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TESTIMONY BEFORE THE  
ENVIRONMENT AND THE ATMOSPHERE  
SUBCOMMITTEE OF THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY  
REGARDING  
NUCLEAR FUEL SERVICES, INC., WEST VALLEY, NEW YORK

PRESENTED BY  
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U.S. NUCLEAR REGULATORY COMMISSION

June 15, 1977

Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to appear before the subcommittee to participate in its examination of the decommissioning of nuclear facilities. As was requested in the letter from the Chairman, the Honorable George E. Brown, Jr., my oral remarks this morning will concentrate on the problems related to the Nuclear Fuel Services (NFS) reprocessing plant in West Valley, New York. However, before I discuss this particular facility, I would like to point out that there are several different kinds of nuclear facilities, including nuclear power reactors and the various fuel cycle plants which support nuclear power production. The decommissioning of nuclear reactor facilities has been relatively well developed and is routinely considered in the licensing process. We examine various decommissioning plans, costs, and environmental impacts prior to the issuance of an operating license for a reactor facility. Over 50 reactor facilities have been successfully decommissioned, including five licensed power reactors. I would like to submit for the record supplemental written testimony on the economics, environmental, and technical aspects of decommissioning this kind of nuclear facility.

With regard to nuclear fuel cycle facilities, decommissioning is an important issue that requires increased attention. Work needs to be done both to improve the technology for decommissioning and to establish suitable ways to assure that decommissioning will be properly financed. The subject of this testimony today, NFS, illustrates problems concerning both the technology for decommissioning and financing such operations.

Status of The Nuclear Fuel Services Plant

NFS and New York State Energy Research Development Authority (NYSERDA) are co-licensees at the site under an NRC provisional facility license, CSF-1. In this arrangement, NFS has operational responsibility for the activities ongoing at the site. NYSERDA's responsibilities include site ownership and the long-term care of high-level wastes. Under the terms of the license, NFS has a continuing responsibility for the safety of the site. The license covers conditions for protecting the health and safety of the public and employees associated with the reprocessing of nuclear fuel and storage of the separated wastes.

The NFS reprocessing facility was originally licensed in 1966 by the Atomic Energy Commission (AEC). In 1972, NFS decided to suspend operations for modification and upgrading of the facility. On September 22, 1976, NFS announced its intention to withdraw from reprocessing. The plant is now in an inactive status.

Since their decision in 1972 to suspend reprocessing operations, NFS has been providing surveillance of high-level waste and stored spent fuel. The spent fuel storage pool is about two-thirds filled with light water reactor spent fuel. The mechanical and chemical process sections of the plant have been partially flushed and decontaminated in preparation for the modifications that were anticipated. The 600,000 gallons of liquid high-level wastes from previous operations are in storage and are closely monitored. Some solid high-level wastes from the reprocessing operations are buried on site. The low-level radioactive waste treatment plant is periodically operated to treat water from the

low-level radioactive waste burial grounds or the retention lagoons. The NRC staff has made, and continues to make, frequent visits to the plant to confirm its safe status. We have prepared supplemental written testimony which provides more detailed information on the history and background of this operation. With your permission, we would like to submit this for your use.

#### Major Issues

There are several complex and interdependent problems which we are addressing now in the NFS case. These problems are:

- o Determining how stored high-level radioactive liquid wastes should be disposed of.
- o Assuring that, pending final disposition of high-level liquid wastes, the current method of tank storage is safe.
- o Determining what actions should be taken with the facilities at West Valley regarding the possible decommissioning of the site or other use.

Work on these problems has been underway; but before the West Valley problem can be finally resolved, policy decisions must be made regarding (1) what the future use of the site may be, (2) who is responsible for financing and implementing the solution, and (3) whether the West Valley site should be a federal waste repository for the NFS waste.

At the time the facility was licensed it was thought that the wastes would be permanently stored at the site. Subsequent to licensing NFS, there was an evolution in thinking by AEC on how high-level wastes should be managed and disposed of. In 1970 AEC regulations (10 CFR Part 50, Appendix F) were changed for new plants to require solidification of high-level wastes and shipment off site to a federal repository. This change was intended to limit both the number of sites where high-level waste could be perpetually stored and the inventory of liquid waste during operations.

AEC committed to review the NFS situation as a special case and issue a separate rule. Although the review is underway, the rule making has not been completed for several reasons. First and foremost, the technology for dealing with the neutralized waste has not been adequately developed. Unlike the wastes planned for future reprocessing plants, wherein the acid wastes as produced in the reprocessing plant are directly solidified, the NFS waste was neutralized similarly to military wastes generated by the weapons program. Neutralized wastes are more difficult to solidify because of their sodium content. It was thought that technology developed to deal with the weapons program wastes could be applied to the NFS problem. If so, duplication of effort and research and development costs could be minimized. Until NFS decided to withdraw from reprocessing, it appeared that time was available to allow the technology to mature; and then the waste could possibly be worked off after the plant was restarted.

It now appears to NRC that actions with regard to the high-level waste at West Valley (i.e., development of technology and safety criteria) should proceed in a stepwise fashion. It also appears that ERDA is the only organization with the technical experience and resources to deal with the problem of developing the technological alternatives for management of high-level wastes and, therefore, should take the lead in this area. The issue of assigning financial responsibility for the disposition of the waste should not delay developing technical solutions. On March 4, 1977 NRC requested ERDA to take the lead in providing the technology applicable to solutions to the NFS high-level wastes problem. NRC will work with ERDA while we develop the associated safety and environmental criteria for the technology.

A problem which has an important bearing on the final solution to the high-level waste issue is that it may not be feasible to remove all of the waste from the high-level waste tank. The liquid in the large high-level waste tank has been chemically neutralized with sodium hydroxide. This neutralization has caused much of the radioactivity in the wastes to be precipitated in the form of insoluble silt or sludge. Because of the complex inner structure of the tank, removal of this sludge will be difficult. This issue and others will have to be dealt with and decisions made as research progresses and technology is developed.

In the meantime, the NRC has evaluated the present safety of continued tank storage. We believe that the wastes can be safely managed with essentially no risk to the public while the technology for final disposition is being developed. Nevertheless, we are conducting further investigations of tank integrity to enhance this conclusion.

Work is currently underway with Battelle Northwest Laboratory to evaluate how best to proceed with decommissioning a reprocessing plant. Battelle has prepared a draft report for us on this subject. We have reviewed the report and suggested some further work prior to publication. The report is more intended to be applicable to future plants but may be of some help for the NFS reprocessing plant. There is some discussion that the NFS plant might be used for development work or otherwise treating the high-level wastes.

#### Costs Associated with the NFS Situation

When the West Valley plant was initially licensed, the AEC received written assurance from the State of New York that care of the waste would remain a New York State responsibility even if the specific State Authority (NYSERDA) should be unable to provide this role. By contractual agreement with NYSERDA, NFS has made installment payments into an escrow account setting funds aside for the perpetual care of the waste. The funding arrangement contemplated only the eventual transfer of the waste to new tanks, in perpetuity, and did not consider facility decommissioning during the early part of the license term.

The waste cost situation was altered extensively for NFS when the AEC issued its new high-level waste management rule, the previously mentioned Appendix F to 10 CFR Part 50. Although the new rule made an exception for the existing wastes at West Valley, its possible application to those wastes would increase the cost of managing the wastes, perhaps a hundred-fold over the funds provided.

As can be seen from what I have said, there are options that need to be explored, safety and environmental analyses conducted, and technologies developed before the final disposition of the plant and the wastes can be established. Cost is one of many factors that needs to be analyzed by all those involved in the decision-making process as work progresses. We do not have at this time sufficient information which would enable us to estimate cost for (1) decommissioning the plant, (2) licensing alternative uses of the plant, or (3) disposal of the high-level waste. These costs depend on things such as how the existing wastes will be treated, use of the existing facilities for the solidification process or alternative purposes, proposed uses of the site following decommissioning, etc. We are exploring with ERDA the development of a program and schedules to consider a range of alternatives. We will, of course, be exploring cost with all those concerned in making decisions about the future of the site.



Relevance of NFS to the Nuclear Energy Program

The NFS situation has been used occasionally as an example of the problems faced by the national program for the management of the much larger quantities of waste expected from the nuclear power industry. We do not believe this example is directly translatable to the present or projected nuclear power industry for two reasons. First, national policy on long-term management of high-level waste was established after the plant began operation (10 CFR 50 Appendix F). Had this policy been established before operation, the design of the plant might have been altered considerably. The decision to neutralize high-level reprocessing wastes was made primarily on the basis of a short-term financial consideration (i.e., neutralized wastes could be safely stored in mild steel tanks instead of more expensive stainless steel tanks). This was done with the belief that perpetual care of the wastes could be undertaken permanently at the site. Therefore, the effect neutralization would have on the possible subsequent need to remove the waste from the storage tanks for transfer to a repository as a solid was not a factor in the analysis. In addition, the reprocessing facility itself was designed with the same perspective that the sites would be permanently committed as a repository. Secondly, the technology for converting neutralized high-level liquid wastes to a solid form suitable for final disposal is more difficult and expensive than it will be for the acid wastes in the current generation of reprocessing plants.

Nonetheless, the NFS situation is a good example of the consequences of inadequate planning. The lessons to be learned from the NFS situation have not been lost and have significantly influenced all aspects of our fuel cycle licensing program. For example, in preparing a Generic Environmental Impact Statement (GEIS) on uranium milling the NRC is examining mill tailings reclamation and financial surety arrangements. This will be the basis for NRC regulations and regulatory guides. Until the GEIS is issued and new regulations implemented, NRC is taking a conservative approach with respect to licensees and new applicants. For new applications, we are requiring applicants to develop and commit to a tailings management plan as a license condition that reduces the impact of the tailings to essentially the same impact as occurs at that site in the natural state. In addition, NRC is requiring that the applicant provide a financial surety arrangement to assure that the tailings management plan will be carried out. With regard to existing licenses, NRC is requiring that a tailings management plan and financial surety arrangement be committed to at time of license renewal as a license condition.

Also, for new major fuel cycle licenses and at the time of renewal for existing licenses, the licensee is being requested to provide decommissioning plans and financial arrangements for defraying these expenses. Additionally, the staff is exploring what statutory or

regulatory changes are desired or needed to provide adequate protection over the long-term. NRC does not plan to firm up details until after a study on financial surety arrangements now being carried out as part of the GEIS on uranium milling is completed, since most of the considerations dealt with in that study will also be applicable to fuel cycle licenses.

#### Summary and Conclusions

The NRC has responsibility not only for the care of the environment and safety of licensed activities, but also for the long-term consequences of the same activities. We have learned that assurance should be provided at the initiation of fuel cycle licensing activities that decommissioning will be properly undertaken at the end of life of each facility. We are attempting to take this into account for each type of facility.

In the specific instance of the West Valley site, we are taking precautionary measures to reinforce our understanding of the safe surveillance of the site and are assisting in the step-wise effort to resolve the questions of its long-term disposition. We believe ERDA has been and will be very helpful in this task.

The entire nuclear community has learned a number of valuable lessons from the experience at West Valley as well as other facilities which have ceased active use. We have studies planned or underway for major facilities to provide systematic understanding of the detailed

decommissioning options and costs. Fuel reprocessing plants will be one of the first for which a study will be complete. Pending completion of these studies we have taken steps in our licensing actions directed toward assuring satisfactory decommissioning of both new and existing facilities.

In the course of our studies we shall identify possible design changes which could facilitate decommissioning. ERDA will have a substantial role in the research and development regarding such design changes and the development of any needed technologies for implementing decommissioning plans. We shall identify to ERDA opportunities for such research and development as they arise from our studies.