

DETAILED RESPONSES RECEIVED FROM AIG

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NOV 14 1978

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

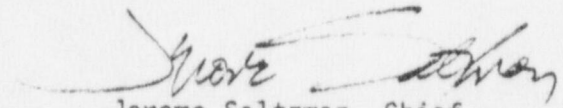
FROM: Jerome Saltzman, Chief
Antitrust & Indemnity Group
Nuclear Reactor Regulation

SUBJECT: USE OF WASH-1400 IN THE LICENSING PROCESS

This is in response to your recent memo subject as above. I have surveyed appropriate members of my staff and have not found, with one possible exception, any AIG licensing and other regulatory actions or staff positions that have relied on the risk assessment models and results of WASH-1400.

The possible exception pertains to some Congressional letters, copies attached, in which general risk assessments of WASH-1900 are characterized. While I believe that we should discontinue the use of characterizations of the conclusions of WASH-1400 (e.g., "...on the order of one chance per billion") we should not try to amend letters that have already been dispatched.

We are also aware of a draft report from ORNL (NUREG/CR-0222 - Economic Consequences of Accidental Releases from Fuel Fabrication and Radioisotope Processing Plants) that is being produced for NMSS to provide the technical framework for the joint NMSS/NRR review of indemnification for materials licensees. This study utilizes WASH-1400 data in devising consequence models for nuclear incidents. However, I understand that NMSS is taking the responsibility of reviewing this study under the same criteria that you furnished to NRR staff, so separate review by NRR is probably unnecessary.


Jerome Saltzman, Chief
Antitrust & Indemnity Group
Nuclear Reactor Regulation

Enclosures:
Copies of Congressional letters



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 2 1978

*File with
unlabeled Q & A*

The Honorable Lee H. Hamilton
United States House of Representatives
Washington, D. C. 20515

Dear Congressman Hamilton:

This is in response to your request for information to reply to a communication you received from Edgar K. DeJean, D.D.S., 102 N. Harrison Street, Salem, Indiana 47167, on April 10, 1978. The part of the letter to which this response is addressed states:

"Electricity generated in nuclear reactor plants is more expensive than electricity from conventional fossil fuel plants when one includes the hidden benefits of government subsidies in funding and insuring (liability) such plants."

We know of no subsidy, unique to nuclear power, in the funding of commercial nuclear power plants. With regard to the question on government subsidy in insuring nuclear power plants, the extent of Federal subsidy cannot be precisely determined. This is because there is some degree of uncertainty in determining the risk associated with the operation of a nuclear power plant. However, the risk is small enough, as indicated below, that any resultant Federal subsidy would not significantly alter cost comparisons between nuclear power and its competitors.

Based on our estimates of costs for the proposed Marble Hill Nuclear Generating Station, the cost of electricity generation (expressed in 1978 dollars) will be about 29 mills per kWh for nuclear and about 33 mills per kWh for coal. The cost of generating electricity by an oil or natural gas fired plant would be considerably higher.

One way of estimating the effect that an insurance subsidy has on generating costs is by consideration of average annual loss. Average annual loss would be the amount of accidental loss times the annual probability that the loss will occur; mathematically, this number would be annual risk. If we simply assume that the Federal government would pay all claims which might result from any nuclear power plant accident, the average annual loss would be a conservative estimate of the annual Federal subsidy.

The average annual loss from nuclear power plant accidents cannot be precisely determined. The Reactor Safety Study* (RSS) developed estimates of probabilities and consequences of nuclear power plant accidents. That study has been the subject of some controversy, but we think the estimates can be useful in considering possible consequences of nuclear power plant accidents. Using those estimates together with other information, we have recently estimated the average annual loss from nuclear power plant accidents to be less than \$400,000 per reactor per year in 1978 dollars. We think that the uncertainty in our estimate is less than a factor of ten. During one year a large power plant would generate about 5.5 billion kilowatt-hours of electricity. The average annual loss then is less than 0.08 mills per kilowatt-hour.

The previous discussion ignores the fact that under the Price-Anderson Act,** there is a system of private funds and governmental indemnity totalling up to \$560 million to pay public liability claims for personal injury and property damage resulting from a nuclear incident. This Act requires licensees of commercial nuclear power plants having a rated capacity of 100,000 electrical kilowatts or more to provide proof to the Nuclear Regulatory Commission that they have financial protection in the form of private nuclear liability insurance, or in some other form approved by the NRC, in an amount equal to the maximum amount of liability insurance available at reasonable cost and on reasonable terms from private sources. That financial protection, \$465 million, is comprised of primary private nuclear liability insurance of \$140 million and a secondary retrospective premium insurance layer of \$325 million.

In the more than 20 years since the inception of the Price-Anderson program, no payment of Government funds has ever been made under licensee indemnity agreements nor will any payment of Government funds be made unless claims resulting from a nuclear incident, exceed the financial protection layer. In its traditional sense, the term "subsidy" connotes payment of money by a government to a person or a private commercial enterprise. While no payments have ever been made under licensee indemnity agreements since the inception of Price-Anderson in 1957, the Government has collected a total of \$19,689,661 in indemnity fees as of March 31, 1978.

*Reactor Safety Study, An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants. U.S. Nuclear Regulatory Commission NUREG-74/014.
**Public Law 85-256, as amended; 42 U.S.C. 2210.

When the Price-Anderson Act was enacted in 1957 and when it was extended in 1965, the Government's involvement as an indemnitor was seen as a temporary necessity. The utility industry was eventually expected to assume the financial risks of its operations. The subsidy issue was raised by a number of witnesses during hearings held by the Joint Committee on Atomic Energy in 1974 and 1975 on the extension of the Price-Anderson Act. Indeed, the legislative proposals submitted by the Administration in both years were sensitive to this concern and provided as a major provision, the phase out of Government indemnity. H.R. 8631, the bill reported out by the Joint Committee in 1975 contained provisions for phasing out Government indemnity by assessing each licensee of a large power reactor a deferred premium which would be calculated as a prorated share of the damages exceeding the base layer of insurance. The Commission was also sensitive to the subsidy argument when it established the retrospective premium at \$5 million per reactor per incident to the Act (Public Law 94-197).

The only other current subsidy we know of which is unique to the civilian nuclear power industry is uranium enrichment services. This service is done with security classified equipment at Federal facilities with a charge to users of the service. Since September, 1977, the charge has been \$74.85 per kg separative work units (swu). Estimates of the cost of providing the service from a newly constructed private facility are \$100 per kg swu when all costs including taxes, private industry interest rates, and business profits are included. If one ignores any benefits which might accrue to the government from operating its enrichment facility for commercial purposes and considers the difference between the cost of new plant and current charges to be a subsidy, the subsidy would be approximately 0.4 mills per kWh.

Subsidies of various types are pervasive in our economy. Accounting for subsidies in one industry, or energy source is difficult; a comparison between unsubsidized costs of alternative energy sources is almost impossible. One should be extremely cautious in drawing conclusions as to which energy source receives the most subsidies. For example payments for black lung disease, indirect subsidies to barging, highways, and railroads, Federal and state minerals exploration, leasing of mineral rights on public lands, investment tax credit and preference tax and borrowing benefits all are subsidies in varying degree to energy sources which compete with one another.

An attempt to enumerate Federal subsidies is contained in a Congressional Staff Study entitled "Federal Subsidy Programs," Joint Economic Committee, October 18, 1974; a copy is enclosed. The section most related to energy subsidies appears to be Natural Resources which begins on page 96. By far the largest subsidy listed is the excess of percentage over cost depletion (commonly called "depletion allowance"). These are granted to extractive industries wherein tax subsidies are allowed ranging from 22 percent of gross income for oil to 5 percent for certain minerals. This depletion allowance of \$2.96 billion in 1975 compares to approximately a \$60 billion total for all Federal subsidies identified in this study.

In summary, government subsidies to various energy industries is pervasive. Moreover, the subsidies vary in both type and value from one energy source to another. Therefore it becomes an extremely difficult, if not impossible, task to compare the unsubsidized costs of power production.

Sincerely,

(Signed) William J. Dircks
William J. Dircks
Assistant Executive Director
for Operations

Enclosures:

1. The Reactor Safety Study - Executive Summary
2. Congressional Staff Study entitled
"Federal Subsidy Programs"

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PLEASE SEE PREVIOUS CONCURRENCES

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The Honorable Carls Moorhead
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Moorhead:

We have received from the Energy Research and Development Administration your letter dated April 27, 1977, which requested information for responding to concerns stated by one of your constituents, Ms. Terry Crawford. We hope the following information will be helpful.

In stating that the Price-Anderson Act was recently struck down as being unconstitutional, Ms. Crawford is alluding to a declaratory judgment rendered on March 31, 1977, by Judge McMillan in the U.S. District Court for the Western District of North Carolina. The Court held that the \$560 million limitation of liability provision in the Price-Anderson Act was unconstitutional. The decision leaves untouched all other provisions of the Act. The NRC and Duke Power Company, who were co-defendants in this case, have both filed notices of appeal to the U.S. Supreme Court.

To place Judge McMillan's decision and Ms. Crawford's statements in perspective it might be helpful to summarize the major provisions of the Price-Anderson Act. As you may recall, the Act was extended on December 31, 1975 for 10 years and modified to establish a three-layer system to pay public liability claims for personal injury and property damage resulting from a nuclear incident. The first layer of this system presently provides that all licensees of commercial nuclear power plants having a rated capacity of 100,000 electrical kilowatts or more are required to provide proof of financial protection in the form of private nuclear liability insurance, or in some other form approved by NRC, in an amount equal to the maximum amount of liability insurance available from private sources. The maximum amount of private nuclear liability insurance currently available is \$140 million.

The new second layer of the system provides a mechanism whereby the utility industry would share collectively in the risk of damages from a

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nuclear incident exceeding \$140 million, the first layer, through the payment of a retrospective premium of up to \$5 million per reactor per incident. In the event of a nuclear incident causing damages exceeding \$140 million, each licensee would be called upon to pay a prorated share of damages in excess of the first layer up to \$5 million per reactor per incident.

The third layer, or Government indemnity, will gradually be phased out as more commercial reactors are licensed and licensees participate in the retrospective premium system. Currently, Government indemnity provides coverage for damages exceeding \$140 million up to a maximum of \$560 million. In August 1977 when the retrospective premium system (second layer) formally takes effect, the Government indemnity layer will equal the difference between \$560 million and the sum of the first and second layers of protection. Government indemnity will be phased out when the first and second layers by themselves provide liability coverage of \$560 million. Under the current level of private liability insurance coverage, this will occur when 84 commercial reactors have been licensed. After that point, the limit of liability would increase without limit in increments of \$5 million for each new reactor licensed.

To illustrate the three-layer system described above, we may assume that 62 reactors are licensed (the current actual number). In the event of a serious nuclear incident, up to \$140 million would be made available through the first or primary financial protection layer. If this amount were not sufficient, then the secondary financial protection layer, or retrospective premium system, would be drawn upon. This would provide up to an additional \$310 million for liability coverage above the initial \$140 million. (\$310 million = 62 licensed reactors X \$5 million/reactor.) If this were still insufficient, the third layer, Government indemnity, would provide the balance up to the \$560 million limit of liability. Government indemnity in this instance would provide \$110 million (i.e., \$560 million - \$310 million - \$140 million = \$110 million).

Ms. Crawford is concerned that the \$560 million limit of liability acts as a "shield" for the nuclear industry and denies the public their "just compensation" in the event of a serious accident. During the course of its considerations of the possible extension or modification of the Price-Anderson Act in 1974 and 1975, Congress apparently accepted the view that there are good reasons for maintaining a limit of liability. First, \$560 million is adequate to cover all but the most extremely improbable accidents. The AEC/NRC report, "An Assessment of Accident Risks in U.S. Commercial Nuclear Plants," (the Rasmussen Report), has shown that a nuclear accident causing damages in excess of \$560 million is extremely remote, on the order of one chance per billion. Insurance is based on reasonable probabilities of liability rather than maximum conceivable damage, however remote.

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Second, without limitation of liability, the public might in fact have less assurance of obtaining compensation after a nuclear incident. Coupled by law with the limitation of liability is a provision for defendants to waive defenses such as contributory negligence and short statutes of limitations in the event of an extraordinary nuclear occurrence, which the Commission has defined as any offsite radiation causing significant injury to persons or property. This provision means that a claimant need only show that injury in fact occurred and was caused by the nuclear incident. Without this provision liability would have to be established in each case on state tort law and procedures and, absent such a system, compensation would be uncertain. Even if a claimant were awarded a judgment, that judgment might be uncollectable if defendant's assets were exhausted.

We would like to add that no member of the public has ever been injured or killed as a result of an accident at a commercial nuclear power facility. This safety record has been recognized by the insurance industry through the nuclear insurance pools, which have participated in the plan established by the Price-Anderson Act since its inception 20 years ago. The only claim paid out under an insurance policy used by licensees to provide the financial protection required, involved the shipment of a spent fuel cask. Leakage from the cask required the decontamination of two trucks used for shipment. A claim of \$3,500 was paid under the insurance policy.

We hope the information provided in this letter will be helpful in responding to your constituent's concerns.

Sincerely,

Enclosure:

Ltr. from Ms. Terry Crawford
dated April 22, 1977

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FROM: Rep. Carlos J. Moorhead		ACTION CONTROL		DATES		CONTROL NO. 01921	
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		ACKNOWLEDGMENT		5/12/77		DATE OF DOCUMENT	
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Encl ltr fm Terry Crawford re insufficient coverage of liability under the Price-Anderson Act		Return enclosure w/reply <i>Done on 5/16/77</i> <i>4/24/77</i>					
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EXECUTIVE DIRECTOR FOR OPERATIONS

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Congress of the United States

House of Representatives

Washington, D.C.

April 27 1977

Mr. Eric Beckjord, Director
Division Reactor Research & Devel.
ERDA
Washington, D. C. 20545
Sir:

The attached communication
is sent for your consideration.
Please investigate the statements
contained therein and forward me
the necessary information for re-
ply, returning the enclosed corre-
spondence with your answer.

Yours truly,

Carlos J. Moorhead

CJM:sk

M. C. 1

Terry Crawford
2069 Bellevue Dr.
Glendale, California 91201



UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

Honorable Carlos J. Moorhead
House of Representatives

Dear Mr. Moorhead:

Reference is made to your recent referral regarding an inquiry from your constituent, Ms. Terry Crawford.

We have reviewed your referral and believe it relates to a program for which the following agency has responsibility:

Mr. Carlton Kammerer, Director
Office of Congressional Affairs
Nuclear Regulatory Commission
1717 H Street, NW.
Washington, D.C. 20555

We are, by copy of this letter, referring your inquiry to that agency for appropriate action. Further inquiries of this nature should be sent to the above address.

If we can be of further assistance, please contact us.

Sincerely,

H. Hollister Cantus, Director
Office of Congressional Relations

Enclosure:
Incoming correspondence

~~Let~~ Nuclear Regulatory Commission

RECEIVED
Date 5/16/77
File 1845

Terry Crawford
2065 Bellevue Dr.
Gleniale, California 91201

April 22, 1977

The Hon. Carlos Moorhead
House of Representatives
Washington, D.C. 20515

Dear Representative:

As you may already know, the Price-Anderson Act was recently struck down as being unconstitutional.

This act has been used as a shield by the nuclear industry against full liability, which is unique only to this industry.

All you ever hear from business and industry is that we need nuclear power to expand our economy. But, these same people deny us of just compensation if an accident ever occurred.

If the free enterprise system works as great as these individuals claim, then the nuclear industry must have to obtain full coverage for their technology. They must be responsible for each act that they permit.

You hear all the time that Mr. Rasmussen's study proved that reactors accidents aren't likely, yet, they don't have near the coverage to cover the huge, potential loss.

Let's make the industry show how safe their reactors are by requiring full insurance.

You should make sure that this problem is solved before nuclear power is allowed to grow as the nuclear industry wishes.

Sincerely,

Terry Crawford

JUN 12 1975

Mr. George F. Murphy, Jr.
Executive Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Murphy:

With regard to your letter of May 30, 1975, we are pleased to provide you with the following response to an inquiry that you received concerning the Price-Anderson Act.

The Price-Anderson Act, Section 170 of the Atomic Energy Act of 1954, as amended, is presently scheduled to expire on July 31, 1977. The Act provides a system of private nuclear liability insurance and governmental indemnity totaling \$560 million to pay public liability claims for personal injury and property damage resulting from a major nuclear accident. Under the Act, power reactor licensees are required to provide proof to the Nuclear Regulatory Commission (NRC) that they have private nuclear liability insurance or another form of financial protection approved by the NRC. For power reactors with a rated capacity of 100,000 kilowatts electrical or more, the Act requires that each licensee maintain such protection in an amount equal to the maximum amount of insurance available from private sources (currently \$125 million). Above that amount, the law requires that the licensee execute an indemnity agreement with NRC, providing government indemnity for all public liability up to a total of \$560 million in insurance and indemnity, at which point the law limits liability. While licensees do indeed provide approximately 20 percent of the \$560 million available to pay claims, they are not required under the present Act to provide any more than this amount, which represents the maximum amount of insurance now available.

The vetoed bill (H.R. 15323) referred to would have extended the Commission's authority to execute indemnity agreements with its licensees to August 1, 1982. Primarily, the bill

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would have changed the method of providing financial protection so that (1) as government indemnity was phased out by the early 1980s, licensees operating large power reactors would be providing the total funds for the payment of public liability claims, and (2) the limitation on liability presently established at \$560 million would have gradually increased in direct proportion to the number of nuclear power reactors licensed by the Commission. The bill specified that financial protection provided by licensees required to have the maximum amount (large power reactors) would consist of two layers: (1) the existing primary insurance layer (\$125 million) furnished by the two nuclear liability insurance pools, Nuclear Energy Liability Insurance Association (NELIA) and Mutual Atomic Energy Liability Underwriters (MAELU) and provided by all licensees as financial protection and (2) a "retrospective premium" insurance layer. The amount of this second layer would depend on the number of licensed facilities and the size of the retrospective premium that would be assessed against each facility licensee in the event of a nuclear incident involving claims in excess of the primary insurance layer. After the sum of the primary insurance layer plus the retrospective premium layer exceeded the present \$560 million limit on liability, government indemnity would terminate and the limit on liability would be the sum of the two insurance layers. The limit would continue to rise as more reactors are licensed, unless the Commission reduced the retrospective premium.

On October 12, 1974, President Ford vetoed H.R. 15323, but solely because of a technical provision unrelated to the bill's basic scheme. That provision (section 12) was added on the Senate floor and dealt with the comprehensive study by Dr. Norman Rasmussen of the Massachusetts Institute of Technology entitled "An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants." It would have required the Joint Committee on Atomic Energy to submit an evaluation of the final Rasmussen Study to Congress. Within 30 days after the JCAE reported to Congress, Congress could, by adoption of a concurrent resolution, make the bill ineffective, thereby, in effect, repealing an enacted law without any action by the President. The President considered section 12 to be unconstitutional, but stated that he would be "glad to approve" the bill's other provisions "if they stood alone."

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Mr. George F. Murphy, Jr. -3-

No doubt the content in the letter that you received concerning the possible damage in the event of a nuclear incident refers to the conclusions of earlier reactor safety studies on the consequences of reactor accidents such as the 1967 Brookhaven National Laboratory Study (WASH-740) which did have estimates on property damage ranging from a lower limit of about one half million dollars to an upper limit in the worst case of seven billion dollars. An important conclusion of the Brookhaven Study, however, was that in the large majority of theoretical reactor accidents considered, the total assured losses would not exceed a few hundred million dollars.

Furthermore, as was brought out in the May 1974 Congressional hearings on the possible modification or extension of the Price-Anderson Act, Dr. Norman Rasmussen testified that he considered the present \$560 million limit on liability to be a reasonable value at this time to cover all combinations of circumstances which could reasonably be considered credible. A basic conclusion of the Rasmussen Study, WASH-1400, released in draft form in August 1974 was that "reactor risks are... smaller than many other man-made and natural risks to which we are exposed as a society and as individuals." In addition, the estimates for both property damage and fatalities and injuries which would result from a nuclear incident were also estimated to be much less than earlier studies concluded. It is questionable, then, whether one can describe the \$560 million figure as representing 5 percent, 100 percent or any percentage of a theoretical, highly improbable, major nuclear accident.

We are enclosing a copy of the Summary Report of the Rasmussen Study. A final report, taking into consideration the many detailed comments received on the draft, will be published later in the year.

We hope this information will be of assistance to you.

Sincerely,

/s/

Carlton Kammerer, Director
Office of Congressional Affairs

Enclosure:
As stated

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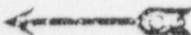
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