

*Mr. Loh*

Remarks by  
John G. Palfrey, Commissioner  
U. S. Atomic Energy Commission  
at the  
Atomic Industrial Forum Twelfth Annual Conference  
Washington, D. C.  
November 16, 1965

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One could ask why all this sudden interest of the Atomic Industrial Forum in problems of the spread of nuclear weapons and international safeguards? Isn't that a problem for the Arms Control and Disarmament Agency, the Atomic Energy Commission, the State Department and the Department of Defense?

*doesn't flow*

An irreverant answer is that perhaps safeguards are increasingly seen by the nuclear industry as a headache, interfering with the sale of reactors abroad to those countries who do not find them palatable. Another such answer is that they are also a potential headache to the operators - they may be applied at home as well. Yankee has voluntarily placed its power reactor in this country <sup>is</sup> under international safeguards and the practice might be extended to other reactors in the U.S. Accordingly, the reasoning might be that it is high time for industry to find out whether these safeguards are really necessary and how hard they are to live with.

My experience this summer at the meeting with industry at Rowe, Massachusetts, persuades me the "headache" approach to safeguards is not an adequate or accurate explanation of the nuclear industry's interest in safeguards. Industry has both a responsibility and a concern in safeguards. <sup>But the industry recognizes the full impact of</sup> It is selling reactors abroad that produce plutonium that could produce weapons. Without safeguards there probably would be no atoms for peace program, atleast in large reactors. With safeguards,

there is a way of keeping the peaceful atom peaceful, and of providing in the process a foreign market for U.S. enriched uranium and U S. reactors. No one, as far as I know, wants to contribute to the spread of nuclear weapons, and industry has good reason to be interested in safeguards and doing what it can to make them as effective as possible. *Yankee*

Accordingly, I salute Industry on this occasion.

I am asked to start this afternoon's discussion by considering the Government's approach to safeguards. The short answer is we believe in them. A somewhat longer answer is needed to explain why and to what extent.

The U. S. has been trying to limit the spread of nuclear weapons ever since 1945. It has consistently tried, in a variety of ways to limit the number of countries with a national nuclear weapon capability. Recently, it has been redoubling its efforts because there are signs that the point has been reached where a decision by India, Israel or Japan, for example, to build weapons would trigger proliferation by a dozen other countries, and hopes to limit the further spread of national weapon capabilities would fade.

The Forum has done a public service in distributing to its members its report on Safeguards growing out of the two day meeting at the Yankee Reactor in Rowe, Mass. I hope all of you have read the report or will read it. Any introduction to the

Government's approach to safeguards should include consideration of William Foster's article on "New Direction in Arms Control", and John Hall's article on "Atoms for Peace or War". Mr. Foster's article makes clear the interlocking nature of our diverse efforts in arms control and our efforts to prevent the spread of nuclear weapons. Mr. Hall's article puts into historical perspective the development of the atoms for peace program and shows how the development of an international safeguards system accompanying that program has provided us with a presently effective and potentially even more important instrument in our efforts to prevent the spread of nuclear weapons.

Elsewhere in the Report there are clear presentations of what safeguards actually are, how they have developed, and how they work. I will touch on only some aspects of this system and you will hear more from those who know more, hereafter. As the starting speaker, I would like to concentrate - quite simply, I'll choose the points to make that I want to make - on the subject of non-proliferation and safeguards, as points to keep in mind in the course of our discussion this afternoon.

My first point is that whatever our views on the importance of non-proliferation, we cannot turn the clock back on the atoms for peace program. One may argue all one wants to about the wisdom of launching the atoms for peace program.

or 1954?

I happen to think it was imaginative and sound in 1953 - but, in any case, in 1965 we do not have a realistic option to consider changing our minds and attempting to cut back on the program. The reason is quite simple. Nations need rapidly increasing amounts of electrical power, and nuclear reactors are increasingly competitive sources for that power. Reactors are going to be built and if we don't supply them, other countries will. If we supply them, we can be confident that the reactors and the material they produce will be used for their stated civil purposes, because of the safeguards that go with them. If we don't supply these reactors, <sup>the existence of</sup> safeguards depends on the policy of the country that does supply the reactors.

*we should point too much* [ Despite real progress in recent years, not all supplier countries are yet ready to impose safeguards under all circumstances to keep watch over their civil use.

Without the safeguards program, I would have very different views, but with it, I think it is furthering the interest of the U.S. and furthering the program of non-proliferation, every time we sell enriched uranium and every time we sell a U.S. power reactor abroad. Personally, and I don't speak for the Government, I think we should seriously consider selling reactors to any country which is prepared to accept International Agency Safeguards. *(including Red China)*

Within ten years - Kgs of Plutonium are likely to be produced by nuclear <sup>power</sup> reactors. It takes roughly to produce an atomic weapon. We should, therefore, aim to have

all such production of plutonium under international safeguards.

My second point is the only one specifically in support of my own agency. Our assignment under law has been the development and control of atomic energy subject to the paramount consideration of the common defense and security. As a development agency, we are active in the process of making nuclear power available on a more competitive basis. As we succeed, as private industry picks up the ball and markets its product at home and abroad, the AEC often comes to be regarded as an agency <sup>preoccupied with</sup> pushing its product around the world and in the process unwittingly increasing the capability of other countries to produce the plutonium which they are tempted to use for weapons.

Actually, from the time the McMahon Act was enacted in 1946 to the amendment of the Act in 1954, the Commission was the agency which read the law so strictly that many accused it of being obsessed with a narrow sense of security that made any international cooperation, even in the field of radioisotopes, unlikely to occur.

Then in 1954, with President Eisenhower's Atoms for Peace program, the Commission had a new kind of responsibility - to cooperate in the civil uses of atomic energy where Congress was satisfied that adequate guarantees were provided that the material and equipment supplied would be used solely for civil purposes.

In carrying out this program, what is less well known is that the AEC in addition to the extensive statutory requirements adopted the practice of requiring that agreements for cooperation

should include specific commitments to give the U S. an opportunity to verify for itself that the guarantees were being honored.

These safeguards give the United States far-reaching rights to enter the territory of the recipient government and to carry out the inspections necessary to make sure that no material or equipment has been diverted to military purposes or transferred to a third country without the permission of the United States. In the course of these inspections, the inspectors have access to facilities and records and are permitted to take appropriate measures to account for the nuclear material that is subject to safeguards. The United States may require the return of the nuclear material and equipment if the safeguards article and associated guarantees are violated. I believe it is quite remarkable that we have been able to negotiate some 40 agreements containing such provisions. This development, in my view, has represented a significant advance in the field of international relations; it has helped establish a valuable precedent.

There was another achievement which the AEC has carried out quietly, step by step, negotiation by negotiation, and with considerably sweat and blood, over the past few years.

Starting in 1963 in all safeguarded bilateral arrangements that have come up for extension, the AEC, with the strong support of the science office of the State Department, has

succeeded in persuading the agreement country to transfer the safeguards to IAEA safeguards.

One may ask why the transfer strengthened our controls over the civil programs of other countries, since the bilateral safeguards were under U.S. control, and the International Safeguards were not. Our reasoning was the following:



To begin with, safeguards administered by an international organization should offer more credible assurances to the world at large that the projects being assisted by the United States are in pursuit of peaceful objectives only. In some countries, an assurance based on American inspection alone may not be convincing.

Of even greater importance is the recognition that many nations besides the United States now provide nuclear assistance to other countries. Accordingly, if we relied simply on a system of bilaterally applied safeguards in this developing situation, we would find that some nations might apply effective controls while others would apply wholly inadequate controls or no controls at all. Because of the competitive commercial pressures that exist in the international nuclear power market, the ultimate result would probably be a reduction to the lowest common denominator - no safeguards at all.

A system administered by an international agency encourages the uniform application of a technically adequate series of controls to all significant transactions. It also offers the promise of removing the matter of safeguards from the market place.

A third point I would like to make relates to our relationships with the Soviet Union. Over a period of difficult times, not excluding the present, we have found it possible to cooperate in areas of science with the Soviet Union in a way that is comparatively independent of the stresses and strains of politics.

The agreements between the US and Soviet Chairman, McCone and \_\_\_\_\_ and between Seaborg and Petrosyants have led to a meaningful exchange of information and personnel in substantial areas of nuclear science.

Until 1963, however, there was a very sharp line between atomic energy matters that did or did not touch upon political issues such as issues of inspection and arms control.

During 1963 came the successful negotiation of the limited test ban treaty and along with it an increasing recognition on both sides of the importance of preventing the further spread of nuclear weapons, which the test ban treaty itself was designed in part to further.

Over the years there has been a continuing debate as to whether you must have progress in relations generally between two rival countries before you can have progress in arms control. From my vantage point in the nuclear field it seems to me that the limited test ban treaty demonstrated that this was not necessarily the case. It was the treaty that helped the relations generally. The contrast between the Soviet behavior at the IAEA in 1962 and in 1963 was striking. In 1962, the Soviets were flatly opposed to the IAEA safeguards program, in 1963 they were not. And since then they have become one of its strongest supporters.

I recently returned from the 1965 meeting of the IAEA in Tokyo where a strengthened and simplified system of safeguards for large and small scale reactors was supported by the conference essentially without dissent.

To date the Soviets have not voluntarily offered to put one of their reactors under international inspection, and we hope they will. But it should be recognized that for a country which is already building nuclear weapons in military facilities to offer to place its non-military facilities under international inspection is more a demonstration of good will and belief in the system than it is a far reaching commitment.

The important point is that quietly, over a period of time, the U.S. and the USSR have come into agreement on a joint endeavor for an international inspection system of atomic facilities, that could have far reaching implications in the future.

Having said all this about safeguards, however, my fourth point is to try to make clear what the present safeguards system can and cannot do in furthering the operations of non-proliferation. [It is by no means a cure-all and its contribution should be neither underestimated nor overestimated.] *stating the obvious*

At present there is nothing-except the inhibition on the signatories of the Limited Test Ban treaty that they must test underground - standing in the way of any country with the independent resources and technological capability of finding uranium, building natural uranium reactors, and making weapons. The agency enters the picture and safeguards are applied only under three sets of circumstances, 1) in agency assisted projects in a given country or group of countries, 2) in cases where two countries operating bilaterally have requested Agency safeguards.

Frequently, this occurs as with U.S. bilaterals, on the initiative of the supplier country who may funnel the material or equipment through the agency or require the recipient to agree to a trilateral safeguards arrangement with the agency as a condition of sale, 3) where a country voluntarily requests agency safeguards for an atomic project with that country.

The loopholes are obvious. Not all suppliers of equipment and material have been persuaded to require safeguards under all circumstances, ~~not~~<sup>neither have</sup> all recipient countries ~~to~~<sup>agree</sup> accept them. To date, no country has undertaken to place all its civil atomic facilities, constructed independently or with outside assistance, under agency controls.

Another aspect of the question is, assuming safeguards are applied, what do they assure, and how effectively do they assure it?

I will not anticipate others by undertaking to describe what a safeguards inspection entails except to say 1) that it calls for maintenance of and access to operating records necessary to account for all source and special nuclear material used or produced in the safeguarded facility, and 2) that inspectors are guaranteed access at all times to all places and persons concerned with the materials, equipment or facilities safeguarded.

The system is designed to verify that there has or has not been a diversion of such materials, equipment or facilities from their stated civil uses.

It is not 100 per cent foolproof. But most people trained in the process, on the inspecting or inspected end, are satisfied that any country would run a substantial risk of discovery if it

attempted to beat the system and divert material or equipment for military purposes.

At this point, I would like to express the government's appreciation to Mr. Webster and his colleagues at Yankee Atomic Electric Company for voluntarily submitting to IAEA inspection of its power reactor at Rowe, Massachusetts. It constituted the first offer by a nuclear power to place a component of its civil program under agency safeguards. Last June the United Kingdom followed suit by announcing that it would write IAEA safeguards to be applied to the Bradwell nuclear power station, a dual reactor, 300 MW(e) facility. These are first steps, but they are important ones.

Mr. Webster's company has done two other things of importance. It has done what it could in helping to make the inspection as foolproof as possible, and it has shown to the power companies all over the world that it can live with safeguards without unreasonable interference and still go about its commercial assignment of producing and distributing electrical power.

My last point is to get back to my assignment of setting forth the government's approach to safeguards, in terms of what more needs to be done and how safeguards relate to other facets of the government's pursuit of non-proliferation.

Probably the most promising way of plugging the gaps in the current safeguards program and of furthering the objectives of that program would be a non-proliferation treaty in which the countries without weapons programs agreed not to undertake them

and, to prove the point, they agreed to place their atomic facilities, current and future, under international safeguards.

Of course such a treaty isn't foolproof either, it could be abrogated, it could be ratified by an insufficient number of countries to provide the others with the assurances they needed. But I think you can see how the present safeguards system could suddenly become an immensely important instrument of arms control of the most effective kind. It could help prevent nuclear arms programs from getting started in the first place.

You are all familiar with the present obstacle to agreement between US and Soviets over the allowance or not of multi national agreements such as the MLF and ANF and similar proposals - with the Soviets claiming they would constitute proliferation and the U.S. claiming they would prevent national proliferation. The principal issue is Germany, and here I obviously speak for myself and not for the AEC or for the government as a whole. The pressures for obtaining a national capability in Germany will persist as long as the Germans know there are missiles of medium range in Russia targeted on them which they cannot reach with the aircraft on quick reaction alert or tactical range missiles which the Germans possess under the current NATO stockpile arrangements. The <sup>longer range</sup> MLF would give them participation in reaching these targets, but there may be other ways of providing them with this participation through the

extension of the existing stockpile agreements which the Soviets have not made grounds for rejection of a non-proliferation treaty.

The connection between safeguards and non-proliferation with other issues of arms control in my judgment is essentially the following: If the non-nuclear countries are to sign a self-denying ordinance, what is the quid pro quo on the part of the powers with nuclear arms? There are many possible steps - an assurance of protection of a non-nuclear power by the nuclear powers against nuclear blackmail. President Johnson has already provided the first step in this direction.

But what about the continuing arms race of the nuclear powers? Not surprisingly, my agency would want to satisfy itself about the effects of a <sup>proposed</sup> comprehensive test ban treaty on this country's security and the adequacy of the verification system, but it seems to me it is in the context of non-proliferation that such a treaty has the most to be said for it. It could strengthen the non-proliferation treaty if countries were bound not to conduct any nuclear weapons tests. Secondly, it would show the

non-nuclear countries that the nuclear powers would be willing to <sup>curtail present development</sup> ~~cut back~~ in the weapons field. Other measures with <sup>more far reaching</sup> ~~a similar~~ effects would be a halt in fissionable material production and the transfer of material for civil uses and the destruction of some weapons.

I am not passing judgment on the merits of these proposals. I am saying it is important to do something to demonstrate to the powers without weapons programs that agreeing not to produce weapons will not make them worse off.

There is one such opportunity for giving assurance in the civil uses field. Suppose additional nuclear assistance and technology under safeguards were provided to those countries who signed a non-proliferation agreement and all such assistance were specifically withdrawn or withheld from those countries who did not sign the treaty. The treaty signers would then know they had something to gain from signing and something to lose from not signing.

In closing, I would like to touch on a few things we should pursue in the absence of a non-proliferation treaty.

We must seek to strengthen and to extend the informal agreements among suppliers of uranium and nuclear equipment to require safeguards on the material and equipment provided. For example, in the western world 80% of the known low cost uranium resources are located in the U.S., Canada, and S. Africa. This represents considerable potential leverage.

We should proceed promptly with the development of specialized procedures for safeguards in the plutonium separation plants. Currently under the principal of "pursuit", all the plutonium produced in a safeguarded reactor will continue to be subject to inspection throughout its processing and subsequent use. And, in fact, safeguards would apply to



succeeding generations of material produced from safeguarded materials or equipment.

Therefore, if all reactors in a country were subject to safeguards it would not be necessary to safeguard reprocessing plants as such, because all the material would be subject to controls <sup>anyway</sup> ~~agency~~, but until all reactors are under safeguards it is important for us and other supplier nations to seek safeguard rights in the reprocessing plants themselves.

But with these facilities there is less leverage in securing safeguards than with reactors. The fuel in the plant may come from non-safeguarded sources. These plants require few, if any, specialized components that could not be manufactured independently by countries of moderate industrial capacity.

Clearly, more attention needs to be given this area and Mr. Runion will talk further on this subject.

As an interim measure it seems to me we should encourage the voluntary adoption of safeguards by the dozen or so leading countries who are capable of pursuing a weapons program but have decided not to. For example, the effect of a joint declaration by countries such as Japan, India, Israel, Norway, Sweden, Switzerland, and Italy would be dramatic.

While such a declaration should probably not have conditions attached to it, the nuclear powers as I suggested previously, should consider forms of nuclear assistance that would enhance the value for those signing such a joint declaration.

This is a vast and complex subject and I have only touched on illustrative segments of it. But I hope I have conveyed to you a sense that the subject of safeguards is not an esoteric and futile area of activity and an appreciation of the importance of industry's assistance and support.

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4:04 orally

John Douglas - ~~222~~

Hankes

Copper in 66

Can we substitute

1,958,000

Cu + Copper alloy

2 million lbs

1/2 construction

1/2 operational cannot  
no substitute

60% wire

alloy

40%

brass foundry products, etc.  
magnet, conductors  
castings

427-1400

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S F

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alloy  
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