Transcript of KMYR series on The Public Affair:
"The Great Nuclear Power Debate, Part 2"

Aired on May 26-30, 1975

PA2019.068.023
Albuquerque Museum, gift of Zane Blaney

This radio program is a five-part series featuring the American Nuclear Society [A.N.S.] and Dr. Jeffrey Philbin, a nuclear engineer and President of the local chapter of A.N.S.
Keywords and topics: nuclear power, nuclear reactors, energy, energy crisis, coal power plants, solar power, American Nuclear Society, Dr. Jeffrey Philbin, safeguards, alternative energy, debate

[loud knocking

MAN'S VOICE: Coming!

MAN'S VOICE: Uh, is this the right room for an argument?]

ZANE BLANEY: On *The Public Affair*

[MAN'S VOICE: [mumbled]]

BLANEY: The Great Power Debate continues with

[MAN'S VOICE: This is energy!

MAN'S VOICE: This is not an argument.

MAN'S VOICE: Yes, it is.

MAN'S VOICE: No, it isn't. It's just contradiction.

MAN'S VOICE: No it isn't.

MAN'S VOICE: It is!

MAN'S VOICE: It is not!]

BLANEY: Equal time is given to government and nuclear industry to debate the question of nuclear development on *The Public Affair*.

[MAN'S VOICE: I'm sorry, but I'm not allowed to argue anymore.

MAN'S VOICE: What?!]

[00:34]

ZANE BLANEY: This week on *The Public Affair*, we offer equal time for a debate on the question of nuclear power development. Last week, we heard from New Mexico Citizens for Clean Air and Water. This week, we will air selected and edited cuts from "Energy and the Atom", a three record set of what are termed [indecipherable] interviews with scientific and industrial leaders on the general topic of nuclear power.

The programs are produced by the American Nuclear Society, were broadcast by stations across the country as public service time. We will air portions of three of these programs, then on Thursday and Friday, we will air the comments of two Albuquerque residents, Dr. Jeffrey Philbin, a nuclear engineer at Sandia Lab and President of the local chapter of the American Nuclear Society, and Professor Bob Long of the UNM [University of New Mexico] Engineering Department. We hope that you will find the programs enlightening.

MAN'S VOICE: Our guest today is Dr. J. Ernest Wilkins, President of the American Nuclear Society, and a distinguished Professor of Applied Mathematics at Howard University in Washington, D.C. Our accent today is on safety. The safety of nuclear power plants to be specific.

DR. J. ERNEST WILKINS: These plants are as safe or safer than conventional chemical plants, manufacturing plants, power plants of any other kind. In fact, historically, they are even safer. We all know of chemical plant explosions, we all know of coal boilers that explode. In fact, there have been no deaths in the nuclear power industry, at all.

MAN'S VOICE: Well, even though these plants cannot blow up like a bomb, there are still risks of a major nuclear accident, uh, I've been told. What assurance can you give us that these plants will continue to be operated safely?

WILKINS: Any plant, no matter what it is, can be operated unsafely if the human beings operating it are not careful. What we do is to design the plants so that they are as fail-safe as possible against both engineering and human errors. Redundant safety systems are used to ensure that even if one error occurs, there are other systems that will protect the plant and the population against the consequences of that error. The design philosophy of the reactor manufacturers and of the Atomic Energy Commission has been to insist on substantial amounts of redundancy so that it takes an almost incredible combination of circumstances to produce a significant, um, accident. Uh, our industry has an enviable safety record and we want to continue that.

MAN'S VOICE: There have been some persons who have been hurt thus far, due to nuclear power plant accidents, is that correct?

WILKINS: There have been accidents in the nuclear business. These accidents have generally been associated with research reactors which are inherently less, uh, safety-oriented. After all, in the research reactor, what you are doing is trying out new things. The power reactors,

however, are not toys to be played with and the engineering design and the operating philosophy of these reactors is such that no one has suffered significant injury.

MAN'S VOICE: Dr. Wilkins, there are critics who proclaim that thousands of persons will eventually die because they are being exposed to radiation from these plants.

WILKINS: In the normal operation of the plants, extraordinarily small amounts of radioactivity are released. Very much smaller amounts than are already present as a result of radiation from the sun, which affects all of the human beings on this Earth. The only way that potentially large amounts of radioactivity can be released in a reactor is if the fuel in the reactor were to melt. The Rasmussen study released recently by the Atomic Energy Commission has estimated the probability of a melt of fuel at one chance in seventeen thousand per reactor per year. And that's a relatively small number. In addition, they go on further to analyze the consequences of the melting of fuel and come to the conclusion that there is less than one chance in three hundred million per reactor per year that a fatality will occur.

MAN'S VOICE: Well, thank you very much, Dr. J. Ernest Wilkins, President of the American Nuclear Society and a distinguished Professor of Applied Mathematical Physics at Howard University in Washington, D. C.

BLANEY: The preceding was produced by the American Nuclear Society and was aired as equal time in the great debate on nuclear power. I'm Zane Blaney on KMYR.

[16:18]

BLANEY: Continuing the nuclear power debate, the American Nuclear Society is given equal time. The program you are about to hear is produced by nuclear industry in this country and concerns itself with one of the key questions in this discussion. That being where to locate nuclear power plants.

MAN'S VOICE: We have a man here today who has had vast experience in selecting sites for nuclear power reactors. He is Mr. Sam Bell, Jr., chairman of the American Nuclear Society Power Division and Director of the Energy Division at Oakridge National Laboratory near Knoxville, Tennessee.

Mr. Bell, some people object to having, uh, nuclear power stations built in their neighborhoods. In your experience, do these people have grounds for complaint?

MR. SAM BELL, JR.: Oh, I think so. I don't believe the complaints apply necessarily just to nuclear plants, I think they apply mostly to any kind of industrial or power station or waste disposal facility which might relate to solid or liquid waste. People just don't want that kind of operation close to their living facility – their living, uh, location.

MAN'S VOICE: Well, they have to be close to someplace, right?

BELL: They have to be close to someone. And, uh, the question is how you make it worthwhile to the residents of a particular area for the power station or other facility to be located there. One way, of course, is to have them benefit from the taxes that are collected from that particular facility. In some parts of the United States, uh, rather than having objections to power plant locations, especially nuclear plant locations, people want them because of the tax revenue and the reduction in local taxes that can result from that revenue.

MAN'S VOICE: I think most people don't realize it takes about ten years from the time you select a site to the time of actual start-up of a plant. That seems like an awful long time.

BELL: It is a long time and it's very expensive. And many millions of dollars are tied up for more years than some people think are necessary. Now, of course, the customer pays those extra millions of dollars of expense on his utility bill. Although a great deal of effort is being made to shorten this time of licensing and construction, um, there are a number of factors which have tended to make it longer than shorter. Uh, for one thing, the U.S. public has demanded more care in selecting sites. Uh, more attention to the environment is required by the National Environmental Protection Act. Uh, a utility must now make a much more thorough study of a site before a license can be granted for construction of that site.

MAN'S VOICE: Of course, if we run out of land space, we can always go underground perhaps? Or maybe float them out to sea?

BELL: Yes, uh, those are good ideas. The underground plants appear to have some difficulties, uh, let's say operating inconveniences, more expense in locating the plants several hundred feet or a few thousand feet underground. Uh, many people think that that expense would not be justified by the additional safety aspects. However, the off-shore siting, uh, is a good idea which doesn't have those same problems. It's possible to, uh, at least on the East coast of the United States and the Gulf Coast, to choose a number, in fact a large number, of places where, uh, barge-mounted nuclear power stations could be towed, anchored, and connected to, uh, underground – underwater transmission lines going to shore.

MAN'S VOICE: Well, thank you kindly, Mr. Bell, for sharing your views regarding the problems and solutions in the important area of site selection for nuclear power plants.

BLANEY: The preceding was aired as equal time and was produced by the American Nuclear Society. Tomorrow we hear nuclear industry's answer to the dangers of terrorists on nuclear power plants. I'm Zane Blaney on KMYR.

[11:27]

BLANEY: One of the strongest objections by critics to nuclear power plants is the possibility of terrorists, sabotage, and extortion. The American Nuclear Society's answer to those concerns follow.

MAN'S VOICE: You may have heard talk about the diversion of nuclear materials in recent days. It is no secret that these radioactive materials have a price on their heads, so to speak. There are those that feel that elements like plutonium and uranium might be diverted for evil uses. Our guest today is Dr. Carl Walske, President of the Atomic Industrial Forum in New York City. Dr. Walske is one of the top authorities in the area of safeguards of nuclear materials. For seven years, he was Senior Assistant to the Secretary of Defense, concerned with all aspects of nuclear weapon security and safety. He is a nuclear physicist with extensive experience in both military and civilian uses of atomic energy. Dr. Walske, first of all, why would anyone want to steal materials such as uranium or plutonium? What would be some of the motives for some of this?

DR. CARL WALSKE: What's been discussed by several, uh, people in the press and in other public circumstances is that, uh, someone might take this material and fashion a crude weapon out of it. A crude atomic bomb. This is debatable as to just, uh, how easy it is to do, but, uh, most people would – that have background in the area would say that, uh, it's conceivable that given a number of weeks and given sufficient resources and given the, uh, reasonable kind of knowledge that a crude atomic bomb might be featured. This is not to say a bomb of the type that was used in the World War II, but one which is almost a fizzle-bomb, nevertheless, uh, a bomb explosive enough to cause much more damage than ordinary high explosives.

MAN'S VOICE: Is it true that you might be able to obtain these instructions, shall we say, to making these bombs from someplace in the government? I've heard this mentioned?

WALSKE: There's no such thing as, uh, instructions on how to do this available any places, but, uh, there are a number of general principle laid down in places which are open in the literature. Uh, also there are a number of pitfalls that a person could fall into in, uh, trying to do this so that he might either injure himself or fail completely to make a successful device. On the other hand, just the threat, uh, just the possibility that this could be done is enough to take it seriously. It is being taken seriously and we are dealing with it properly.

MAN'S VOICE: Uh, Dr. Walske, as we find more plutonium and uranium used in nuclear power plants, do you believe that some more strict measures must be taken to ensure against theft?

WALSKE: As a matter of fact, they are being taken. As the, uh, industry has been growing and its growth has been rather large in the last year and it'll be larger still as we move ahead. Uh, we have been tightening up the safeguards so that today, the set of regulations is a much tighter set of regulations than we were operating with for the previous two years. And as time goes on, and uh, the amount of material handled is larger and is found in more places, we'll take those measures necessary to ensure adequate security.

MAN'S VOICE: Of course, these measures are not new.

WALSKE: The measures are not new, but we've been adding to them and strengthening them in various regards. We've been giving them plenty of serious thought. As you suggest, we've had nuclear weapons to guard in this country for many, many years. So the idea of guarding something which can possibly be a nuclear explosive is not new and it's worth pointing out that in all these years, there hasn't been any untoward incident of any kind because the measures have been sufficient.

MAN'S VOICE: Well, how are the present materials being, uh, shall we say, transported across the country? By air or truck, or a combination, or what?

WALSKE: Materials today move both ways, uh, and when they move in a truck, for example, they're under adequate guard. Guards with communications, armed guards. Um, when they move by air, they're carefully escorted to the airplane and then when the airplane lands, they're escorted from the airplane.

MAN'S VOICE: Well, thank you so much, Dr. Carl Walske, President of the Atomic Industrial Forum in New York City. Dr. Walske has filled us in on the important area of nuclear material safeguards. We're confident that the nuclear industry will take the proper steps to ensure the public that nuclear fuels will remain in the proper hands, both today and in the future.

BLANEY: The preceding was produced by the American Nuclear Society and aired as equal time. Tomorrow and Friday, we will hear from two Albuquerque residents who are involved in nuclear research and development. I'm Zane Blaney on KMYR.

[16:56]

BLANEY: Today on *The Public Affair*, we continue the nuclear power debate offering equal time to Dr. Jeffrey Philbin, a nuclear engineer at Sandia Laboratory and chairman of the Trinity Section of the American Nuclear Society.

DR. JEFFREY PHILBIN: I'm responding to a series of five Public Affairs programs aired on this station last week, which were critical of nuclear power. My primary goal today and tomorrow is to refute some of the misconceptions that were generated last week and to place the issue of nuclear safety into perspective with other technologies and natural events that we live with every day. The high price of oil which we must now import in order to keep Americans at their jobs threatens our economic structure, indeed that of the Western world. Energy is the lifeblood of all modern societies. If we were suddenly deprived of a constant source of energy, there would be widespread economic chaos and much human suffering and loss of life. As ugly as this might sound, it is a fact of life.

In order to avoid such a catastrophe, we can and we must use energy and existing sources more intelligently. But conservation is not the whole answer. In addition, we must develop new sources of energy and develop long-range realistic plans that will ensure our constant energy supply but without endangering the health and safety of the public.

The key question is this: do we want an abundance of electricity at reasonable cost, or limited amounts of electricity at high cost? If we want an abundance of electricity at reasonable cost, and if we feel it is important for our social and economic growth, then we need every source of making electricity at our disposal. There currently isn't enough coal production to do it all by coal and the environmental and safety issues connected with the strip and deep mining of enormous quantities of coal are by no means negligible. Obviously, there is not enough oil or natural gas, either. Nuclear power is the only other developed technology that we have to satisfy the requirements of the immediate future. The advanced technologies of the future just aren't here. Fusion power is being investigated, but there have been no assurances that it can be made to work. Even if it is successfully developed, commercial power production is probably thirty years away. We know how to generate electricity from solar power in principle, but the cost of building solar electric power plants with our present technology would result in large increases in the cost of power. Contrary to what some people believe, there are no easy solutions to these technological problems.

So, it's not a question of choosing between coal or nuclear power; we need them both. This conclusion has been vigorously defended in a manifest on energy, signed by thirty-two of this country's most eminent scientists, including eleven Nobel Prize winners from a variety of scientific disciplines. Water-cooled reactors are an existing technology that must be used to bridge the gap between today's energy requirements and the future, when advanced sources such as fusion, and solar, and geo-thermal can be used on a large-scale. We also need to develop advanced nuclear technologies such as the breeder reactor to hold in reserve in case the fusion and solar technologies don't live up to expectations.

Let's talk about the safety of nuclear reactors. With fifty nuclear plants in operation and nearly two hundred reactor years of experience behind us, there has not been a single nuclear-related fatality associated with the operation of these plants. This safety record is the envy of every major industry in this country. We can attribute this excellent safety record to the inherently safe designs of the fuel and control systems as well as the licensing and regulation processes. The goal of these designs and regulations is to prohibit the release of any of the radioactive products trapped in the fuel of the reactor. The fuel is designed so that the neutron chain reaction turns itself off when the fuel gets too hot. The licensing procedure involves a searching analysis of the safety of each proposed plant and a review of the plant's environmental impact. This procedure also provides opportunity for the public to keep fully informed of the progress of the license applications and to participate in public hearings held before action is taken to grant or deny them.

As a result of these open and visible procedures, the problems of the nuclear industry have, in many cases, been exaggerated when contrasted with the problems of other industries that are not nearly as safety-conscious. The public realizes that we need electricity, we need to generate it, and we have alternative ways of doing this of which nuclear power is one. The perspective of where it fits and its relative safety, risks, and benefits are not well understood, however, and this misunderstanding fostered by some irresponsible critics can actually have the effect of depriving the public of a necessary and very safe form of electrical generation. We will discuss some of these relative risks, benefits, and safety issues in more detail tomorrow. I am Dr. Jeffrey Philbin on KMYR.

[22:30]

BLANEY: Concluding "The Great Nuclear Power Debate", again, Dr. Jeffrey Philbin:

PHILBIN: Today I want to refute some specific errors and inferences aired on this station's Public Affairs series last week. It was stated that nuclear power plants are not able, after twenty years of intensive effort, to cut the cost of electricity at all. This statement is false. Allow me to quote a few statistics: A recent survey by the Atomic Industrial Forum revealed that the nuclear power plants produce electricity at an average savings of forty percent compared to fossil-fuel plants. An economic projection study commissioned by the Long Island Lighting Company indicates that nuclear-generated electricity will continue to have a clear cut advantage, economically, even if the Price-Anderson Insurance Indemnification [Price-Anderson Nuclear Industries Indemnity Act] is dropped and if the government were to get out of the fuel enrichment business. The projections favor nuclear power even more strongly if you account for the costs of cleaning up the coal burning process and enhancing coal mine safety, two improvements that are sorely needed.

I would like to say a few words about the nuclear waste problem. The yearly waste from a large, one thousand megawatt electrical nuclear plant can be concentrated and solidified in glass, for example, into cube three feet on a side. The fact that these wastes are so compact and are trapped in the fuel elements mean clean air for the neighbors of nuclear power plants. Because of the limited number of nuclear plants now in operation, the waste problem is not unmanageable at this time. We will need, however, a national long-term waste storage or disposal policy by the early or mid-1980s. There are several options available at this time. Temporary or permanent storage in deep, stable, geological formations is one possibility. Research is being done in this area and I am confident this problem can be solved in a reasonable period of time.

I now want to discuss a report that was commissioned by the regulatory branch of the old Atomic Energy Commission. The goal of this report was to estimate the public risks that could

be involved in potential accidents in commercial nuclear power plants and compare them with non-nuclear risks to which our society is exposed. It is performed under the independent direction of Professor Norman C. Rasmussen of the Massachusetts Institute of Technology. There was an attempt to discredit this report and its conclusions about the relative safety of nuclear power on this station last week and I object strenuously to such irresponsible misrepresentations. Specifically, you were told on last Tuesday's program that the so-called Rasmussen Report estimated a major accident in even a small nuclear power plant, one-tenth the size of modern plants, might kill six or seven thousand people. First of all, the referenced reactors used in the report are representative of those in use and under construction and are not one-tenth the size of a modern nuclear power plant. And secondly, the largest calculated value for fatalities was twenty-three hundred with a probability of only one in a billion, not seven thousand fatalities as stated. In the most likely [indecipherable] accident, the number of fatalities predicted was less than one person. One of the major findings of this study is that only about one in ten potential [indecipherable] accidents occurring on the average of once every seventeen centuries, might produce measurable health effects. The potential for number of lives lost is much higher for dam failures, fires, and industrial chlorine releases than for nuclear power plants, just to name a few.

You were also told last week about a fire that occurred recently in a nuclear reactor on the East coast. You were told that the emergency core cooling system was supposed to come into play to fight the fire and that it failed. You were also told that the reactor itself suffered major damage. This is all nonsense and it indicates how poorly informed some of these critics can be. The incident referred to occurred at the Brown's Ferry Nuclear Plant in Alabama. Hardly on the East coast. The fire was in the cable-routing room beneath one of the control rooms. There was no damage to the reactor itself whatsoever. The plant was safely shut down by a competent operating crew. The emergency core cooling system was not supposed to come into play because the reactor core itself was never under-cooled. This incident was very serious, however, and an investigation is being performed to determine why the sprinklers in the cable room did not turn on to douse the fire.

You were also misled about the controversy on the emergency core cooling systems for reactors in general. It is true that these systems have never been tested in a full-scale reactor test, but computer models of the emergency core cooling system in operating and proposed plants indicate that they will work as designed, contrary to what was implied last week. Otherwise, the plants could never have obtained an operating license. These systems will be tested experimentally in a test at the Idaho Reactor Testing Station near Idaho Falls in the near future. I am Dr. Jeffrey Philbin on KMYR.

[28:16]

[end]