NEW JERSEY SENATE

DISSENTING STATEMENT

BY

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MEMBER OF THE AD HOC ~~COMMITTEE~~ COMMISSION ON ENERGY AND THE ENVIRONMENT (CREATED BY ORDER OF SENATE PRESIDENT ALFRED N. BEADLESTON, JANUARY 9, 1973) TO THE "REPORT TO THE SENATE" OF SAID ~~COMMITTEE~~ COMMISSION SUBMITTED APRIL 5, 1973.

APRIL 5, 1973

NUCLEAR ENERGY

Looking back on the history of New Jersey and this nation, one thing is clear. From the very start, we prospered on abundant sources of energy--wood, water and coal. Then oil, followed by natural gas. And lately, the atom.

In the past, our energy has been cheap. It has fed prosperity. Now those days are over.

New Jersey has become highly industrialized. We have become the most densely populated state in the nation. Railroads meet here. We are building an international airport in Newark. Port Elizabeth and Port Newark are burgeoning--they are taking in about 75% of all the cargo that once went to the Port of New York. New Jersey has come into its own.

People are beginning to move out of the ghettos. Some who chose to remain in the cities are finding them more livable. They have jobs. And a job means that a man or a woman can have a decent home where they can raise children who will grow up to be good citizens.

But something is happening to dim the glow of success. We are becoming energy-poor. To be more precise, we are fuel-poor.

We have virtually stopped burning coal. As S. David Freeman, former White House energy adviser, once said, "There are two things wrong with coal today. We can't mine it and we can't burn it."

We cannot burn it because it is too dirty. Public Service Electric and Gas Company has 66 electric generating units. Three burn coal. Atlantic City Electric Company has but one unit burning coal. Jersey Central and New Jersey Power and Light Companies have none. The reason: the New Jersey air pollution code requires that fuel have less than one-third of one per cent sulfur. We just have not been able to get rid of the sulfur in coal readily and economically.

There is plenty of coal. Estimates say the supply could last from 100 to 500 years. But mining it is a problem. Deep mining, the old method, has become expensive. And there are not too many miners around who can or will do it. Strip mining is increasing as the principal method of getting coal. Gargantuan machines chew away the earth's surface to depths of 200 feet to uncover seams of coal, leaving torn landscapes in their wake. Some estimates of what it costs to reclaim such areas adequately run as high as $2,000 an acre. And only about one-third of the nearly 2,500 square miles of the United States that have been stripped have received even token repairs. The public is becoming indignant, and I feel this is likely to limit the growth of strip mining and raise its cost.

Despite the mining problems, coal gasification and liquefaction show promise for the future, but not the near future. The United States Office of Coal Research has spent

$100 million on coal gasification and is not any closer to its goal than it was ten years ago, according to some observers. New Jersey utilities are now contributing to such research, but they are not counting on any substantial success for years to come.

As for natural gas--there is not enough of it. New customers are being turned away. It is an ideal fuel--clean and efficient. But we have been using more than we have been finding in the ground. And now we are running out. Contracts have already been signed to import large quantities of gas. From all indications, it is going to cost twice as much as domestic pipeline gas.

Imports of oil are expected to increase from 3.5 million to 15 million barrels a day between now and 1985, according to some estimates. According to others, America is already using 15 million barrels a day, counting our domestic production. By 1982, we will probably be using 30 million.

These tremendous increases in the importation of natural gas and oil should give pause to thinking people. We are already spending far more abroad than other nations are spending here. The balance of payments picture looks even bleaker for the future. And the nations from which we are buying these fuels are not exactly political sidekicks. They may some day bring us to our knees by shutting off our energy supply.

Looking to the year 2000, thermonuclear fusion looms on the horizon as the ideal energy source. Research is going forward on this at our own Princeton University, backed by New Jersey utilities. In fusion, two atoms are joined together to create heat or energy. The atoms can be obtained from sea water, which is in abundant supply. Electricity will some day be produced by this method without the byproduct of radioactive waste, but, according to the best estimates, not before the turn of the century. Too many problems still exist. The same thing applies to solar power and all the other exotic forms of producing energy. They are either too expensive, too impractical, or, as in the case of geothermal power, cannot produce large quantities of power here in New Jersey.

The likeliest source of energy for the next few decades, therefore, is nuclear fission.

As I have observed at these hearings, environmentalists and conservationists question the safety of nuclear fission plants. They charge that the heated water from cooling systems can damage our rivers, bays and ocean. They present radiation problems, according to some critics. In the next section of this report, I will examine these charges.

Proponents of nuclear fuel point out many advantages. The fuel is compact. It takes about three tons of coal but only about one-third of an ounce of uranium, to produce what the normal household uses in electricity each year. An ordinary power plant uses up a trainload of coal every day, or an equivalent amount of oil. A nuclear power plant gets along on a few truckloads of nuclear fuel a year. Shipping costs are negligible. That is important to New Jersey, where all our oil and coal must be imported.

The fuel is relatively cheap. Currently, it costs about 20 cents to produce a million British Thermal Units of heat; coal and oil currently cost three to four times as much. (A British Thermal Unit is the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.)

The fuel is clean. The two Salem nuclear reactors working at full power for 24 hours would use 15 pounds of uranium. Two coal-burning or oil-burning plants of equivalent power would use 18,000 tons a day or 35,000 barrels of oil.

The coal plants would produce the following pollutants: 317 tons of ash, 300 tons of sulfur dioxide, 3,500 tons of nitrogen dioxide, 11,000 tons of carbon dioxide, and 360 pounds of mercury.

The oil plants would not produce any ash but, the amount of the mercury pollutants would increase. Lead pollutants are also introduced by the burning of oil. The nuclear plants would produce none of the above air pollutants.

As a result of the fuel differential, Public Service Electric and Gas Company, for example, estimates that it may save $715 million over the 40-year life of its proposed Newbold

Island Nuclear Generating Station, as opposed to the cost of operating an oil-fired station of equal size over the same period.

This should tend to flatten out the rise in electric costs to customers of Public Service.

Opponents at our hearings said nuclear plants are not "clean". They point to the low levels of radiation that are emitted and say these levels can cause cancer and other diseases.

Considerable time has been spent in researching the radiation question.

In an attempt to put the subject of low-dose radiation in perspective, Dr. Clarence E. Larson, one of the five commissioners of the Atomic Energy Commission, told members of the New Jersey Press Association on October 8, 1970, in Burlington:

> You have all been continuously exposed to radiation from various sources ever since birth. It comes from cosmic rays, from natural radioactivity in rocks, soil, and building materials. There is even radioactivity from within your body as part of the process of living. This background radiation varies depending on where you live.
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> In the United States it ranges from 70 to 200 millirems per year. There are other areas of the world where background radiation is much higher. In one area of India containing extensive deposits of monozite sand, the figure is approximately 1,300 millirems annually.
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> Background radiation within the United States is affected by the type of building you live in. For example, the radiation levels in Manhattan are considerably higher than those in the city's suburbs because some buildings contain much granite rock facing. (Grand Central Station, for instance, emits more radiation than Salem Nuclear Generating Station will.) The increase from

living in a brick or stone house rather than a wooden one can range up to 50 millirems a year.

Altitude also makes a difference because cosmic radiation increases the higher you go. The background radiation for a person living in New Haven, Connecticut, for instance, is estimated at 73 millirems per year compared with 172 in Denver. (In New Jersey, it is 125-140 millirems per year.)

I think the central point that should be kept in mind here is the balance between risk and benefit. There are two different types of risks--those we accept by choice, as when we drive fast in an automobile, and those which are imposed on us, such as smog. Nuclear power plants will improve the situation with respect to non-voluntary risks, since they do not put combustion products such as smoke into the atmosphere, and the hydrocarbons in smog pose a greater hazard to health than the tiny amount of radiation from such plants.

While on this subject, it might be pointed out that we accept risks in many areas because of the obvious advantage of doing so. Statistically, driving an auto is a risky business but it also is convenient. We accept the radiation in diagnostic X rays because of the benefits in medical practice. Are we then to draw the line at benefits from electric power? We will need increasing amounts of electricity in the future, for demand is doubling every decade and the supply of fossil fuels is limited. Obviously, nuclear power can and should help out. The very small risk involved from radioactivity released by nuclear plants is far outweighed by the advantages to society.

Some persons have demanded that nuclear stations reduce their releases to zero radio-activity. The rationale behind this is that all radiation is harmful, no matter how tiny the amounts. As Dr. Dunster, my counterpart

> on Britain's Atomic Energy Authority, has put it, 'This says that if a hurricane kills 1,000 people, a breeze will kill 10 people.' There is much evidence to suggest that there is a threshold of external radiation below which there is no lasting radiation damage.
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> For the sake of argument, let us assume that we accept the 10-fold reduction approach. To be absolutely consistent, we should apply it across the board to all other sources of radioactivity. If we did this, we would have to evacuate Denver, since its inhabitants receive about 100 more millirems per year than those of us living near sea level. We should ban brick and granite from dwellings. We should limit transcontinental jet flights at high altitudes. We should put up warning signs at Aspen stating that skiing at these altitudes may be harmful to your health due to the extra radiation. Chest and dental X rays would be outlawed. Oddly enough, so would any sales of Brazil nuts, for they contain 14,000 times more radioactivity than common fruits.

According to another scientist, testifying for the Suffolk Scientists for Cleaner Power and Safer Environment during the hearings for the Shoreham Nuclear Power Station proposed by Long Island Lighting Company, the risk from exposure to low levels of radiation are meaningful only when compared to the many other risks to which persons are subjected.

Based on life expectancy values derived from either Public Health Service Statistics or from those of the Metropolitan Life Insurance Company, the scientist, Howard J. Curtis, drew up the following comparison table of various risks for the United States population, then followed it with his group's own assessment of radiation risks.

COMPARISON OF VARIOUS RISKS FOR U. S. POPULATION

(The normal life expectancy is 70 years.)

Comparison	Change in Life Expectancy
45% overweight	-7 years
Smoking 1 pack cigarettes per day	-6 years
Smoking 2 packs cigarettes per day	-11 years
Automobile accidents	-1 year
City smoke (death from lung cancer)	-100 days
"The Pill"	-30 days
Radiation:	
a) Diagnostic medical X rays (U.S. average)	-7 days
b) Living in Denver vs. sea level	-3 days
c) Living next to nuclear power plant	-3 hours
d) One transcontinental jet plane trip per year	-2 hours

(The values for radiation risk from living next to a nuclear power plant are based on actual radiation dose measurements taken next to existing operating plants.)

Charles Amato of the Department of Environmental Protection, Atomic Energy Division, has produced evidence which clearly illustrates the minimal danger attached to living next door to a nuclear power plant insofar as radiation exposure is concerned. He said, "If a man were chained to the fence on the perimeter of the plant for a period of one year and exposed to all the radiation emitted by the plant during that year, he would be subjected to less radiation than if he were to receive one chest X ray."

During the hearings, there were references in the press to charges made by Dr. Ernest Sternglass, professor of radiation physics at the University of Pittsburgh. While Dr. Sternglass did not appear at these hearings, at least two witnesses have been quoted in newspapers agreeing with his stand that radiation from nuclear plants is killing babies.

In the past, Dr. Sternglass has estimated that fallout from nuclear bomb testing resulted in 400,000 infant deaths in the United States. Now he is pointing the finger at nuclear power plants. His beliefs about radiation have been refuted by many scientists and by the United States Department of Health, Education and Welfare, which has issued a 37-page report which said, in essence, that it simply could not support his thinking. In the interest of brevity, let one case involving Dr. Sternglass suffice to point out the flaws in his work.

In February, 1971, Dr. Sternglass issued a statement in Michigan that a nuclear plant at Big Rock Point had caused a rise in infant mortality due to radiation carried by the wind from the plant in 10 counties in northern Michigan. The Michigan Department of Health promptly investigated the claims and turned up these discrepancies:

The total infant mortality rate of the counties showed an increase of less than 2 per cent, rather than the nearly 9 per cent claimed by Dr. Sternglass.

Of the 10 counties Dr. Sternglass named, only five were found to have had an increase in infant mortality and five had a decrease.

The county in which the plant is located and the immediate downwind county had a decrease, and one of the counties with an increase was 45 miles away and in the opposite direction of prevailing winds.

The monitoring stations at various locations around Big Rock Point show no radiation changes in the air that could be attributed to operation of the nuclear plant. The Michigan Public Health Department said it found no connection between infant mortality and effluent from the plant.

The question of nuclear waste disposal has troubled this Committee, even though no waste repositories or nuclear fuel recycling plants are planned for New Jersey.

In an entire year of operation, a nuclear power plant produces only a little more than an ounce of radioactive waste concentrate for every family served by the plant.

To put it another way, if the electricity needs for the average consumer were completely met by nuclear power, the amount of nuclear waste associated with his use per year would equal in weight three aspirin tablets, and have a much smaller volume.

One-third to one-fourth of the fuel elements is replaced about once a year. These fuel elements are stored in a vault or pool at the power plant site for several months. During this period, a large amount of short-lived radioactivity decays and is gone. The spent fuel elements are then shipped in specially constructed casks to a fuel reprocessing plant. According to the AEC and Department of Transportation controls and regulations, the casks must withstand the following theoretical accidents without losing their containment integrity.

1. A 30-foot free drop on a flat, unyielding horizontal surface.
2. A 40-inch free drop on the top end of a 6-inch diameter, 8-inch high vertical mild steel bar.
3. Exposure to a 1,475 degree Fahrenheit fire for a 30-minute period with no artificial post fire cooling.
4. Immersion in water to a depth of 3 feet for at least eight hours.

After reprocessing and solidification, the wastes will be transported off-site and buried underground in a federal repository in accordance with strict specifications of the AEC. The system is simple, straightforward and effective. It represents no hazard to people in the vicinity of the plant or any immediate or long-term hazard to anyone else, according to proponents.

It is estimated that the amount of such solid, high-level radioactive waste generated over the 40-year lifetime of Newbold Island, a nuclear plant that Public Service Electric and

Gas Company proposes to build on the Delaware River in Bordentown Township, would occupy a space of only 12 cubic yards. This is about the size of an average automobile.

By the year 2000, all high-level waste in the nation would require about 10 acres, according to Julius Rubin, assistant general manager for environment and safety at the AEC. For a city like New York, the vaults of Chase-Manhattan Bank could store the city's nuclear waste for about 1000 years.

One witness who appeared before the Committee warned that we would have to stand guard over this waste for thousands of years. Since this is the responsibility of the Atomic Energy Commission, its plans in this regard were sought. Our quest brought us a copy of a letter by Milton Shaw, director of the AEC's division of reactor development and technology.

Mr. Shaw discussed the waste disposal question at length in a letter to the editor of the Atlantic City Press on November 22, 1972. Mr. Shaw was answering a letter from a Mr. Charles G. Santora of the Atlantic County Citizen Council on Environment, who charged that radioactive wastes from nuclear power plants, if "hypothetically" equally distributed and digested, would do great harm to the population and therefore these wastes must be confined.

Here is what Mr. Shaw wrote in response:

These wastes most certainly must be confined. The Atomic Energy Commission has operated on that basis from the beginning and has successfully kept the wastes generated by AEC operations out of man's everyday environment. We intend to do the same for wastes generated by commercial nuclear power plants and see no reason why we cannot. In fact, we cannot conceive of a reasonable situation where these high-level wastes could be equally distributed and ingested. You could say the same kind of thing about almost any toxic substance or poison. Ten tons of chlorine, for example--which is not much compared with industrial use of chlorine--would be enough to kill the world's population if properly administered.

The management of radioactive waste material in the nuclear energy industry can be classified under two general categories. In the first is the treatment and disposal of the low activity gaseous, liquid and solid wastes produced in nuclear power plants and other facilities such as fuel fabrication and reprocessing plants. Reactor plants and fuel reprocessing plants are permitted to release low concentrations of radioactivity to the atmosphere and to condenser cooling water. Experience has shown that these amounts are generally only a few per cent of limits specified in regulations issued by the AEC.

Low-level solid wastes are packaged and shipped for storage at AEC-owned or licensed burial sites. These sites are located on federally-or state-owned land where the local geology and hydrology are not conducive to significant migration of the buried radioactivity. Surveillance programs are maintained to assure that migration does not occur.

The second category involves the treatment and permanent storage of much smaller volumes of wastes with high levels of radioactivity. These high-level wastes are by-products from the reprocessing of used fuel elements from nuclear reactors. The high-level liquid wastes resulting from reprocessing are concentrated and stored in tanks under controlled conditions at the site of the reprocessing plant. More than 20 years of experience at AEC facilities has indicated that underground tank storage is a safe and practical means of interim handling of high-level waste. In anticipation of the growth of the nuclear industry, the AEC has developed a technology to reduce liquid waste to solid form. Further, the AEC has adopted a policy of requiring high-level waste from the reprocessing of commercial reactor fuels be converted to an acceptable solid from and shipped to a federal repository for permanent custody.

Essentially, what we will do is build engineered surface storage facilities capable of handling the solidified high-level wastes to be generated by the nuclear industry. We know we can do that; no new technical problems are involved. But we would prefer to have a minimum of surveillance and a minimal burden upon succeeding generations, so we will continue research and development on other disposal methods. Disposal in bedded salt, for example, has been recommended and under study since 1955. We expect to have a pilot repository in operation late this decade to prove or disprove its suitability.

The shipment of high-level wastes and other radioactive materials is subject to the transportation safety regulations of both the AEC and the Department of Transportation. Large numbers of irradiated fuel elements and radioactive waste products have been shipped for over 20 years without significant incident. It is estimated that currently somewhat more than 800,000 shipments of all

> kinds of radioactive materials are made each year. To date, there has not been a single injury due to radiation from radioactive materials in transportation. There has never been a case of serious leakage from a shipment of irradiated fuel.

Among the complaints lodged against nuclear plants is the fact that they discharge warm water that could endanger aquatic life in bays, rivers, and the ocean.

Some problems in this regard have been encountered at Oyster Creek, the nuclear power plant which Jersey Central Power and Light Company operates near Barnegat Bay in Lacey Township, Ocean County. The Committee visited Oyster Creek and was impressed with the elaborate precautions in effect to prevent malfunctions and confine containments in the event of a malfunction. However, there have been fish kills and studies are under way to determine the cause. A preliminary report issued by Jersey Central expresses concern for these incidents, which occurred in the water discharge canal at Oyster Creek. The largest such incident occurred in January, 1972. The extent of the fish kill cannot be verified. However, estimates range between 100,000 and 1,000,000 fish lost, virtually all of which were menhaden.

To put the extent of the fish kill into perspective, reference is made to the menhaden purse seine fishery off New Jersey. The menhaden purse seine is a large encircling net that captures schools of fish. An average set of the net yields about 20 tons of fish, although sets yielding nearly 170 tons have been made.

If it is assumed that the fish lost in Oyster Creek had all survived to commercial size (10 to 12 inches), and numbered 1,000,000, they would have weighed an estimated 25 tons, or slightly more than the total catch of a single net set. The estimates of weight were derived from Carlander (Handbook of Freshwater Fishery Biology, Volume I, 1969) using the gizzard shad as the base of comparison. The gizzard shad and menhaden, members of the same family, have closely comparable body forms.

In 1956, the New Jersey Fishery reached its peak and 270,000 tons of fish were landed. Almost 90% of this weight was menhaden, which is normally ground up for fertilizer.

In view of Jersey Central's concern about these incidents, an intensive investigation has been initiated to understand the cause or causes of the incident, subsequently to develop and implement a program to minimize the possibility of future occurrences.

I am especially concerned about game fish, but it is evident that New Jersey's utilities are just as concerned.

Public Service Electric and Gas Company is conducting fish studies on the Delaware River, in conjunction with its Salem Nuclear Generating Station, now under construction, and at Newbold. A 50-square-mile area around the site of the proposed Atlantic Generating Station, 2.8 miles out in the Atlantic Ocean, is also being studied. Since this would be the first atomic plant situated in the ocean, I believe the long-range study commission should devote particular attention to the ecological consequences of an ocean site.

The man who is conducting these studies, Dr. Edward C. Raney, director of Ichthyological Associates and a professor of zoology at Cornell University for 30 years, told a New Jersey Assembly hearing last June that the commission to study the ocean is a "rare opportunity that a biologist gets" to help provide engineering solutions to potential ecological problems.

At Salem, Dr. Raney and other consultants found that if water discharge pipes were run 500 feet out into the Delaware River at a depth of 25 feet, the tidal flow of the river will quickly disperse the heated water. And the fact that the outlet is so far from the intake pipes will insure that fish will not be drawn toward the plant or otherwise harmed. Scientifically designed screens in front of the intakes will add to this protection.

The Committee is in complete agreement on the need to protect the residents of New Jersey from the potential hazards of nuclear power plants and to preserve from harm the state's air, land and water. But I think we also agree that we need more electric energy.

I submit that adding another level to the present pyramid of agencies concerned with controlling nuclear power is unnecessary; it would be another stop on an already well-regulated road.

The State will need, within a decade, twice the electrical power it now consumes. Some 9000 megawatts of that proposed additional power--three-fourths of the present capacity--is nuclear in nature. It takes almost 10 years to build a nuclear power plant. Within that time some 50 to 60 applications, licenses and permits must be forthcoming from local, state and federal agencies--including New Jersey's Department of Environmental Protection, the Atomic Energy Commission and the Federal Environmental Protection Agency.

The cleanup of our environment is certainly going to need energy. As an example, the proposed secondary treatment plant of the Passaic Valley Sewerage Commission in northern New Jersey will require an additional flow of 73,000 to 78,000 kilowatts. That is enough electricity to run 100,000 homes.

There is general agreement in this State that the need for additional power exists. And there is agreement among energy producers that the consequence of not having the power available--in this case, nuclear power--is less power, at more cost, and the very real threat of blackouts, with all of the consequent damage to safety, health and the economy.

New industry will go elsewhere, and the industry that has meant jobs and security for our residents may go elsewhere, too.

Well, how well can we trust the regulatory agencies? Let us look at the record. What is the operating experience of existing reactor plants?

There are, at this time, 30 commercial plants in the United States, 90 commercial plants overseas, and 70 research reactors and many vessels using nuclear power. All of them have proven to be safe and good neighbors; there has never been any danger or injury to the general public as a result of the operation of any of the plants. Reactors can be, and are, operated safely.

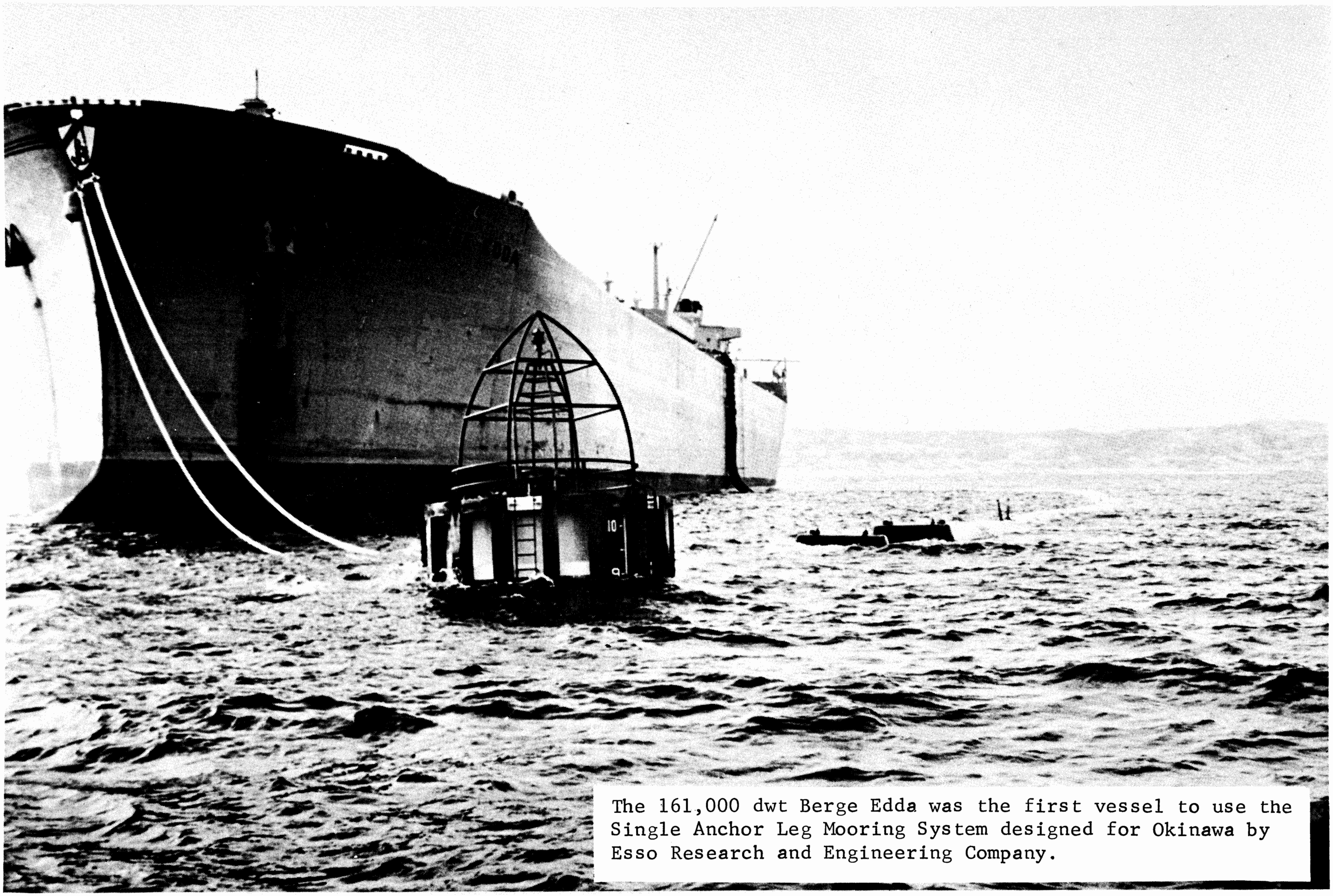
We are right to be concerned about the safe operation of this power source. But the technology to insure the safe operation of the plant is there, and I submit that it is not our job to outlaw a technology that can produce electricity without pollution.

This is an interim report. A more searching analysis of the problem should be made by the long-range study commission proposed in Senate Bill No. 2075.

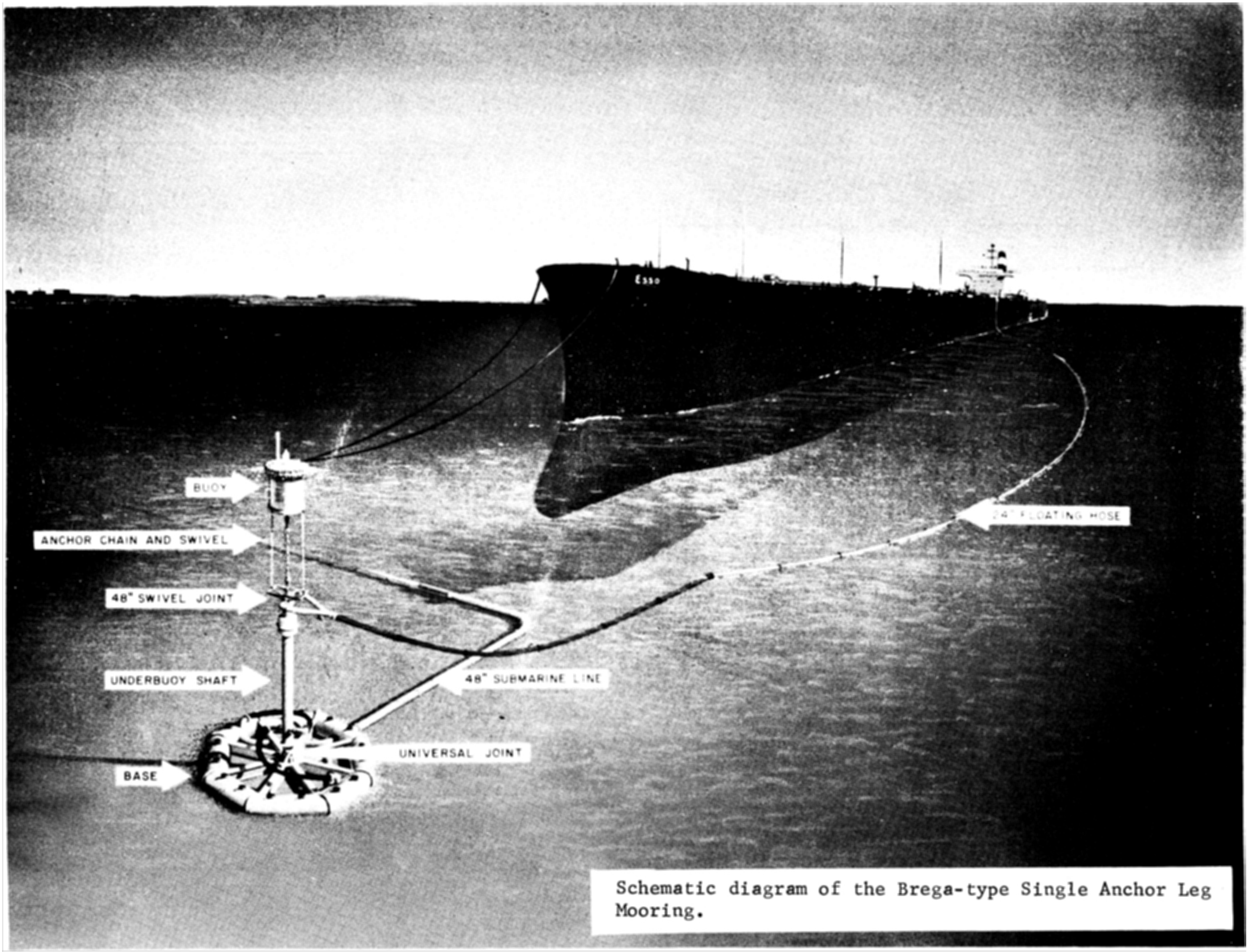
Major aspects of energy supply and demand have not been dealt with. This Committee has not offered any real alternatives to nuclear fission.

There was testimony and some review of offshore drilling for gas and oil, but the legal and scientific complexities of this proposal forced us to put off any judgments at this time. Limited time and resources also precluded any real study of the feasibility of solar energy, fuel cells, geothermal energy, coal gasification and liquefaction, nuclear fusion, and oil derived from shale. More investigation is needed to gauge adequately the potential of these alternatives for meeting the energy demands of the future.

I, therefore, concur with the Committee's recommendation for the enactment of Senate Bill No. 2075, which establishes a long-range energy study commission. I recommend that the long-range commission thoroughly review (a) federal and state energy policies; (b) long-range supply and demand prospects for all types of fuel and electricity; (c) the benefits and risks of offshore drilling for oil and gas; (d) strategies for the conservation of energy and reduction in energy demand; (e) the outlook for new methods of energy production; (f) the environmental, economic and social implications of a deep-water port off New Jersey, and (g) site planning procedures for location of energy-related facilities.



The 161,000 dwt Berge Edda was the first vessel to use the Single Anchor Leg Mooring System designed for Okinawa by Esso Research and Engineering Company.



Schematic diagram of the Brega-type Single Anchor Leg Mooring.

OIL PORT

The majority's recommendation calling for a moratorium on the construction of facilities to handle offshore unloading of large crude oil vessels is overly stringent and unnecessary. I have kept the possible environmental consequences of offshore unloading as my overriding consideration, and I am not convinced that this principle is unsound when compared with the lightering system which is now in use. Lightering is a system by which smaller ships go out to meet the heavy tankers which, because of their size and heavy draft, cannot sail into a United States port. The smaller tankers then take on the oil from the huge tankers, sail back to shore, unload, and then sail back to the tanker again. This "piggyback" operation is carried on until the tanker is light enough to reach port.

This double handling is sloppy and is a major cause of many small oil spills. It is also expensive and contributes to the rising cost of oil. Furthermore, with the increased demand for oil goes a more extensive use of lightering, which in turn causes an ever-rising risk of accidents, and an ever-increasing cost.

Lightering also contributes heavily to the increase in traffic in our already congested harbors where most accidents occur, while the use of a mooring buoy would decrease the traffic dramatically. In 1970, there were 4,000 unloadings to handle

petroleum imports to the United States. In 1985, using the same size vessels, the traffic would increase to about 21,000 annual ship calls. If modern offshore facilities are built and optimum size ships used, then the total delivery activity in the entire United States could be reduced to 3,400 annual ship calls by 1985. The reduction in inner harbor traffic and the reduction of the potential for inner harbor accidents and spills is self-evident.

The safety record of these buoys is also notable. A port at Milford Haven, England, has a proven record of an oil loss of less than .0004% of the oil handled. One company points to ten years of experience with four terminals operating at a loss rate of .0002% of the product handled. The Bantry Bay, Ireland, terminal has handled over 500 million barrels of oil with a loss of 29 gallons. Also, in New Jersey, the large carriers would be unloading crude oil and taking on water ballast. There would be no oily water-ballast discharges.

Another consideration I have noted from my own personal observation is that the Single Point Mooring Buoy is not aesthetically objectionable. It is efficient, unobtrusive and clean. An unloading buoy located thirteen miles offshore will require no dredging, and will not interfere with aquifers, currents, tide, marine life or navigation. From the mooring buoy, a buried pipeline to shore is the only physical requirement. Using existing rights-of-way, the oil can be moved inland to appropriate approved product storage sites or to existing product storage facilities. The petroleum industry has emphasized that it has never been its intent to seek product storage on any beach or recreational area. Even with future projected increased crude oil storage, if more storage facilities are required to help assure continued supplies without interruption, only about one-half square mile of land would be needed.

The economic advantage of the use of large tankers should also be noted. Industry has indicated to us that, by conservative estimate, large carriers can reduce transportation costs by $250 million to $1.2 billion per year by 1985. These economies will hopefully lead to lower prices for the New Jersey consumer. Conversely, the inefficient high-cost handling of crude oil will eventually lead to higher priced petroleum products. Thus, the cost factor is both positive and negative.

The point has been made that a spill from a very large crude carrier might conceivably cause irreparable harm to the New Jersey coastline. I have determined that the larger vessels are carefully compartmentalized and engineered and are built with the best available navigational aids. Locating the unloading point thirteen miles offshore further minimizes the possibility of any accidental spills reaching the New Jersey beaches.

To insure that the possibility of a major spill is even further reduced, I would require that the companies using this mooring buoy maintain a recovery and containment ship in the immediate area of the buoy and keep it fully manned whenever the buoy is in use. These companies will further have to report and prove to the Department of Environmental Protection that they have the required facilities to handle any eventuality. Thus, any possible spill would be quickly, efficiently and totally contained and removed.

Furthermore, the conclusion "that the presence of a deepwater facility is not necessarily vital for the continuation of a dependable energy supply for New Jersey" is a conclusion drawn contrary to all of the testimony and data set before this study committee.

It was brought to our attention that every major industrial nation in the world has deepwater crude oil handling capabilities. The petroleum industry has repeatedly stressed the current and immediate need for such a terminal.

While it is true that the New Jersey refineries serve areas outside of this State, it must be remembered that we have benefited from the employment, the tax base and the lower cost products locally available. For example, for years the New England consumer has borne the added cost of shipping his heating oil from New Jersey or Gulf Coast refineries. It is a distortion of fact to say that we, as local consumers, have not benefited from having refining capacity in our State. We have local access to gasoline and heating oil with less probability of supply disruption due to natural cause such as weather, transport delays, etc.

State environmental regulations and local zoning controls will govern what additional refining capacity, if any, is ever built and where it would be built. Also, it is a non sequitur to say that merely because a deep water mooring buoy will be built, added refining capacity will be sought. If necessary, we could further control that possibility by mandating that any mooring buoy built shall be built only for present refining capacity need.

As a final consideration, I would fervently admonish the oil companies, in all good conscience, to keep the welfare and needs of New Jersey residents paramount insofar as oil needs are concerned. While it is true that no present law requires that New Jersey be supplied with oil first and the excess then be transported to other states, these companies should be ever-mindful of the needs of this State, which has so graciously made available its facilities to them.