some of the congressional members. It was the military side that first recognized terrorism and started to increase its protection. The amount of protection given to military weapons, either in manufacture, in transit, or in place, as well as the material for them, is generating most of the technology which is being made available to the civilian power cycle to use: the special transportation trailers, communications systems and what have you. Like any other system, we don't pretend it's perfect. It varies depending upon where you are in the U.S., whether you're on board a carrier, or in the middle of Europe. But it is the Department of Defense which is responsible for the protection of everything in its custody which is finished weapons. Jointly they have invested a tremendous amount of money. They are doing most of the research and development which is spinning off civilian benefits, so in that case the program is hardening up as fast as it can. There is no question about that. To understand its level would require detailed analysis of the world, in a sense, because you have to go country by country and movement by movement. These things the Defense Department does for itself; I don't think it would be in the public interest to make those data available any more than I want my bank president to make available, on the window of his bank, a wiring diagram for that bank's vault.

**DR. KEEPIN:**

A question for Vic Gilinsky. "Is NRC chartered to develop and publish policy on the level of definite risks

in the safeguards issue. If not, then which government agency is so chartered?"

**DR. GILINSKY:**

I think that in the course of the studies that we're doing, we are going to have to address the question of risks. This is a very difficult question to address. To go back to something that Ted Taylor said earlier, it's as if you had your doors open in a high crime area. Well, we're not even sure we're in a high crime area. We're talking about events that haven't happened. It's very hard to assess the likelihood of their happening, and we certainly want to do everything to avoid their actually happening. But at some point we're going to have to pick, in effect, a standard risk to which we will expect all licensees to defend against. In that sense, I suppose the answer is yes.

**DR. KEEPIN:**

I have another question for Dave Burnham or Ted Taylor. "Dr. Taylor's opinion on the ease of diversion has been well publicized. His opinion that effective safeguards are achievable at reasonable cost has not. Why is this so?"

Why is it that Ted Taylor's views on how easy it is to divert and make bombs are very well publicized? Maybe this is a question for John Mc Phee who isn't here, but how come we don't know as much about his more recent views?

**DR. TAYLOR:**

Let me try answering that briefly. Many reporters who wrote about the safeguards risk in terms of how easy it is to make a bomb and whether or not safeguards were adequate were using facts. That was McPhee's view. When it comes to my talking about "feeling hopeful" about solving the problem internationally because of having been in Vienna for a couple of years and feeling a very strong sense of dedication on the part of the inspectors and so on, that's all my speculation. In the specific instance of John McPhee's writing, he tried to get away from speculation as much as possible, and I've heard other people say the same thing. This was the general tenor of the producer's view in connection with the NOVA television program, "The Plutonium Connection." Now, I think a little bit of speculation crept in there in connection with, for example, Ralph Nader's interview. But by and large, I think the NOVA program was factual. They chose not to exhibit the expressions of optimism and confidence expressed by yourself, Bob (Keepin) and me and by other people. Whether it's good, bad or indifferent, I think that's why.

**DR. KEEPIN:**

I'll try to constrain myself as regards the NOVA production just referred to—but it won't be easy, as I can get quite exercised on that subject. I'll only say that in my opinion, and that of many PBS viewers around the country, "The Plutonium Connection" was a gross and irresponsible distortion of an important and

sensitive national issue; it was nothing short of a disgrace to the generally respected NOVA series and the Public Broadcasting Service (PBS). End of my comment on that subject.

I'd like to move on to a question for Tom Cochran. "When you called for a definition of an acceptable level of risk, were you requesting an absolute number, or a number relating to other societal risks such as the failure of dams, lightning striking and so forth?"

**DR. COCHRAN:**

Both.

**DR. KEEPIN:**

Good short answer.

Another question for Ted Taylor. "You stated that the industry's perfect safeguards record to date is probably due to luck. Do you think that possibly it is not luck, but the fact that the problem of diversion, and so forth, is perhaps not as serious as it is made out to be?"

**DR. TAYLOR:**

That's certainly quite possible. All I'm saying is that one can be lucky for a long time and luck is a matter of degree. If you live in an area that has had no crime rate whatever and leave your doors open, the chances are good that nobody will ever steal anything, but occasionally it does happen that crime starts up in a certain neighborhood. That's happened in our neighborhood. No burglaries until about three months ago, and now everybody's uptight. That's what I meant by luck, not that there has been a very, very likely situation all along and somehow we have dramatically lucked out. I did not mean that at all. It's just that apparently no one has taken it into his head to perpetrate these kinds of crimes.

**DR. KEEPIN:**

The next question is for Dave Burnham. "In the case where a reporter is not an expert in science and technology, especially in the nuclear field, how is the accuracy of technical statements, data, or evaluations verified?"

**MR. BURNHAM:**

That's a good question, and it's very, very, very difficult. I try not to rely on single source reporting. I try to speak to as many people as I can. I welcome people to call me up and say, "Hey, that statement in that article is wrong. It should be so and so." I run corrections, and I'm trying to learn. I am a learner. I guess this is called the Ford defense.

**DR. LANOUILLE:**

I just wanted to add something to that about a technique I find useful. Frequently, as a translator of technical data, if I've spent two hours with somebody on an interview and in the final story I've got quotations sometimes strung together that might take up three or four paragraphs, I may not be sure that one quotation directly relates to another or that the quotes

necessarily need to be combined. I will call the person back. I say, "Listen, you made three good points that are relevant to the theme of the story. May I read you your quote and will you tell me if this is an accurate summary of what you said?" I know full well that he spent 40 minutes on that the first time we talked. So, if it's an area where I've really condensed a lot of material but I think I've got the essence of what he said, I'll sometimes call him back and say, "Does this sound reasonable?"

**GEN. TILLER:**

I think, as a matter of practice, those of us who do give out information are very happy to listen to the final version and see if you've made any error of fact. Very seldom do I get called. When I do, I feel that I have much more rapport with that individual because I've had a chance to tell him, "Yes, those are true facts and I'll back you up on the facts part." I may not like the way he puts it together, but that's another matter. That doesn't happen as often as it might.

**DR. KEEPIN:**

I have another question, addressed simply to "the press." "In general, whom do you trust more for information, government or industry representatives?" (Much laughter)

Answer, "Neither." (More laughter) Continuing with the second part of the question, "Why are government officials quoted more frequently than industry officials?"

**MR. BURNHAM:**

I think government officials are usually easier to reach than industry officials, and they're much more willing to talk to you. It seems that if you call a major company an awful lot of PR men get in the way. That may be one reason.

As far as whom I trust more, I think I'll pass on that question.

**DR. LANOUILLE:**

I would second Dave's comment about the PR men. I find that occasionally the PR network that builds up around a corporation can look like Mt. Everest when you're setting out on a hike. Getting through them can be so frustrating that by the time you finally get to the vice-president with authority, you're so mad that you don't even want to talk to him. I think that this is a serious problem. Maybe you ought to have, in the big corporations, PR people who deal exclusively with the press, and PR people who deal with arranging tours, and PR people who deal with the newsletter. A working journalist who's on a deadline and who wants to get to the guy who's responsible for research in this area doesn't want to mess around with a little background about how important the program is to all the people who work in the plant. So the PR people can be a real problem. I think, the PR people in some of the government agencies are frequently so inept that they would just as soon throw their hands up and say, "Go ahead

and talk to Secretary so and so." (Much laughter) Then you get through to Secretary so and so. I'm not saying all of them are inept, but frequently they are.

**MR. BURNHAM:**

Just one thing. My brother works for IBM. He's a PR man. (Laughter) They had a rule, he swears they don't have it anymore, that anytime anyone in IBM was interviewed about anything, there had to be a PR man present. We had a terrible fight about this, actually. Once, Izzy Shanker, who writes about cultural things, went to see an IBM scientist. The scientist happened to be a poet or something, and the PR man was there for the interview about poetry. I asked my brother, "If you so distrust your people, how can you pay them so much and how can you expect them to be bosses?" He got very angry with me and eventually swore that IBM didn't do this. But I think it does do it.

**DR. KEEPIN:**

Since our time is running very short now, I'm going to take the moderator's prerogative and introduce a subject area that I feel is very important and deserves at least some attention in this panel. The area is international safeguards. I want to say a couple of things about it because I believe very strongly in this.

Safeguards is a global problem. The whole sordid business of diversion, blackmail bombs, nuclear terrorism, etc., is patently a global problem. Materials spawned anywhere on our globe can appear anywhere else as blackmail bombs. So, I would say to the critics and those extremists who would shut down all nuclear power in the United States, that if you had your way, and shut down the entire U.S. nuclear industry, it would have little if any effect on the threat of blackmail bombs and nuclear terrorism in this country. Now I'm not saying that other problem areas might not be ameliorated, but the particular safeguards and diversion problem we are focusing on here is inherently global and simply cannot be solved by unilateral national action—I think just about everybody intuitively recognizes that fact.

The issue of international safeguards has been accorded priority attention very recently by our government in the form of a Presidential message to Congress on May 6, by ongoing congressional actions, by reaffirmed ERDA policy decisions to strengthen the International Atomic Energy Agency. And why that agency? Because that's all we've got in this world as a mechanism to even hope to achieve effective international control and safeguards verification and inspection. The IAEA is subscribed to, and supported by, both the East and West power blocs and it is, in fact, the only mechanism that can realistically implement international safeguards. I would like to take the rest of the time, since we have the Inspector General of the IAEA with us here, to ask his views on how our U.S. national system relates to the total world-wide picture of international safeguards and security against nuclear diversion, threats, and international terrorism.



Who would speak to this on "either side of the house?"

**DR. TAYLOR:**

In connection with your comments, Bob, I'd like to ask Dr. Rometsch a question, because we do, as you point out, have a special opportunity here. Is there any kind of continuing effort within the Agency—by the staff, by the Board of Governors, by the people directly connected with the IAEA—to really try to come to grips, from the Agency's point of view, with this tough matter of objectives in international safeguards? By objectives I mean within the context of detection and rapid reporting and subsequent follow-up of any diversions by countries subject to IAEA inspection and safeguards—either under NPT or non-NPT type agreements.

**DR. ROMETSCH:**

Yes, of course, there is an attempt to do that. But I have to remind you again of the limitations. We are looking primarily from the material accountancy side and from the point of view of applying containment and surveillance. We cannot, as an international organization, deal directly with the very important matter of physical protection. That is a matter for the sovereign state, with its police and other organizations. What we can do in that respect, and what we continuously do, is to formulate recommendations which, hopefully, trigger the necessary action in the state. But we cannot have any police function. That's one of the problems.

Concerning improvement and adaptation of accountancy methods as well as surveillance by automatic instrumentation, we have in the last four years, I believe, made very good progress. We still need to go further with such development work, and we need increased means for doing so.

May I use this opportunity to answer the call of Dave Burnham for corrections, and draw his attention to something in one of his articles which is completely misleading? On the 15th of June, he wrote that IAEA, with a total staff of about 1000 persons, was established to apply international safeguards. I wish to point out that only 100 of those are working in the safeguards field. The other 900 are doing many other jobs, as the International Atomic Energy Agency has objectives other than applying safeguards. I think that is important: we are doing our job at present with only about 100 persons.

**DR. KEEPIN:**

Next I have a question directed to Commissioner Gilinsky. "Would not release of MUF data aid terrorists in perpetrating hoaxes that would be difficult to detect as being hoaxes?"

**DR. GILINSKY:**

This is one of the arguments given for not releasing such information, or at least withholding it for some period. It's one of the considerations in studies now

underway concerning the release of such information. I personally am not strongly persuaded by that argument.

**DR. ROMETSCH:**

May I add a thought concerning this question of acceptable MUF?

We have to consider that there are two different questions of acceptability. One related to the time before anything has happened, before the material balance is closed. In this planning phase no MUF is acceptable; that is, we have to work for achieving a MUF as small as possible. After the establishment of all the facts we have, of course, to judge whether a detected MUF has found sufficient and plausible explanation. If we then come to the conclusion that this MUF is acceptable, this would only mean that we start the next material balance period on the basis of the ending physical inventory of the previous period.

I would suggest a comparison: to plan to kill 50,000 people in automobile accidents next year would be outrageous; everybody would say no! At the end of next year, however, you will accept the fact that it has happened.

I think we have to make a careful distinction between what we can accept *a priori*, to which I would say "nothing" or "as small as possible," and what we might have to accept after the fact as being due to understandable circumstances.

**DR. GILINSKY:**

Could I pursue that, Bob?

**DR. KEEPIN:**

Yes, please.

**DR. GILINSKY:**

The whole question of what constitutes an acceptable risk in anything is a very difficult one to answer. It's very easy to say that nothing more than zero accidents are acceptable. But in the matter of energy we're faced with choices between various sources of energy, and each one of these has associated risks. The risks of nuclear energy have been discussed here today and there are, of course, other ones related to safety which are not the subject of this meeting. But each of the other sources of energy has other kinds of risks. We're all familiar with the political and economic risks of relying on oil, and the dangers of oil spills and their attendant pollution of the ocean. Reliance on coal, which is really the competitor for uranium in the generation of electricity, has other kinds of associated risks. We're all familiar with mining accidents, black-lung disease, the matter of strip mining in the West, air pollution, etc. We, of course, would like to eliminate all of these, but it turns out you have to strike some balance. Conservation, no matter how aggressively pursued, cannot be the total answer, even though we want to conserve energy as effectively as we can. I think what is important is to study these matters and to develop relationships between various types of

measures and their attendant risks so that you have the information to pick a reasonable mix of energy sources. One of the things that we've learned—I hope we've learned—from the past few years where all the predictions about the future turned out to be wrong, is that we need to be flexible. We need to have a lot of flexibility in our energy options; so, given the information we've developed in studies, I think the actual choice or decisions about risks are made in a variety of areas. They're made by the public by the degree to which they accept things, by the Congress in how they appropriate money, and, of course, by bureaucrats too. So I think it's important to keep these matters in perspective; it's a matter of relative risks; there aren't any zero-risk choices.

**DR. KEEPIN:**

I have a last question that is perhaps as good as any to conclude with. This is for Dave Burnham and Ted Taylor, but I'd like to ask Dave Burnham to respond. "What does the public need to know, in your opinion, in order to have confidence about the safeguards record and presumably our national safeguards system? One or all of the following: MUF data, facility security plans, congressional watchdog committees, NRC assurances? What among these would give you the confidence and credibility that would really help this problem of safeguards acceptability and credibility?"

**MR. BURNHAM:**

It seems obvious to me that it would not be in the public interest to release the plans (e.g., for plant security). The MUF information, by facility or by company, would probably not help the public understand, but it definitely would make the companies which are concerned about their public information positions, very, very concerned about this problem. I think it would help if the public knew how much the MUF was, which I gather was the AEC's initial position and then they worried about it and it was referred to the National Security Council. I don't think the plans help. I don't think the public has to see a plan of the Kerr-McGee plutonium facility, which is in, as we all know, the public document room.

**DR. KEEPIN:**

Would any other of these areas, like a congressional watchdog committee, alleviate your concern?

**MR. BURNHAM:**

It doesn't seem to me that the Joint Atomic Energy Committee of the Congress has given us very much of a record as a watchdog.

**DR. KEEPIN:**

But there are, I believe, a few Congressmen whom one could name who have served, and continue to serve, in that function.

**MR. BURNHAM:**

I'm working on a story now about the role of Congress as a watchdog. It seems to me that if you look across the board—at the ICC, at the Maritime Commission, at the Federal Communications Commission—it would give you very little faith in congressional watchdogs.

**DR. KEEPIN:**

I'd like to conclude with an observation concerning the kind of press-government-industry interaction we've seen here on this panel today. Bill Lanouette pointed out, very correctly in my opinion, that trust based on integrity is the real basis for effective interaction, and credibility, with the press—and thereby with the public at large. Many of us in safeguards and materials management, and in the nuclear community generally, believe that nuclear power is a viable and vital energy option; we are confident that the nuclear materials safeguards problem can be solved, and indeed many of us have been working very hard to further improve U.S. safeguards posture and to achieve stringent and cost-effective safeguards throughout the nuclear fuel cycle.

In this panel today there clearly hasn't been time to consider all the topics of concern in the broad area of nuclear safeguards, and in that sense we were bound to experience some frustration, as I do now looking at the long list of topics set forth on our agenda. Nevertheless, in the limited time available I believe we have all sincerely tried—in the spirit with which Bill Lanouette so aptly challenged us—to discuss safeguards issues and problems in an honest and straightforward way.

To the distinguished representatives of the press, NRDC, ERDA, NRC, IAEA and the Nuclear Industry who have given of their valuable time in order to come to New Orleans and participate in this panel, we of INMM are indeed most grateful. I think the type of candid discussions we've had here today can serve an extremely important function which has been all too rarely exercised in the past, and I for one hope we'll be seeing more such direct and effective interchange in the future. It can only serve the best interests of a better informed citizenry which is so important to the decision-making process in a democracy such as ours.

Thank you everyone for being with us this afternoon and for your individual participation. I now declare this panel, and the 16th annual meeting of the Institute of Nuclear Materials Management, hereby adjourned.