Supplemental Information

The following is additional information on the various numbered points raised in Mary Sinclair's letter of June 26, 1974.

1. Statement

The unresolved questions of nuclear safety which were brought out primarily during the national safety hearings. These issues have by no means been resolved and, in fact, a recent (1973) AEC Task Force that inspected the record of operating reactors stated that n-plants now operating are "besieged" by malfunctions and that the level of risk cannot be determined at present.

Response

As regulators, we always want to know more; and the fact that we ask tough questions, to which there may be no immediate answers, is not going to deter us from those pursuits. The fact that there are questions under study and being researched certainly indicates that answers are being pursued; however, it does not follow that substantial threats exist today to the health and safety of the public. Significant margins have been used where questions remain.

Regarding the point about operating reactors being "besieged" by malfunctions, there have been large numbers of problems reported to the AEC regarding reactors in operation and under construction. A few of these represented significant potential threats to public health and safety, but the vast majority were problems that are predictable in any complex plant, and the plants are designed to accommodate them. The main thrust of the report was to emphasize that some of these problems were significant and were generic in nature; therefore, efforts must be made to continue to improve safety even more as additional plants become operational in the future. In addition, while generic problems can be adequately resolved today without significantly affecting the electric energy production of the country, the potential for such problems must be reduced in the future so as to avoid resultant significant power losses due to possible

nuclear plant shutdowns and deratings, as well as excessive delays during the construction and testing phases. Reliable, as well as safe, power for the future is the key.

Regarding level of risk, it is true that as of the writing of the report exact quantification was not possible. A report on the current safety study (performed under the direction of Dr. Rasmussen) is due to be published soon, and this will provide needed insight on quantifying the loss-of-coolant accident chain probabilities. The Task Force report did not say that there was no knowledge of the subject of level of risk, just that it was not exactly quantified. The AEC believes that the general level of risk was known well enough to provide reasonable assurance as to protection of public health and safety for the plants licensed to date, but one must always strive to do better in a field of endeavor of this nature.

2. Statement

The lack of a satisfactory disposal site for high-level, highly toxic wastes which will last for many thousands of years. Stating the amount of space that a solidified mass of this waste will require, as Dixie Lee Ray repeatedly states to TV and other audiences, does not explain the fact that the more than 80 million gallons of wastes from the weapons program at Hanford, Washington, and Savannah, Georgia, have not been solidified or safely stored at all. In fact hundreds of thousands of gallons of these wastes have been allowed to leak accidentally to the soil. Furthermore, the fact that highly toxic plutonium (with a 24,000 year half-life) will inevitably be lost into the environment at most stages of the fuel cycle even under "safe" handling conditions is not taken into account in this statement. Some of the attached news items indicate what has already been happening.

Response

The large quantities of liquid waste from the weapons program are being converted into solid form in a responsible way. The tanks that have leaked were not

designed for indefinite storage, and the leakage has been analyzed and does not represent any threat to public health and safety. The AEC believes that controls over plutonium can effectively prevent dispersal of quantities of plutonium to the environment that would represent a significant threat to the general public.

3. Statement
The possibility of diversion of plutonium to subnational groups who could make crude atomic bombs as a means of blackmail of entire cities.

Response
The potential for this type of a diversion is becoming more of a reality in today's environment. Although recent tightening of requirements has just been implemented, we are looking ahead now to the future safeguard needs for nuclear materials. New controls will be implemented as needed to act as an effective counter force or deterrent against diversion.

4. Statement
The lack of adequate insurance coverage for the millions of home-owners who will be close to reactors now being built and planned because of the limits on liability established in the Price-Anderson Act. Also, every home-owner's insurance policy carries a nuclear exclusion clause, and it becomes an important social question whether we wish to proliferate technologies that are uninsurable.

Response
The Price-Anderson Act provides for a system of private insurance and governmental indemnity, totaling $560 million, to pay public liability claims for injury and property damage resulting from a nuclear power plant accident. Under the Act, most power reactor licensees are required to provide the AEC with proof that they have private nuclear liability insurance or some other form of financial protection in an amount equal to the maximum amount of liability insurance available from private sources (currently $110 million). To cover possible claims above that amount, the law requires that the licensee execute an indemnity agreement with the AEC; that agreement provides coverage up to an aggregate of

$560 million (private insurance plus Government indemnity), at which point the law limits liability.

The statutory ceiling on liability provides an opportunity for after-the-fact Congressional reassessment of the situation should an almost inconceivable accident causing damages in excess of $560 million ever occur. The report of the Congressional Joint Committee on Atomic Energy on the bill which became the Price-Anderson law makes it clear that the limitation on the indemnity undertaking "could be subject to upward revision by the Congress in the event of any one particular incident in which, after further Congressional study, the Congress felt more appropriations would be in order." It might be noted that every nation which has undertaken to provide governmental indemnification for liability for nuclear incidents has limited the indemnification undertaking (and to a lower figure).

While the Price-Anderson Act does not prohibit private insurers from offering the type of insurance that you have described, the standard fire and property insurance policies have contained the nuclear exclusion clause since 1959. The AEC's understanding of this exclusion is that the insurers consider that property damage caused by a nuclear accident would be covered by nuclear liability insurance, and that coverage for the same property damage should be excluded from the conventional home-owner's policy to avoid duplication of insurance. Thus, if a property owner suffered damage to his property because of a nuclear incident, the compensation would come through nuclear liability insurance or the Government indemnity.

5. Statement

The total energy input into the whole uranium fuel cycle from mining to milling and fuel enrichment before the fuel gets to a reactor and the transportation of spent fuel, fuel processing and waste disposal problems after it leaves the n-plant shows very little increment of power for this extensive and irretrievable use of land and resources.

Response
The statement simply is grossly inaccurate. A study has been made of the energy required for mining, milling, enriching, fabricating, and processing nuclear fuel; and the energy required is less than 5% of the energy released in a nuclear reactor. Also, when making statements of this sort, one should also consider the total fuel cycle impact for other sources of energy. For example, the mining, transportation, and waste disposal processes for coal and the drilling, transportation, and refining processes for oil. It should be remembered that the annual consumption for a 1000 Mwe oil-burning power plant is approximately 10,000,000 barrels of oil, and a 1000 Mwe coal-burning plant would require approximately 2,600,000 tons of coal annually.

6. Statement
The questions of reliability of the large-sized n-plants are being raised all over the country. The Palisades experience in Michigan has been very bad. It has operated only 5 months since it received its full power license in December, 1972. It has had excessive radioactive accidental releases. It is also costing $7,000,000 a month to purchase the electricity it should be producing, in addition to the repairs. Other plants in other states are also having difficulties.

Response
With regard to the reliability of large-sized nuclear power plants, the Office of Operations Evaluation of the U.S. Atomic Energy Commission has performed a study of nuclear power plant availability and capacity statistics for 1973. These matters are discussed in Report OOE-OS-002 entitled "Nuclear Power Plant Availability and Capacity Statistics for 1973." A copy of this report which was issued in May 1974 is attached for your information. Based on an analysis of operating information from 27 light water-cooled nuclear plants, the study concludes in part:

a. The average reactor availability factor was 73%. Ten plants had reactor availability factors of greater than 80%; four were less than 60%.

   The same four plants (Dresden-2, Oyster Creek, Point Beach-1, and H. B. Robinson-2) whose operating records were reviewed in OOE-ES-01 were considered in preparing representative updated information on availability and outage figures. These four plants improved their lifetime average plant availability during 1973 by 3% to 75%.

b. The small population of plants with three or more years of commercial operation (ten plants) was affected strongly by extensive outage time at four plants, reducing the average plant availability factor for these ten plants to 67%.

c. Comparison of the plant availability and capacity factors for nuclear and fossil-fueled power plants, using the data developed in the present report and that published by the Edison Electric Institute, indicates that the figures are approximately the same for comparably sized nuclear and fossil-fueled plants.

Concerning the experience at the Palisades Plant, this nuclear plant was escalating power prior to and after December 1972 and was authorized to operate at full power only in April 1973. During 1973 the Palisades Plant was shutdown in January until March for steam generator repairs, and in May for reheater-moisture separator repairs. The plant was returned to power and was operated until August 11, 1973, when it was shutdown and is still remaining shutdown. During the shutdown period, extensive tests and investigations have been conducted by the licensee, Consumers Power Company, into problems relating to steam generator tube wastage and vibration of core internals. All necessary repairs will be completed before operation of the Palisades Plant will be resumed. At no time

prior to the August 1973 shutdown have the then existing conditions posed a danger to the health and safety of the public. There have been no excessive radioactive accidental releases reported to the Commission. The measures taken after the August 1973 shutdown will provide a high degree of confidence that the plant can be operated safely when it is returned to power. The prolonged shutdown of the Palisades Plant has involved significant costs for purchasing power for its customers and for the performance of necessary work. However, this fact will always be subordinated to the requirement for carrying out adequate corrective measures that will provide assurance that the health and safety of the public will not be endangered.

7. Statement

Perhaps the most grave problem is the fact that the large-sized plants placed close to our major population centers are a threat to national security over which we have no defense. They can be sabotaged externally by damaging the cold water intake pipes and pumps.

Response

The Department of Defense has studied the question of sabotage from a national security standpoint and has concluded that a nuclear power plant would be a low priority attack item. This is primarily because the structures are massive, and the systems are complex with many built-in protective and engineered safety features.

Specifically, however, the loss of the cold water intake pipes and pumps is a significant operational problem in maintaining power production, but is considered in the safety design of the plant. Loss of adequate cooling to the plant condensor immediately results in a loss of condensor vacuum, and the reactor is shutdown. A large inventory of reactor cooling water is available to provide, by specifically designed alternate system arrangements, core cooling for extended periods of time, during which temporary measures would be effected for long-term cooling.