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UPDATE OF ESTIMATED COSTS FOR DECOMMISSIONING ONE OF THE PALO VERDE NUCLEAR GENERATING STATION (PVNGS) UNITS

Prepared for

Arizona Nuclear Power Project

by

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I. Introduction

A. General

To date, decommissioning has been performed on 14 reactors with ratings greater than 10 megawatts thermal. Of these 14 plants, 10 were power production units while 4 were principally test facilities. Table A summarizes the decommissioning experience at these units. About 50 research reactors have also been decommissioned, typically by dismantlement.

From Table A it can be seen that the amount of work done at each unit varied considerably. Presently two basic options for decommissioning exist. A unit may either be immediately dismantled or it may be placed in some form of safe storage (custodial, passive, or hardened modes) and dismantled at some later date.* Thirteen of the fourteen units listed in Table A have opted for some form of safe storage. Only Elk River has performed immediate dismantlement.

At the time a unit is constructed, it is generally not possible to determine which approach to decommissioning would be chosen at the end of the unit's life. The decision at the time of decommissioning will depend upon current economics, current regulation, the nature of the then current operations at the site, and intended future use of the site.

Expanding for a moment on that latter thought, there are several points to be made. First, nuclear plants are not expected to suffer from conventional economic obsolescence. The heart of the system, in the context of where future technical development may occur, is in the reactor core, and core and fuel design changes can be accommodated (retrofitted) within the existing Palo Verde units as developments occur; i.e., current programs to enhance uranium utilization efficiency. Relatedly, we have no evidence to date which suggests what the limit on physical lifetime is. The oldest commercial plants in the U.S., San Onofre and Connecticut Yankee, are almost 12 years old, and their good performance over the last several years suggests no physical degradation due to "aging." The first point, therefore, is that there is no current basis to anticipate that the service life of such plants will be limited to their accounting lifetime.

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*(Detailed descriptions of these decommissioning modes are presented in NUREG/CR-0130, 6/78), referred to here as the PNL report, as it was performed by Battelle Pacific Northwest Labs.

TABLE A

Plant	Type	Power	Decommissioning	Date Completed	Cost
Hallam	Sodium Graphite	75MW(e)	Removed all fuel and sodium. Removed some piping and some components. Encased reactor in isolation structure.	1969	$4,207,000
CVTR	Heavy Water - Pressure Tube	65MW(t)	Removed fuel and heavy water. Decontaminated some areas. Sealed up reactor area.	1968	$ 250,000
BONUS	Boiling Water -	50MW(t)	Removed fuel. Decontaminated plant. Removed some components. Encased reactor in isolation structure.	1971	$1,613,000
Pathfinder	Boiling Water - Integral Superheat	58.5 MW(e)	Removed fuel. Decontaminated plant. Removed some piping and components. Sealed reactor in place. Re-used turbine with fossil boilers.	1969	$3,700,000
Elk River	Boiling Water	22.5 MW(e)	Dismantled to below grade. All radioactive components shipped to burial site.	1974	$6,075,000
Piqua	Organic Cooled + moderated	11.4 MW(e)	Removed fuel. Removed all piping external to biological shield. Ship components off site. Encased reactor in isolation structure.	1967	$2,000,000
Saxon	Pressurized Water (test facility)	23.5 MW(t)	Safe Storage (mothballed). Removed fuel. Welded security enclosure.	1973	$2,500,000
SEFOR	Sodium Cooled Fast reactor (test facility)	20 MW(t)	Safe Storage (mothballed). Removed fuel. Welded security enclosure.	1973	Unknown
Fermi 1	Sodium Cooled Fast reactor	200 MW(t)	Safe Storage (mothballed). Locked doors and security fence.	1975	$6,950,000
GE EVESR	Boiling Water (test facility)	17 MW(t)	Safe Storage (mothballed). Continuous security force and locked doors.	--	Unknown
Peach Bottom 1	Gas Cooled Graphite Moderated	115 MW(t)	Safe Storage (mothballed). Removed fuel. Continuous security force	--	Unknown

Table A/P[illegible] Two

Plant	Type	Power	Decommissioning	Date Completed	Cost
VBWR	Boiling Water	50 MW(t)	Safe storage with steam plant conversion. Continuous security force with locked doors.	--	Unknown
Westinghouse Test Reactor	Tank Reactor (test facility)	60 MW(t)	Safe storage (mothballed). Continuous security force with locked doors.	--	Unknown
SRE	Graphite moderated Sodium Cooled	30 MW(t)	Safe storage (mothballed) in 1967. Dismantling started in 1974.	--	Unknown

The second, and more important point as regards cost of decommissioning, is that it would clearly be logical to defer dismantling of Unit 1, for example, until all of the units at the site had finished their useful operating life. At that time, one would develop a coherent plan for a total site decommissioning program, and mobilize the necessary resources in the same way as planning for the multiple plant construction program. There is no question that that procedure would bring substantial savings in the total decommissioning cost as compared to estimates for a single unit dismantlement.

A clear incentive for deferring dismantlement is that personnel and public exposures are reduced (NUREG/CR-130 estimates that total radiation dose is reduced 40% for a ten-year delay and 60% for a 30-year delay). The consequently reduced inventories of radioactive materials after allowing time for decay will result in simplified disassembly of equipment and reduced waste disposal costs. To some extent, these savings are offset by factors such as restrictions on site usage, front-end costs to achieve safe storage, and annual surveillance costs, but most studies, on balance, indicate that deferred dismantlement results in lower costs and lower exposures. For example, the Comptroller General Report* estimates that safe storage with delayed dismantlement can save from $3 million to $10 million over immediate dismantlement, exclusive of time-value-of-money considerations. The latter can make deferral much more attractive.

As a conservative approach, this analysis considers only immediate dismantlement. This approach should always be the more expensive option as compared with safe storage and the discounted expenses of deferred dismantlement, and as well, does not consider the savings inherent in a planned multiple decommissioning as alluded to earlier.

B. Basic Cost Data

The earlier analyses of decommissioning costs made by SMSC for ANPP

*Report to Congress, GA1.13: EMD-77-46, using information from the AIF Study-AIF/NESP-009.

(1975) were developed from basic cost data derived from decommissioning of the Elk River reactor and from the BONUS reactor. Since 1975, many important studies have been done on decommissioning which has received increasing public and regulatory attention in the intervening years. As an illustration of this level of interest, FY1980 budget of DOE allows $33 million for D&D (decommissioning and disposal) studies; this is also a reflection of the many (approximately 500)government-owned facilities involving radioactivity which exist and which shall need decommissioning.

Thus, in this report we have had available the results of these many studies. The key source of cost data used herein is the Battelle Pacific Northwest Labs (PNL) report (NUREG/CR-0130), a comprehensive cost estimate for decommissioning a large commercial PWR, specifically taken to be the Trojan Reactor for PG&E. Where PNL cost estimates appear to be more valid than original Elk River - derived experience, those former estimates have been used herein.

Elk River is the only commercial nuclear plant thus far to have been completely dismantled and therefore remains an important basis for cost estimating. The Elk River reactor was a boiling water reactor with a net electrical rating of about 22MW. It was completely dismantled in the period of 1971 through 1974. The total cost of dismantling was about $6 million with approximately $2 million dollars spent in each of the three years; 1972, 1973, and 1974. On the average then, Elk River dismantling costs were in 1973 dollars. Data is available for Elk River giving the costs of each task in the dismantling operation. Within each task, costs are broken down into labor, equipment, overheads, etc. General overheads, such as planning, supervision, and radiation monitoring are lumped together and distributed among the tasks. As a result of this, the overhead costs for each task contains a portion of the general overheads.

In areas where a particular operation was not performed at Elk River, cost data is available from the decommissioning of the BONUS reactor. BONUS was a 50 MW(t) boiling water reactor with integral superheat. Decommissioning was by entombment (hardened safe storage). Costs by tasks are available for

BONUS as they are for Elk River. Most of the BONUS work was done in Puerto Rico in 1969, and it was therefore necessary to adjust these costs to 1973 U.S. averages.

Albeit data derived from real experience is very useful, it is recognized that both Elk River and BONUS were much smaller than the PVNGS units, so simple extrapolation of the costs incurred at these smaller units may introduce errors.

Also, the experiences at Elk River and Bonus were prototype decommissioning operations, and certain costs, i.e., planning, engineering, supervision, and tooling development are likely higher than they will be for routine future decommissionings. It is, in fact, likely such as for the PVNGS units, which will be decommissioned after much experience in these types of operations has been accrued and the methods are more routine.

Therefore, we believe it is important to relate such cost extrapolations from experience to more recent studies which examined costs explicitly. The PNL study, done under contract to NRC, provides an in-depth analysis of the costs for each of the basic decommissioning tasks based upon detailed cost schedules for manpower, equipment, special services, removal, transportation, and waste burial requirements. As an example, demolition costs were established by having a demolition contracting firm estimate the job.

As it turns out, most of the PNL estimates for the individual decommissioning tasks closely agree with those estimated by SMSC in 1975 by extrapolation. This is not unexpected since, generally, the assumptions on decommissioning technology are the same (i.e., remote cutting of the reactor vessel internals was assumed), even though a different methodology was used in deriving the cost. In some instances, PNL costs were lower than SMSC's original estimate due to economies of scale achievable in the larger plant.

Thus, this analysis draws heavily from the PNL work, making reasonable adjustments for design differences between PVNGS and Trojan. We estimate that costs for immediate dismantlement of a PVNGS unit are $56.7 million in 1979

dollars, a value which includes substantial contingency allowances as discussed later in this report We believe the "real world" costs, wherein dismantlement would almost certainly be deferred until ultimate disposition of the site were known, would be expected to be substantially less on a per unit basis.

II. Cost Estimate for Immediate Dismantlement

A. Introduction

This section details the estimated cost of dismantling one PVNGS unit. Since only peripheral items are shared among units, demolition of a single unit could be essentially independent of other units on site. The following ground rules were used in making the estimate:

- Plant data was taken primarily from CESSAR, from the PVNGS PSAR and from data provided by ANPP. In a few cases where sufficiently detailed data was not readily available, an estimate was made based on data from similar units.
- Essentially all costs were based either on Elk River and BONUS data or on data from the PNL study. Where these numbers resulted in different costs for a task, the more realistic value was used.
- Where costs were based on Elk River experience, estimated costs were extrapolated by using the ratio of weights or volumes as appropriate. Most dismantling operations such as cutting a pipe, removing concrete, or shipping drummed waste are repetitive in nature such that the unit costs would be independent of the number of units with the exception of any advantages due to economies of scale.
- Costs were estimated from the PNL study by using the methodology of that report and the plant data for the PVNGS units.

The dismantling operation was divided into six basic tasks. These tasks generally conform to the task definitions for Elk River and for the PNL

study. The tasks were as follows:

1. Site and Facility Preparation -- This task consists of opening access hatches in buildings, bringing in temporary power, licensing and nuclear insurance requirements, and environmental surveillance.

2. Removal of spent fuel

3. Decontamination of piping and equipment -- It was assumed that all nuclear plant systems would be decontaminated, cut up, and shipped to an approved burial ground. This task includes the decontamination of the nuclear plant systems.

4. Removal of nuclear and containment systems components -- This task consists of the cutting up and removal of the reactor vessel and internals, nuclear system piping and equipment, and the biological shield.

5. Shipment and burial of radioactive wastes -- This task consists of preparation, shipment, and burial of all the wastes generated in Task 4.

6. Demolition -- Upon completion of Tasks 1 through 5, all remaining structures and equipment would be non-radioactive. Remaining equipment would consist of piping and mechanical equipment in the turbine building and control building, as well as electrical cables and equipment throughout the unit. All structures would remain and would require demolition. These structures would be mostly reinforced concrete, with some structural steel (primarily the turbine building super-structure).

B. Inventory of Components in a PVNGS Unit

For purposes of this estimate, it was assumed that the following components would be contaminated to the extent that it would be necessary to bury them at an approved site:

- All mechanical equipment in the nuclear portion of the unit (i.e., the containment, auxiliary building, radwaste building, and fuel storage building)
- The biological shield

The actual quantities of material to be buried would be somewhat less than the preceding for the following reasons:

- Much of the mechanical equipment in the nuclear unit, such as service and instrument air, fresh water, and auxiliary cooling systems, never carry radioactive fluids and should not be contaminated.
- Much of the biological shield would not be activated above allowable concentrations.

Table B provides an inventory of the mechanical equipment and biological shield in the nuclear unit. For each item the weight and/or volume of the item is given.

It is assumed that after the radioactive components have been removed from the unit, the remainder of the unit could be removed conventionally. This would include the power conversion building and the control building, all electrical equipment, and the portions of the nuclear structures remaining after the radioactive components have been removed. The reinforced concrete structures would presumably be demolished and used for land fill.

C. Cost Estimate for Each of Six Dismantlement Tasks

1. Site and Facility Preparation

It is assumed that adequate security, office, shop,contamination control, water supply systems, fire protection system, and laundry facilities will be present at the site. Preparation for dismantling would consist of providing:

- Electrical service
- Access hatches for equipment removal
- Licensing activities

TABLE B

Inventory of potentially radioactive components in containment, auxiliary building, radwaste building, and fuel building of a PVNGS unit.

VESSEL AND INTERNALS

No.	Name	Weight each (tons)
1	Reactor vessel and head	510
1	Vessel internals	239.5

OTHER MAJOR EQUIPMENT

No.	Name	Weight (tons)	Volume (Ft^3)
2	Steam generators	714.5	17,000
1	Pressurizer	115	2,000
4	Reactor coolant pumps	56	740
2	Shutdown cooling heat exchangers	10	200
2	Spent fuel heat exchangers	4	100
1	Regenerative heat exchanger	2.5	50
1	Letdown heat exchanger	2	50
2	Essential cooling water heat exchangers	18	300
2	Nuclear cooling water heat exchangers	13	200
1	Liquid waste evaporator	10	3,000
1	Boric acid concentrator	10	3,000
1	Gas stripper	4	100
	TOTAL OTHER MAJOR EQUIPMENT	1037	46,760

TABLE B (continued)

LARGE TANKS

No.	Name	Weight (tons)
1	Refueling water	36
1	Makeup	33
1	Holdup	50
	TOTAL	119

SPENT FUEL RACKS AND TOOLS AND POOL LINERS

No.	Name	Weight (tons)	Volume (Ft^3)
	Racks	60	24,000
	Tools	10	200
	Pool Liners	90	

PUMPS

No.	Name	Weight (tons)	Volume (Ft^3)
41	Small pumps	.15	2
15	Large pumps	1	8
2	Compressors	1	8
	TOTAL	23	218

FILTER & DEMINERALIZER VESSELS

No.	Name	Weight (tons)	Volume (Ft^3)
11	Filters	.1	1
8	Demineralizers	.8	30
	TOTAL	7.5	251

TABLE B (continued)

TANKS

No.	Name	Weight (tons)	Volume (Ft^3)
1	Equipment drain	12	1,300
4	Accumulators	68	2,400
1	Spray	12	1,100
3	LRS holdup	5	2,600
2	Spent resin	2	300
1	Reactor drain	3	400
1	Chemical drain	1	200
1	Gas surge	8	750
3	Gas decay	8	750
1	Volume control	1.5	400
2	LRS recycle	5	2,600
2	LRS concentrate	3	850
2	Refueling shutdown	6	2,300
2	ECWS surge	1	250
1	ECWS surge	1	250
	TOTAL TANKS	384	36,650

PIPING

No.	Name	Weight (tons)	Volume (Ft^3)
-	Reactor coolant system	143	1,760
-	All other piping	740	22,230

BIOLOGICAL SHIELD

25' ID

37' OD

43' H 1040 cuyd of concrete

TABLE B (continued)

Total RCS Volume	13,443 ft^3 (381m^3)
Total Nuclear Systems Volume	107,875 ft^3 (3055m^3)

- Insurance
- Environmental surveillance

a. Electrical Service

During the dismantling operations certain of the unit support systems will be required to remain operational. At Elk River, temporary electrical service was installed for $7,500 to facilitate continued use of these systems. Costs of the electricity used during dismantling of Elk River was not aggregated separately, but was included in the total cost for the various operations. PNL, however, conservatively estimated that these requirements would incur costs of about $3.5 million. Trojan and PVNGS should have very similar electrical requirements during dismantling operations and costs of $3.85 million were assumed for the purposes of this study.

b. Access Hatches and Equipment Removal

Removal of piping, equipment, and concrete from the containment, auxiliary building, and fuel building may require a number of access openings through floors. The PNL analysis assumes that existing accesses are sufficient for the dismantling of equipment in these buildings. At Elk River, however, one floor opening and one opening in the containment wall were required. Though it appears that equipment hatches will be adequate for removing equipment from the containment, it was conservatively estimated that one hatch would be required in the containment floor and one in the fuel building floor. In addition, several hatches may be required in the auxiliary building floors and roof.

At Elk River the two hatches were each about 12' x 15' and cost approximately $10,000 each. It is assumed that a PVNGS unit will require seven hatches which are about 20' x 15' on the average. Using the Elk River costs and escalating to 1979 dollars, the estimated cost is about $200,000.

c. Licensing Activities

It is probable that there will be a number of licensing actions required by the decommissioning effort. Although it is not clear what these

requirements will be in about 40 years, actions toterminate the operating license and apply for a possession only license will probably be needed. Preparation of an environmental impact assessment and a detailed decommissioning plan are also likely.

For the purposes of this study it is estimated that these licensing activities will cost about $1.0 million.

d. Insurance

Based upon PNL estimates these costs during the immediate dismantling operations would be about $0.9 million.

e. Environmental Surveillance

PNL study develops an environmental surveillance program lasting four years after reactor shutdown (the duration of the dismantlement program). For PVNGS, this would cost about $170,000.

The total cost of these site and facility preparations are expected to be about $6.1 million.

2. Removal of Spent Fuel

During unit operation approximately one-third of a core is removed each year. Filter and demineralizer resins are also changed about once a year. At the time of decommissioning, removal of all resins and filters and removal of one-third of the core can properly be regarded as operating expense for the previous year, and only the added cost of removal of the other two-thirds of the core, as well as removal of all sources and control rods, have been taken as part of the cost of dismantling. Two-thirds of a core contain approximately 68.5 metric tons of uranium. Shipping costs in 1975 were about $13,000 per metric ton of uranium in spent fuel for a 1,000 mile shipment. Using this data, the current cost for transporting two-thirds of a core would be about $1.2 million. This number compares closely with the estimate based on numbers from the PNL study.

3. Decontamination of Piping and Equipment

PNL performed a detailed analysis of decontamination and assumed use of a relatively expensive decontaminant: EDTA/Oxalic/Citric Acid in a 1:1:1 mixture by weight and in a solution of 5% by weight. Because the piping and equipment will no longer be used to support the operation of the nuclear unit, a harsher and cheaper acid wash could be chosen, although we have used the PNL costs. We have assumed use of a volume of solution equal to the entire nuclear system of a PVNGS unit (including support systems, tanks, the spent fuel pool, and the secondary side of the steam generators), to derive the total cost of the PNL chemicals of $1.3 million. PNL also assumes that additional costs (adjusted for escalation) of $70,456 and $115,500 are incurred for staff labor costs and power requirements to circulate the solution and rinses. The cost of decontaminating the nuclear systems at a PVNGS unit is therefore estimated at $1.5 million.

4. Removal of Nuclear and Containment System Components

In the 1975 SMSC analysis performed for ANPP, the cost of dismantling the biological shield and the reactor coolant system, including the reactor vessel and internals and other contaminated piping and components, was estimated by extrapolating data from the Elk River decommissioning, recognizing that such extrapolation may result in unrealistically large costs for these tasks. The Elk River decommissioning, because of its nature, incurred large tool development and engineering and supervision costs, these two tasks representing more than 87% of the total costs for removing the Elk River reactor vessel and internals.

The actual expenses at a PVNGS unit should be much smaller for these two parts of the dismantling job, and in addition, extrapolation of Elk River data for removal of contaminated equipment does not take credit for any economies of scale.

We now have available what we believe to be a more realistic estimate of the cost of these decommissioning tasks. In the PNL analysis a detailed schedule for all job tasks was developed and listings of manpower requirements

for the individual jobs and salary data was then used to derive total manpower costs. In addition, a complete listing of costs for specialty contractors and for special equipment and miscellaneous supplies was developed.

The total costs for these manpower requirements, equipment and supplies derived by PNL and escalated to 1979 dollars is $12.9 million. Two major contingencies have been allowed for in the total estimated cost of $19.4 million for dismantling contaminated structures and equipment for the PVNGS units. PNL assumes that the biological shield will be dismantled by use of explosives. Because this concrete structure will be somewhat contaminated, we have assumed use of explosives may not be acceptable. Also, PNL has assumed an optimum that there is good utilization of decommissioning personnel, with people hired and fired as they are needed. While this is probably reasonable if the job is well planned, we have elected to increase the PNL estimates.

5. Shipment and Burial of Radioactive Waste

Based on the Elk River experience and the data from the PNL analysis, the following assumptions were made concerning radioactive waste shipments and burial:

- Highly activated components like the reactor vessel and internals will be cut up and shipped in shielded casks.
- Contaminated materials like the reactor coolant pumps will be cut up as necessary and shipped in unshielded, disposable containers or will be capped and sealed with welded closure plates and shipped as their own containers.

It is assumed that the shipping distance to radioactive waste sites is 1000 miles. Transportation costs were calculated based on weight of the radioactive waste shipments, while burial costs were determined by rates per volume of waste.

(a) Activated Materials

(1) Reactor Pressure Vessel

The cost for shipping and burying the Elk River reactor vessel was about $1,263/ton. The reactor vessel of a PVNGS unit weighs about 510 tons. Escalating these numbers to 1979, the cost of shipping and burying a PVNGS unit reactor vessel will be about $1.0 million. This agrees quite closely with the PNL estimate of $1.3 million (1979 dollars and scaled for the difference in weight of the PVNGS and the Trojan reactor vessels). The larger $1.3 million estimate will be used.

(2) Reactor Vessel Internals

The estimated costs for shipping and burying the reactor vessel internals from a PVNGS unit differ between extrapolated Elk River experience and when the PNL analysis is used. Both analyses agree that the internals will be more expensive to dispose of than the reactor vessel. The reactor internals have a higher surface to volume ratio than does the reactor vessel and therefore will have more surface contamination. The internals will also have higher levels of radioactivity from activation products. PNL estimates that the internals will be 250 times more radioactive than the reactor vessel. This problem together with the odd shapes of the internals will result in less of the internals transported per shipment and higher costs for the shipment and burial. At Elk River, disposal of the internals was about 10.6 times as expensive per unit of weight than disposal of the reactor vessel. PNL estimates this factor at about 3.0. This study assumes the more costly Elk River experience, yielding a total estimated cost of $5.1 million for transporting and burying the reactor vessel internals.

(3) Biological Shield

It is conservatively assumed that the entire 28,000 ft^3 of biological shield must be buried. Shipping and burial costs for a PVNGS unit's biological shield, using the PNL cost basis, is about $300,000.

(b) Contaminated Materials

Nearly all piping and equipment in the containment building, the auxiliary building, and the fuel building are considered to be contaminated during the operational life of the unit. It is assumed that these materials must be interred at a low level waste burial site.

PNL performed a detailed analysis of the cost of removal and burial of those materials. Based on the PNL methodology and using weights and volumes of equipment at the PVNGS unit as listed in Table B, a total cost of $2.4 million was obtained. In addition to the equipment listed in Table B, this cost includes the transportation and burial of the turbine-generator, concrete from the pressurizer and steam generator enclosures, the missile shield, and the base slab.

(c) Other Radioactive Wastes

(1) Solid Wastes

Solid wastes are assumed to be generated during decommissioning in the form of spent resins, spent filter cartridges, and miscellaneous materials like rags and plastic sheeting. It is estimated, based on the PNL study, that these wastes will require about 1,412 disposable containers, 86 shipments by truck, and a total burial volume of 12,440 cubic feet. The resultant cost for transportation and burial of these solid wastes is estimated at about $0.4 million.

(2) Liquid Wastes

Liquid wastes will be evaporated, and the concentrate will be solidified and shipped for burial. The total liquid holding capacity of all nuclear systems in a PVNGS unit is about 80% of the total volume of these systems or about 86,300 cubic feet (the other 20% is metal). Completely full, these systems could contain about 690,000 gallons of water.

At the conclusion of unit operation, these systems are assumed to be about half full. It is assumed that each system is then flushed three times for decontamination, and each flush uses 1.25 times the system

volume. The total waste water inventory to be processed is therefore about 4.25 times the volume of the nuclear systems, or about 2.933 million gallons. Additionally, one would expect that about 1 million gallons of contaminated water is in the holdup and refueling tanks and in the spent fuel pool. Using the PNL assumption that this liquid waste can be concentrated by a factor of 100, a total of about 150 cubic meters of solid waste is ultimately generated.

In addition to the liquid wastes from residual system fluids and from flushing, one reactor coolant system volume (381 cubic meters) of liquid waste is assumed to be generated by the decontamination operations. These wastes are then concentrated to about 58 cubic meters.

A total of about 208 cubic meters of solidified liquid wastes is therefore generated. Using PNL numbers, a conservative estimate of the cost of transportation and disposal of these wastes is $0.6 million.

6. Demolition

PNL performed a detailed analysis of demolition costs of the non-radioactive reinforced concrete structures by engaging a wrecking contractor to develop a typical bid for such a job. The contractor's estimate takes into account economies of scale associated with tearing down and removing these large structures and salvage profits from the retrieval of some materials (only structural materials are assumed to have scrap value - no salvage of equipment is considered).

The projected cost for demolition and removal of all structures on the Trojan site was $7 million. This estimate included the demolition of the large hyberbolic natural draft cooling tower at Trojan. The wrecking contractor estimated this part of the demolition job at $2.7 million. The PVNGS units, however, will utilize much smaller mechanical draft cooling towers which according to the estimates made by extrapolating the Elk River numbers should cost less than $1 million to remove. Adjusting the PNL estimate for demolition of the non-radioactive structures results in a total cost of $5.1 million.

D. Contingencies

1. Concrete Floors

Concrete floors in the containment, auxiliary building, radwaste building, and the fuel building will probably contain small amounts of contamination from spills which have penetrated a small distance into the concrete.

The quantities of activity would be very small, but the limits on amounts of radioactivity, below which material may be considered non-radioactive, are so low that removal of floor concrete as radioactive wastes has herein been considered.

The area of concrete floor in the nuclear portion of the plant consists of about 105,000 ft^2 in the auxiliary building, 49,000 ft^2 in the containment, 19,200 ft^2 in the fuel building, and 38,000 ft^2 in the radwaste building. If it is assumed that this floor is contaminated to a depth of three inches, which we believe to be very pessimistic, 53,000 ft^3 of concrete would have to be removed.

At Elk River, removal of 840 cubic yards of concrete from the biological shield and concrete flooring cost approximately $1 million. Taking a cost of about $490 per cubic yard as the appropriate value for floor removal, which may well be high, and correcting for escalation, the cost of removing contaminated concrete floor surfaces from various nuclear unit buildings at PVNGS would be $1.5 million. The cost of transporting and burying this concrete based on PNL numbers is $0.5 million. The total cost for removal, transportation, and burial of contaminated concrete floor surface is therefore about $2 million.

2. Decontamination of the Secondary Plant

Some portions of the secondary plant might require decontamination in order to meet the stringent limits necessary to be treated as non-radioactive waste. It has been assumed, and this, too, we believe to be pessimistic, that one-half of the secondary plant requires decontamination. The secondary plant

contains a total of about 154,000 feet of piping. Extrapolating the costs that were incurred at the BONUS decontamination, the estimate for this operation is $2.6 million.

3. Contingency

Above and beyond the specific contingency allowances noted herein, an additional overall contingency of 20% of the total cost or about $8.7 million has been added as suggested by good general engineering practice.

E. Total Cost Estimate for Immediate Dismantlement

The costs of the six dismantlement tasks described in the previous section are as follows:

Task		Cost ($ x 10^6)
1	Site and Facility Preparation	6.0
2	Removal of Spent Fuel	1.2
3	Decontamination	1.5
4	Removal of Nuclear and Containment System Components	19.4
5	Shipment and Burial of Radioactive Wastes	10.2
6	Demolition	5.1
	TOTAL (excluding contingencies)	43.4
	CONTINGENCIES	13.3
	TOTAL (including contingencies)	56.7

F. Cost Sensitivities

Estimates for this report were made in 1979 dollars and were based on decommissioning regulations and technology that is current in 1979. These regulations and the technologies are subject to change. Anticipating the effects of these changes on costs forty years in the future is difficult, if not impossible. However, some understanding of cost sensitivities to evolving technology and regulations may be derived from examining percentages of total

for additional transportation costs, it is unlikely that deep geologic burial of the highly activated wastes would increase the total cost for immediate dismantling by more than 2%.

NRC and DOT are in the process of upgrading requirements for transportation of low-level radioactive waste. It is unlikely that these changes would impact heavily on the decommissioning cost attributable to waste transportation, as changes are likely to emphasize administrative rather than physical changes.

Personnel costs, which are a significant component (34.1%) may be influenced by changes in occupational radiation exposure limits. NRC is in the process of tightening these limits, though drastic changes are not now contemplated.

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
ARIZONA PUBLIC SERVICE COMPANY, et al.,	)	DOCKET NOS. STN 50-528 50-529 50-530
	)	
(Palo Verde Nuclear Generating Station, Units 1, 2 and 3	)	
	)	

INTERVENORS ANSWERS TO

APPLICANT'S FIRST SET OF INTERROGATORIES

GENERAL

Answer to Interrogatory No. 1.

The parties have agreed that the Intervenor may have an additional period of time within which to respond to the Request for Admissions. The date for said Response will be set by agreement of the parties.

Answer to Interrogatory No. 2.

See Answer to Interrogatory No. 1. above.

CONTENTION NO. 1.

Answer to Interrogatory No. 3.

The term "transfer factors" as used in Paragraph 1.a of the Explanation to Contention No. 1 means that fraction

the number of control rods, the greater the potential for deformation under peak-ATWS pressures (3800 psi to 4100 psi in larger reactors) during vessel-head lifting.

Answer to Interrogatory No. 41.

No. See Answer to Interrogatory No. 39 above; plus ACRS Advice and Comments Report on ATWS proposals of NUREG-0460, Vol. 4, submitted to NRC, April 16, 1980.

CONTENTION NO. 7.

Answer to Interrogatory No. 42.

Contention No. 7 is based upon Joint Applicant's inadequate treatment of decommissioning costs in their ER-OL. Cost estimates provided in the ER-OL are inadequately calculated due to a lack of operational experience in decommissioning a plant of this size. In addition, the dismantling operations outlined in Section 5.8.1 of the ER-OL are overly simplified and lack specificity.

Answer to Interrogatory No. 43.

Intervenor maintains that the Joint Applicants have "inadequately figured decommissioning costs" based on their calculation of $57 million as the entire cost of decommissioning PVNGS. See Answer to Interrogatory No. 45.

Answer to Interrogatory No. 44.

Yes.

Answer to Interrogatory No. 45.

NRC Reg. Guide 1.86 describes four alternatives for retirement of nuclear reactor facilities which are considered acceptable by the NRC. The Joint Applicants in Section 5.8.1 of the ER-OL discuss dismantling as the method they will use to decommission the plant. The Joint Applicants then state an estimated cost of $57 million per reactor unit. A detailed engineering cost estimate for decommissioning a commercial power reactor was presented in 1975 testimony before the Pennsylvania Public Utility Commission concerning TMI Unit 1. At that hearing, a witness on behalf of General Public Utilities Services Corp., estimated the capital costs of dismantling to be on the order of $118 million.

A study prepared by Northeast Utilities on decommissioning costs for the Millstone 3 Nuclear Power Plant in Connecticut estimated a total cost of $264 million for decommissioning.

In addition to capital costs of decommissioning, a Pacific Gas and Electric study in 1976 estimated an additional cost of surveillance and light maintenance of between $60,000 and $330,000 annually.

Answer to Interrogatory No. 46.

Yes.

Answer to Interrogatory No. 47.

The methodology used by the Joint Applicants in Section 5.8.1 of the ER-O1 is inadequate in its entirety. Numerous questions remain concerning the specifics of dismantling procedures.

Answer to Interrogatory No. 48.

See Answer to Interrogatory No. 45.

Answer to Interrogatory No. 49.

See Answer to Interrogatory No. 45.

Answer to Interrogatory No. 50.

Presumably the Joint Applicants will recover these costs through rates.

Answer to Interrogatory No. 51.

See Answer to Interrogatory No. 53.

Answer to Interrogatory No. 52.

See Answer to Interrogatory No. 53.

Answer to Interrogatory No. 53.

It is the Intervenor's position that the utility commissions of the various states involved in PVNGS could conclude that the decommissioning expenses were imprudently incurred and prohibit the Joint Applicants from recovering such expenses in rates.

Answer to Interrogatory No. 54.

See Answer to Interrogatory No. 53.

Answer to Interrogatory No. 55.

No.

Answer to Interrogatory No. 56.

Not applicable.

CONTENTION NO. 8.

Answer to Interrogatory No. 57.

A concrete slump test is an indicator of water/cement ratio, ambient air temperature, air content, cement temperature, and consistency of cement prior to pouring.

Answer to Interrogatory No. 58.

The information obtained from a concrete slump test includes the water/cement ratio, the ambient air temperature, the cement temperature and the consistency of the cement.

Answer to Interrogatory No. 59.

A concrete slump test measures the amount of water and air in the premixed cement.

Answer to Interrogatory No. 60.

When performing a concrete slump test, the premixed cement is poured into a 12" high by 6" wide metal cone or tube. The cone is then removed from the cement and the slump is measured.

Answer to Interrogatory No. 61.

If the slump is not of correct proportions, the cement will not meet its designed strength specifications.

Answer to Interrogatory No. 62.

The lab numbers, date of reports, placement numbers, ticket numbers, and any other means of identification will have to be supplied by Engineering Testing Laboratories, the Bechtel Corporation, or the Joint Applicants.

Answer to Interrogatory Nos. 63 through 65.

Object on the ground that the interrogatory calls for information which is irrelevant, immaterial, and not designed to lead to the discovery of admissible evidence.

Answer to Interrogatory No. 66.

The concrete slump test is an important indicator of the strength, integrity, and job specification proportions of the concrete which will support a system essential to reactor operation.

WITNESSES

Answer to Interrogatory No. 67.

Intervenor has not determined at this time who will be called as witnesses.

Answer to Interrogatory No. 68.

See Answer to Interrogatory No. 67 above.

Answer to Interrogatory No. 69.

See list of documents attached.

Answer to Interrogatory No. 70.

Intervenor has not determined at this time which exhibits will be used.

Answer to Interrogatory No. 71.

See Answer to Interrogatory No. 70 above.

DATED this 26th day of June, 1981.

Bruce Meyerson
Arizona Center for Law
in the Public Interest
112 North Fifth Avenue
Phoenix, Arizona 85003
(602) 252-4904

Attorney for Intervenor

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
ARIZONA PUBLIC SERVICE COMPANY, et al.	)	Docket Nos. STN 50-528 50-529 50-530
	)	
Palo Verde Nuclear Generating Station, Units 1, 2 and 3	)	
	)	

JOINT APPLICANTS' FIRST SET OF INTERROGATORIES AND REQUESTS FOR PRODUCTION OF DOCUMENTS TO INTERVENOR

Pursuant to 10 CFR §§ 2.740b-2.741, and the Stipulation of Parties Regarding Contentions and Discovery ("Stipulation"), dated December 12, 1980, Joint Applicants hereby propound the following Interrogatories and Requests for Production of Documents to Intervenor.

I

INSTRUCTIONS

1. Each Interrogatory must be answered separately and fully in writing under oath or affirmation by the person or persons making them no later than June 22, 1981, and each document requested must be produced no later than 30 days after service of these Interrogatories and Requests for Production.

Advisory Committee on Reactor Safeguards reportedly has accepted 'Alternative 3A', with modifications, while the Commission minutes referenced above also have advanced the same recommendation, with other features, including limited peak pressures and improving scram systems."

CONTENTION NO. 7

42. Explain in detail the basis for Contention No. 7.

43. Explain in detail what is meant by the contention that Joint Applicants "have inadequately figured decommissioning costs."

44. Is it your position that the estimated cost of decommissioning provided in Section 5.8 of the Palo Verde Nuclear Generating Station Units 1, 2 and 3 Environmental Report - Operating License Stage is too low?

45. If the answer to Interrogatory 44 is yes, explain in detail the basis for your answer.

46. Is it your position that the methodology used by Joint Applicants in estimating decommissioning costs for PVNGS is inadequate?

47. If the answer to Interrogatory 46 is yes, explain in detail what aspect or aspects of the methodology used by Joint Applicants are inadequate.

48. State what you consider to be a reasonable estimate of the decommissioning costs for PVNGS. Explain in detail the basis for such estimate.

49. Is the answer to Interrogatory 48 based upon any type of study, calculation, or analysis? If so:

(a) Describe the nature of the study, calculation, or analysis and identify any documents which discuss the study, calculation, or analysis.

(b) Who performed the study, calculation, or analysis?

(c) Describe in detail the information that was studied, calculated or analyzed.

(d) What were the results of each study, calculation, or analysis.

50. What is your understanding as to the source of funds to cover the costs of decommissioning of PVNGS?

51. Is it your position that one or more of the federal, state and local agencies which regulate the rates charged by Joint Applicants will not approve the rates necessary for the Joint Applicants to receive an adequate return on their investment in PVNGS?

52. If the answer to Interrogatory 51 is yes, identify the agencies and explain in detail the basis for your answer.

53. Is it your position that the ratemaking statutes applicable to one or more of Joint Applicants prohibit the recovery of decommissioning costs?

54. If the answer to Interrogatory 53 yes, explain in detail the basis for your answer.

55. Is it your position that the costs of decommissioning a nuclear power plant the size of PVNGS are unknown and incapable of determination?

56. If the answer to Interrogatory 55 is yes, explain in detail the basis for your answer.

CONTENTION NO. 8

57. Explain in detail your understanding of the purpose of concrete slump tests for the concrete used in the containment base mats.

58. What information is obtained from a concrete slump test?

59. What measurements are made as part of a concrete slump test?

60. Explain in detail your understanding of the procedure followed in the performance of a concrete slump test.

61. Explain in detail how, if at all, the information obtained from the concrete slump test is related to the strength or integrity of the containment base mats.

70. Identify, with specificity, each and every exhibit you intend to use in this matter. As to each such exhibit, state which facts, opinions, or contentions the exhibit supports, if any.

71. With reference to the exhibits listed in the answer to Interrogatory 70, state the source and nature of the exhibit, i.e., whether said exhibit is documentary, a picture, or whatever; who prepared each exhibit; its date of preparation; and, who has custody of each exhibit.

III

REQUESTS FOR PRODUCTION OF DOCUMENTS

1. Produce all documents identified in response to Interrogatory 69.

2. Produce all exhibits identified in response to Interrogatory 70.

3. Produce all studies, calculations or analyses identified in response to Interrogatories 16, 24, 29 and 49.

4. Produce all documents upon which your expert witnesses will rely in formulating opinion testimony.

RESPECTFULLY SUBMITTED this 22nd day of May, 1981.

By Charles A. Bischoff

ARTHUR C. GEHR
CHARLES A. BISCHOFF
3100 Valley Bank Center
Phoenix, Arizona 85073
Attorneys for Joint Applicants

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	DOCKET NOS. STN	50-528
		50-529
ARIZONA PUBLIC SERVICE COMPANY, et al.,		50-530
(Palo Verde Nuclear Generating Station, Units 1, 2 and 3		

INTERVENORS ANSWERS TO

APPLICANT'S SECOND SET OF INTERROGATORIES

GENERAL

Answer to Interrogatory No. 24.

The term capacity factor refers to the ratio of average plant electrical energy output to rated output.

Answer to Interrogatory No. 25.

This information is currently unavailable and will be provided at a later date.

Answer to Interrogatory No. 26.

See answer to No. 25 above.

Answer to Interrogatory No. 27.

See answer to No. 26 above.

Answer to Interrogatory No. 28.

The answer to No. 53 reads: It is the Intervenor's position that the utility commissions of the various states involved in PVNGS could conclude that the decommissioning expenses were imprudently incurred and prohibit the Joint Applicants from recover-

incurred and prohibit the Joint Applicants from recovering such expenses in rates.

Answer to Interrogatory No. 29.

Yes.

Answer to Interrogatory No. 30.

The methodology used by Joint Applicants in estimating decommissioning is inadequate according to the following studies: An Analysis of Decommissioning and Premature Shutdown Costs of Nuclear Power Plants. Accountants for the Public Interest. 8/1/80. Nuclear Power Plant Decommissioning, Richard Hubbard. 8/31/81.

Answer to Interrogatory No. 31.

A site specific study is underway to determine a resonable estimate for decommissioning costs.

Answer to Interrogatory No. 32.

See answer to No. 31 above.

Answer to Interrogatory No. 33.

The cost estimate presented before the Pennsylvania Public Utility Commission concerning TMI Unit 1 can be found in the "Analysis of Decommissioning and Premature Shutdown Costs of Nuclear Power Plants." 8/80 p. 35. The Northeast Utility statement can be found in "Nuclear Power Plant Decommissioning" by Richard Hubbard of MHB Technical Associated, San Jose, CA. 8/31/79, p. 20.

Answer to Interrogatory No. 34.

No.

Answer to Interrogatory No. 35.

See answer to No. 34 above.

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of ARIZONA PUBLIC SERVICE COMPANY, et al.	)	Dockets Nos. STN 50-528
	)	STN 50-529
	)	STN 50-530
Palo Verde Nuclear Generating Station, Units 1, 2 and 3	)	
	)	

JOINT APPLICANTS' SECOND SET OF INTERROGATORIES AND REQUESTS FOR PRODUCTION OF DOCUMENTS TO INTERVENOR

Pursuant to 10 CFR §§ 2.740b-2.741, and the understanding between Joint Applicants and Intervenor, Joint Applicants hereby propound the following Interrogatories and Requests for Production of Documents to Intervenor.

I

INSTRUCTIONS

1. Each Interrogatory must be answered separately and fully in writing under oath or affirmation by the person or persons making them no later than August 20, 1981, and each document requested must be produced no later than 30 days after service of these Interrogatories and Requests for Production.

2. All information is to be divulged which is in the possession of Intervenor, her attorney, investigators,

(c) Describe in detail the information that was studied, calculated, or analyzed.

(d) What were the results of each study, calculation, or analysis?

CONTENTION NO. 6B

24. Define the term "capacity factor" as used in Intervenor's Answer to Interrogatory No. 40.

25. With reference to Intervenor's Answer to Interrogatory No. 40, describe the "evidence" of a "degradation of CE capacity factors due to steam generator tube denting and leaks," and explain how such evidence contributes to establishing that large reactors manufactured by Combustion Engineering will experience a greater frequency of transients that require "scram" initiation. Provide specific references for such evidence.

26. With reference to Intervenor's Answer to Interrogatory No. 40, identify those factors which Intervenor believes will contribute to a greater frequency of transients that require "scram" initiation or response for large reactors.

27. For each factor identified in the answer to Interrogatory No. 26, explain the basis for your answer.

CONTENTION NO. 7

28. With reference to Intervenor's Answer to Interrogatory No. 53, identify each situation currently known

to Intervenor in which a state regulatory commission concluded that the expenses associated with decommissioning a nuclear power reactor were imprudently incurred.

29. Is it your position that the methodology used by Joint Applicants in estimating decommissioning costs as described in the reports by S. M. Stoller Corporation entitled "Estimated Costs for Decommissioning One of the Palo Verde Nuclear Generating Plants" and "Update of Estimated Costs for Decommissioning One of the Palo Verde Nuclear Generating Station (PVNGS) Units," dated 1975 and October 3, 1979, respectively (copies of these reports have been provided to Intervenor), is inadequate?

30. If the answer to Interrogatory No. 29 is yes, explain in detail what aspect or aspects of the methodology used by Joint Applicants are inadequate. Explain the basis for your answer.

31. State what you consider to be a reasonable estimate of the decommissioning costs for PVNGS. Explain in detail the basis for such estimate.

32. Is the answer to Interrogatory No. 31 based upon any type of study, calculation, or analysis? If so:

(a) Describe the nature of the study, calculation, or analysis and identify any documents which discuss the study, calculation, or analysis.

(b) Who performed the study, calculation, or analysis?

(c) Describe in detail the information that was studied, calculated or analyzed.

(d) What were the results of each study, calculation, or analysis.

33. With reference to Intervenor's Answer to Interrogatory No. 45, provide specific references, including page numbers as appropriate, for the cost estimate presented before the Pennsylvania Public Utility Commission concerning TMI Unit 1 and for the study prepared by Northeast Utilities on decommissioning costs for Millstone Unit 3.

34. With reference to Intervenor's Answer to Interrogatory No. 45, is it Intervenor's position that costs associated with "surveillance and light maintenance" will be incurred where the method of decommissioning used is immediate dismantlement?

35. If your answer to Interrogatory No. 34 is yes, explain the basis for your answer.

CONTENTION NO. 8

36. With reference to Intervenor's Answer to Interrogatory No. 58, explain in detail how the ambient air temperature and the cement temperature are obtained from the slump measured in a concrete slump test.

37. With reference to Intervenor's Answer to Interrogatory No. 59, explain in detail how the "amount of water and air in the premixed cement" are obtained from the slump measured in a concrete slump test.

IV

REQUESTS FOR PRODUCTION OF DOCUMENTS

1. Produce all documents identified in response to Interrogatory No. 41.

2. Produce all exhibits identified in response to Interrogatory No. 42.

3. Produce all studies, calculations or analyses identified in response to Interrogatory Nos. 23 and 32.

4. Produce all documents upon which your expert witnesses will rely in formulating opinion testimony.

5. The documents produced pursuant to paragraphs 1-4 above should be made available for inspection and copying as follows:

DATE: August 20, 1981

TIME: 10:00 A.M.

LOCATION: Snell & Wilmer
3100 Valley Bank Center
Phoenix, Arizona 85073

RESPECTFULLY SUBMITTED this 21st day of July, 1981.

SNELL & WILMER

By _____
ARTHUR C. GEHR
CHARLES A. BISCHOFF
3100 Valley Bank Center
Phoenix, Arizona 85073
Attorneys for Joint Applicants

Proposed Rules

Federal Register
Vol. 46, No. 159
Tuesday, August 18, 1981

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

Financial Qualifications; Domestic Licensing of Production and Utilization Facilities

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is considering amending its regulations concerning requirements for financial qualifications review and findings for electric utility applicants that are applying for permits or licenses for production or utilization facilities:

(1) To eliminate entirely these requirements for construction permit applicants; and either

(2)(i) To also eliminate entirely these requirements for operating license applicants; or

(2)(ii) To retain these requirements for operating license applicants to the extent they require submission of information concerning the costs of permanently shutting down the facility and maintaining it in a safe condition (i.e. decommissioning costs).

The Commission is also considering amending its regulations to require power reactor licensees to maintain the maximum amount of commercially available on-site property damage insurance, or an equivalent amount of protection (e.g., letter of credit, bond, or self insurance), from the time that the Commission first permits ownership, possession, and storage of special nuclear material at the site of the nuclear reactor.

DATES: Comment period expires October 19, 1981: Comments received after October 19, 1981, will be considered if it is practical to do so, but assurances of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Interested persons are invited to submit written comments and suggestions on the proposal and/or the supporting value/impact analysis to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Single copies of the value/impact analysis may be obtained on request from Jim C. Petersen, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (telephone: 301-492-9883). Copies of the value/impact analysis and of comments received by the Commission may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Jim C. Petersen, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (telephone 301-492-9883).

SUPPLEMENTARY INFORMATION:

I. Background

A. *The Statute and the Proposed Rule.* Section 182a of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2232a (the "Act"), provides in pertinent part:

> Each application for a license hereunder shall be in writing and shall specifically state *such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the technical and financial qualifications of the applicant,* the character of the applicant, the citizenship of the applicant, or any other qualifications of the applicant as the Commission may deem appropriate for the license. . . . *The Commission may* at any time after the filing of the original application, and before the expiration of the license, *require further written statements* in order to enable the Commission to determine whether the application shall be granted or denied or whether a license should be modified or revoked. . . .

(emphasis added). In *New England Coalition on Nuclear Pollution* v. *NRC*, 582 F.2d 87 (1st Cir. 1978), *aff'g sub nom. Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1 (1978), the U.S. Court of Appeals for the First Circuit stated that the Act "gives the NRC complete discretion to decide what financial qualifications are appropriate." 582 F.2d at 93.

As will be discussed below, it is the NRC's present proposal, in exercising the discretion conferred by Section 182a, to eliminate current financial qualifications review and findings required by 10 CFR 50.33(f) and other sections of 10 CFR Part 50 as to electric utility applicants for construction permits and operating licenses for nuclear power plants, which are utilization facilities licensed pursuant to 10 CFR 50.21(b) and 50.22, or for production facilities licensed pursuant to 10 CFR Part 50. The one possible exception to this proposal may be that the Commission, in the alternative, will decide to retain at the operating license stage that portion of the financial qualifications review and findings that relate to the costs for permanent shutdown and maintenance of the facility in a safe condition (*i.e.* decommissioning costs). If the Commission decides to retain the financial qualifications requirements relating to decommissioning costs, the rule will serve as an interim rule until completion of a future rulemaking on decommissioning that will consider the costs of decommissioning and the necessary financial assurances. At that time, the Commission will, if necessary, again amend the financial qualifications regulations to make them consistent with the final decommissioning regulations adopted. The proposed rule also makes certain editorial modifications to § 50.33(f) to improve its clarity, makes conforming changes to § 50.40(b) and § 50.57(a)(4), and eliminates Appendix C to 10 CFR Part 50. In addition, a new provision discussed in III., D., below, would require power reactor licensees to maintain the maximum amount of commercially available on-site property damage insurance, or an equivalent amount of protection (e.g. letter of credit, bond, or self insurance), from the point in time that the Commission first permits ownership, possession and storage of special nuclear material at the site of the nuclear reactor.

The Commission believes that its existing financial qualifications review has done little to identify substantial health and safety concerns at nuclear power plants. However, there are matters important to safety which may be affected by financial considerations. Consequently, the Commission requests comment regarding the type of NRC review that would focus effectively on financial considerations that might have an adverse impact on safety.

B. *The Commission's Seabrook Decision.* In *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1 (1978) (hereinafter "*Seabrook*"), the Commission directed the staff "to initiate a rulemaking proceeding in which the factual legal, and policy aspects of the financial qualifications issue may be reexamined." 7 NRC at 20. Specifically, the staff was to examine the relationship between the financial qualifications of Part 50 applicants and licensees and their ability to safely construct and operate production and utilization facilities. Further, the staff was to prepare a proposed rule to serve as the basis for initiating the rulemaking described by the Commission in *Seabrook*.

In its *Seabrook* decision, the Commission first reviewed the statutory and regulatory basis leading up to the present financial qualifications requirements set forth in 10 CFR 50.33(f). The Commission observed that "[t]his history suggests that for established utilities with substantial operating records, close scrutiny of financial qualifications was not viewed as necessary to assure that financial considerations did not compromise safety." *Id.* at 11. The Commission went on to express its belief that financial qualifications of a regulated public utility have less bearing on assuring safety in construction and operation than for other applicants, even though the Commission noted, in the context of the present "reasonable assurance" requirement of § 50.33(f), that merely being a regulated public utility would not automatically satisfy § 50.33(f) as applied to a construction permit application. The Commission stated:

> While unexceptional in the abstract, this proposition is less compelling in the case of a regulated public utility engaged in a construction project which is itself subject to high safety standards and ongoing inspection. . . .
>
> In the absence of any demonstrated direct connection between financial qualifications and safety in the utility—either generally or in this case in particular—we are left with the essentially speculative claims of the parties.

Id. at 18. Finally, after characterizing the link between safety and financial qualifications as "seemingly tenuous," the Commission emphasized direct approaches for assuring safety: "[t]he resulting limited usefulness of the financial qualifications inquiry underscores the importance of ongoing inspections of reactor construction projects." *Id.* at 19.

C. *Earlier Public Comments:* Following the *Seabrook* decision, the NRC notified the public of its generic study of the financial qualifications issue (43 FR 22373, May 25, 1978). The notice requested interested members of the public to submit comments on the issue and to propose specific changes to the rules by July 24, 1978. Seven sets of comments were received. Six of the submittals were from electric utilities, the Edison Electric Institute (EEI), and law firms representing electric utilities. The seventh set of comments was from the National Consumer Law Center, Inc. The following is a summary of the relevant points made in these comments.

The utilities, the EEI, and the law firms recommended that the regulations be revised to substantially reduce the scope of NRC's financial qualifications review especially as it applied to applicants whose rates for service are either self-determined or are determined by state and/or federal regulatory agencies. These commenters generally maintained that a history of successful plant construction and operation coupled with the legal requirements placed on economic regulators together constitute "reasonable assurance" that adequate financing can be obtained (the presently-existing standard set forth in § 50.33(f)). This group of commenters further argued that "cutting-corners" in construction or operation is not in the self-interest of the utility, as it is imperative that a plant provide long-term operation reliably and safely in accordance with NRC regulations. The commenters said that the financial savings that could be achieved through "corner-cutting" would be small compared to the sums required to complete the project. The risk of detection by NRC inspectors and possible resulting legal action against the utility were cited as additional disincentives to violation of NRC's safety regulations.

One of the above commenters expressed a preference for complete elimination of the financial qualification findings as now required by the regulations. That commenter maintained that a causal relationship between financial qualifications and safety had not been demonstrated.

The National Consumer Law Center, Inc. (NCLC) commented that the existing regulation is inadequate in that it does not require the filing of sufficient financial information to demonstrate financial qualifications for a construction permit or an operating license. NCLC provided a detailed list of types of financial information that should be required of applicants. NCLC based its suggestion for NRC requiring such information on the premise that safe, reliable construction and operation of nuclear facilities is contingent upon the financial qualifications of the applicant. It stated that insufficient financing during construction could lead to the use of substandard materials and to costly delays in construction. NCLC further suggested that NRC should promulgate a regulation requiring that nuclear facilities constructed with a reasonable cost of financing and that failing to do so may financially burden the applicant and the applicant's owners and customers.

II. Separate Treatment of Decommissioning Costs

Generic study of the costs and financial arrangements for decommissioning nuclear power plants, as well as for other nuclear facilities, has been and will continue to be treated as a subject area separate from the more routine financial qualifications issues that were discussed by the Commission in *Seabrook*. With regard to decommissioning costs, the NRC recently published two documents: "Assuring the Availability of Funds for Decommissioning Nuclear Facilities" (NUREG-0584, Revision 2, October 1980) and "Draft Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: (NUREG-0586, January 1981). The generic study of decommissioning, including an applicant's financial ability to bear the costs thereof, and the publication of a proposed rule for comment are expected to be completed by March 1982. The Commission's treatment of decommissioning and its costs as a separate matter is thus expected to lead to a final rule on this subject. It is also expected that when the final policies and regulations are developed, they will be imposed on all Part 50 licensees, including the electric utility applicants and licensees affected by these proposed financial qualifications amendments.

As stated above, the Commission is proposing a possible alternative to the elimination of the entire financial qualifications review presently required by § 50.33(f) for electric utilities applying for operating licenses for nuclear power plants. This alternative would retain the present financial qualifications review and findings at the operating license stage as to the issue of decommissioning costs. Upon completion of the separate rulemaking on the decommissioning issue, the Commission will re-examine the financial qualifications regulations and will, if necessary, further amend them to conform to the final rule on decommissioning.

III. Other Basic Considerations and Aspects of the Proposed Rule

A. *Electric Utility and Other Applicants.* With regard to the financial qualifications issues as raised in *Seabrook*, the Commission continues to believe that technical reviews and inspection efforts are effective, direct methods of discovering deficiencies that could affect the public health and safety. While analysis of financial qualifications has been viewed in the past as possibly an additional method of determining an applicant's ability to satisfy safety requirements, experience has failed to show a clear relationship between the NRC's review of an applicant's financial qualifications and the applicant's ability to safely construct and operate a nuclear power plant.

As discussed above, such utilities are usually regulated by state and/or federal economic regulatory agencies, and generally recover the costs of constructing generating facilities through the ratemaking process, subject to the oversight of such state and/or federal agencies. As a result, reasonable costs necessary to meet a utility's obligations (including NRC-imposed safety requirements) are normally recovered through this ratemaking process. *See, e.g., FPC* v. *Hope Natural Gas Co.*, 320 U.S. 591 (1944); *Bluefield Water Works and Improvement Co.* v. *Public Service Commission of the State of West Virginia*, 269 U.S. 679 (1923). These landmark court decisions established the principle that public utility commissions are to establish a utility's rates such that all reasonable costs of serving the public may be recovered assuming prudent management of the utility. Therefore, one presumption that underlies this proposed rule is that regulated electric utilities (or those able to set their own rates) will be able to meet the costs for safe construction and operation of a nuclear production or utilization facility. The other presumption is that the more direct methods of ensuring safety—inspection and enforcement—will be reasonably effective in deterring any "corner-cutting" and in remedying safety problems.

The Commission has tentatively concluded that the present financial qualifications review can appropriately be eliminated for electric utility applicants, which can be presumed to be able to meet the financial demands of constructing and operating nuclear power plants. As an alternative to entirely eliminating the present financial qualification review, the Commission is considering retaining, at least as an interim rule, that portion of the current operating license review related to financing the permanent shutdown and maintenance of the facility in a safe condition.

The Commission proposes to retain its current review under § 50.33(f) of applicants for any production or utilization facility license, if such applicants are not electric utilities having either a regulated status or the authority to set their own rates for electric service. The § 50.33(f) financial qualifications review is also unchanged as to production or utilization facilities not covered by § 50.21b or § 50.22, *i.e.* medical utilization facilities, research and development facilities, and testing facilities.

B. *Additional Information That Can Be Required.* By this proposed rule, the Commission does not intend to waive or relinquish its residual authority to require such additional information in individual cases, as may be necessary for the Commission to determine whether an application should be granted or denied or whether a license should be modified or revoked. See, for example, the fourth sentence of Section 182a of the Atomic Energy Act of 1954, as amended. Similarly, no change in the present powers of the Commission with regard to the financial qualifications review of non-utility applicants for Part 50 licenses is proposed. In addition, an exception to or waiver from the rule, if promulgated in final form, would be possible to require the submission of financial information from a particular electric utility applicant if special circumstances are shown pursuant to 10 CFR 2.758 in an individual licensing hearing.

C. *Practical Impacts.* The proposed rule will, in normal circumstances, reduce the time and effort which the applicants, licensees, the NRC staff and NRC adjudicatory boards devote to reviewing the applicant's or licensee's financial qualifications. The proposed rule aims at either reducing or eliminating staff review in cases where the applicant is an electric utility, presumed to be able to finance activities to be authorized under the permit or license.

D. *Interim Rule Requiring Property Damage Insurance.* At present, the Commission does not require licensees to maintain property damage insurance, or its equivalent. Under its responsibilities to protect the public health and safety, the Commission is concerned about the ability of a nuclear power plant licensee to finance the clean-up costs resulting from a nuclear-related accident. The Commission is considering the adoption of an interim rule which would require all licensees for operating power reactors to maintain the maximum amount of commercially available on-site property damage insurance, or an equivalent amount of protection. The proposed rule is intended to serve as an interim requirement until the Commission has an opportunity to conduct a rulemaking to determine what level of protection is necessary to cope with the on-site radiological hazards resulting from an accident. While the vast majority of licensees for operating power reactors currently maintain the maximum available amount of such insurance, the Commission understands that some utilities do not buy the maximum amount and one utility (TVA) self-insures for property losses. In view of the substantial importance to the public health and safety of adequately cleaning up nuclear accidents, the Commission is proposing that such maximum insurance coverage be mandatory (1) for a construction permit holder from the point in time that the Commission first permits ownership, possession and storage of special nuclear material at the site of the nuclear reactor, and (2) for all holders of nuclear power plant operating licenses. In other words, the insurance would be mandatory only when nuclear materials are on-site and not in the earlier construction stages. Within 90 days of the adoption of a final rule, licensees would have to demonstrate to the Commission's satisfaction that they possess the maximum amount of commercially available on-site property damage insurance or that they possess an equivalent amount of protection.

The impact of this proposed new requirement on construction permit holders and on licensees for operating power reactors is expected to be relatively small in comparison to total utility resources and the large consumer base for a nuclear power plant. The current property damage insurance premium for a two-unit site is approximately $1 million per year for maximum coverage with the premium for a one-unit site being proportionately less. For regulated utilities, insurance costs and the costs of complying with NRC regulations are normally passed through to consumers. All other utilities set their own rates and can pass such costs through to consumers at their own discretion.

IV. Proposed Application of the Final Rule

In summary, the Commission has tentatively concluded that adoption of the proposed rule will substantially reduce the effort of demonstrating financial qualifications without reducing

the protection of the public health and safety. If the proposed rule is promulgated as a final rule, it is the Commission's present intention to make it effective immediately upon publication, pursuant to 5 U.S.C. § 553(d)(1) since the rule is expected to significantly relieve the obligation of certain applicants with respect to information required for construction permits and operating licenses, and also to reduce the amount of unnecessary, time-consuming staff review and adjudicatory proceedings. In that regard, the Commission notes that the final rule, when effective, will be applied to ongoing licensing proceedings now pending and to issues or contentions therein. *Union of Concerned Scientists v. AEC*, 499 F.2d 1069 (D.C. Cir. 1974).

In addition, the NRC neither intends nor expects that the proposed rule, if and when finally effective, would affect the scope of any issues or contentions related to a cost/benefit analysis performed pursuant to the National Environmental Policy Act of 1968, either in pending or future licensing proceedings for nuclear power plants (utilization facilities under §§ 50.21(b) and 50.22). Under NEPA, the issue is not whether the applicant can demonstrate reasonable assurance of covering certain projected costs—the Atomic Energy Act issue dealt with in the proposed financial qualifications rule—but rather is merely what costs to the applicant of construction and operating the plant are to be put into the cost-benefit balance. As is now the case, the rule of reason will continue to govern the scope of what costs are to be included in the balance, and the resulting determinations may still be the subject of litigation. Thus, financial qualifications would not be expected to become an issue or contention in an NRC licensing proceeding insofar as NEPA might be involved.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. § 605(b), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. The proposed rule reduces certain minor information collection requirements on the owners and operators of nuclear power plants licensed pursuant to Section 103 and 104b of the Atomic Energy Act of 1954, as amended, 42 U.S.C. §§ 2133, 2134b. These electric utility companies are dominant in their service areas. Accordingly, there is no significant economic impact, nor are such owners and operators of nuclear power plants within the definition of a small business found in Section 3 of the Small Business Act, 15 U.S.C. § 632, or within the Small Business Size Standards set forth in 13 CFR Part 121.

Paperwork Reduction Act Statement

Pursuant to the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96–511), the NRC has made a preliminary determination that this proposed rule does not impose new information collection requirements. This proposed rule has nevertheless been submitted to the Office of Management and Budget for its consideration of any potential or new information collection requirements pursuant to Pub. L. 96–511.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Section 553 of Title 5 of the United States Code, notice is hereby given that adoption of one of the two following alternative amendments to 10 CFR Part 50 is contemplated.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

The authority citation for Part 50 reads as follows:

Authority: Secs. 103, 104, 161, 182, 183, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2239); secs. 201, 202, 206, 88 Stat. 1243, 1244, 1246 (42 U.S.C. 5841, 5842, 5846), unless otherwise noted. Section 50.78 also issued under sec. 122, 68 stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100–50.102 issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236). For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), § 50.41(i) issued under sec. 161i, 68 Stat. 949 (42 U.S.C. 2201(i)); §§ 50.70, 50.71 and 50.78 issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C.2201(o), and the laws referred to in Appendices.

Alternative 1—Eliminate Entirely the Financial Qualifications Review And Findings As To Electric Utilities That Are Applying For Construction Permits And Operating Licenses For Production Or Utilization Facilities

1. Paragraph (f) in § 50.33 is revised to read as follows:

§ 50.33 Contents of applications; general information.

Each application shall state:

. . . . .

(f)(1) Information sufficient to demonstrate to the Commission the financial qualifications of the applicant to carry out, in accordance with regulations in this chapter, the activities for which the permit or license is sought, *provided*, however, that no information on financial qualifications described in paragraphs (f)(1)(i) and (ii) of this section shall be required, nor shall any financial review be conducted, if the applicant is an electric utility applicant for a license to construct or operate a production or utilization facility of the type described in § 50.21(b) or § 50.22.

(i) If the application is for a construction permit, the applicant shall submit information that demonstrates the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated construction costs and related fuel cycle costs. The applicant shall submit estimates of the total construction cost of the facility and related fuel cycle costs, and shall indicate the source(s) of funds to cover these costs.

(ii) If the application is for an operating license, the applicant shall submit information that demonstrates the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated operation costs for the period of the license, plus the estimated costs of permanently shutting the facility down and maintaining it in a safe condition. The applicant shall submit estimates for total annual operating costs for each of the first five years of operation of the facility and estimates of the costs to permanently shut down the facility and maintain it in a safe condition. The applicant shall also indicate the sources(s) of funds to cover these costs. An application to renew or extend the term of an operating license must include the same financial information as required in an application for an initial license.

(2) Except for electric utility applicants for construction permits and operating licenses, each application for a construction permit or an operating license submitted by a newly-formed entity organized for the primary purpose of constructing or operating a facility must also include information showing:

(i) The legal and financial relationships it has or proposes to have with its stockholders or owners;

(ii) Their financial ability to meet any contractual obligation to such entity which they have incurred or propose to incur; and

(iii) Any other information considered necessary by the Commission to enable it to determine the applicant's financial qualifications.

(3) Except for electric utility applicants for construction permits and operating licenses, the Commission may request an established entity or newly-formed entity to submit additional or more detailed information respecting its

financial arrangements and status of funds if the Commission considers such information appropriate. This may include information regarding a licensee's ability to continue the conduct of the activities authorized by the license and to permanently shut down the facility and maintain it in a safe condition.

. . . . .

2. Paragraph (b) in § 50.40 is revised to read as follows:

§ 50.40 Common standards.

. . . . .

(b) The applicant is technically and financially qualified to engage in the proposed activities in accordance with the regulation in this chapter, *provided*, however, that no consideration of financial qualifications shall be necessary for an electric utility applicant for a license for a production or utilization facility of the type described in § 50.21(b) or § 50.22.

. . . . .

3. A new paragraph (v) is added to § 50.54 to read as follows:

§ 50.54 Conditions of licenses.

. . . . .

(v) Each electric utility licensee under this part for a production or utilization facility of the type described in § 50.21(b) or § 50.22 shall, within 90 days of the date this regulation becomes effective, have and maintain the maximum available amount of commercial on-site property damage insurance or demonstrate to the satisfaction of the Commission that it possesses an equivalent amount of protection covering such facility.

4. A new paragraph (l) is added to § 50.55 to read as follows:

§ 50.55 Conditions of construction permits.

. . . . .

(l) Each electric utility that is a construction permit holder under this Part for a production or utilization facility of the type described in § 50.21(b) or § 50.22 and who is also the holder of a license under Part 70 of this chapter authorizing only ownership, possession, and storage of special nuclear material at the site of the nuclear reactor for use as fuel in operation of the nuclear reactor after issuance of an operating license under Part 50 of this chapter, shall, within 90 days of the date this regulation becomes effective, have and maintain the maximum available amount of commercial on-site property damage insurance or demonstrate to the satisfaction of the Commission that it possesses an equivalent amount of protection covering such facility.

5. Paragraph (a)(4) in § 50.57 is revised to read as follows:

§ 50.57 Issuance of operating licenses.

. . . . .

(a) * * *

(4) The applicant is technically and financially qualified to engage in the activities authorized by the operating license in accordance with the regulations in this chapter, *provided*, however, that no finding of financial qualifications shall be necessary for an electric utility applicant for an operating license for a production or utilization facility of the type described in § 50.21(b) or § 50.22.

. . . . .

6. Part 50 is amended by removing Appendix C.

Appendix C—[Removed]

Alternative 2—Eliminate The Present Financial Qualifications Review And Findings As To Electric Utilities That Are Applying For Construction Permits, And Also Eliminate The Financial Qualifications Review And Findings At The Operating License Stage For Electric Utilities, Except Retain The Portion Of That Review And Findings That Relates To Permanent Shutdown And Maintenance Of The Facility In A Safe Condition

1. Paragraph (f) in § 50.33 is revised to read as follows:

§ 50.33 Contents of applications; general information.

Each application shall state:

. . . . .

(f)(1) Information sufficient to demonstrate to the Commission the financial qualifications of the applicant to carry out, in accordance with the regulations in this chapter, the activities for which the permit or license is sought, *provided*, however, no information on financial qualifications described in paragraphs (f)(1) (i) and (ii) of this section shall be required, nor shall any financial review of the information required by paragraphs (f)(1) (i) and (ii) be conducted if the applicant is an electric utility applicant for a license to construct or operate a production or utilization facility of the type described in § 50.21(b) or § 50.22.

(i) If the application is for a construction permit, the applicant shall submit information that demonstrates the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated construction costs and related fuel cycle costs. The applicant shall submit estimates of the total construction cost of the facility and related fuel cycle costs, and shall indicate the source(s) of funds to cover these costs.

(ii) If the application is for an operating license, the applicant shall submit information that demonstrates the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated operation costs for the period of the license, plus the estimated costs of permanently shutting the facility down and maintaining it in a safe condition. The applicant shall submit estimates of total annual operating costs for each of the first five years of operation of the facility and estimates of the costs to permanently shut down the facility and maintain it in a safe condition. The applicant shall also indicate the source(s) of funds to cover these costs. An application to renew or extend the term of an operating license must include the same financial information as required in an application for an initial license.

(iii) If the application is by an electric utility for a license to operate a production or utilization facility of the type described in § 50.21(b) or § 50.22, information shall be submitted that demonstrates the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover the estimated costs of permanently shutting down the facility and maintaining it in a safe condition. The applicant shall submit estimates of these costs, and shall also indicate the source(s) of funds to be used to cover these costs.

(2) Except for electric utility applicants for construction permits and operating licenses, each application for a construction permit or an operating license submitted by a newly-formed entity organized for the primary purpose of constructing or operating a facility shall also include information showing:

(i) The legal and financial relationships it has or proposes to have with its stockholders or owners;

(ii) The financial ability of such stockholders or owners to meet any contractual obligation to such entity which they have incurred or propose to incur; and

(iii) Any other information considered necessary by the Commission to enable it to determine the applicant's financial qualifications.

(3) The Commission may request an established entity or newly-formed entity to submit additional or more detailed information respecting its financial arrangements and status of funds if the Commission considers such information appropriate. This may

include information regarding a licensee's ability to continue the conduct of the activities authorized by the license and to permanently shut down the facility and maintain it in a safe condition.

2. Paragraph (b) in § 50.40 is revised to read as follows:

§ 50.40 Common Standards.

* * * * *

(b) The applicant is technically and financially qualified to engage in the proposed activities in accordance with the regulations in this chapter, *provided*, however, that consideration of the financial qualifications of an electric utility applicant shall be made only in the case of an operating license application for a production or utilization facility of the type described in § 50.21(b) or § 50.22, and shall be limited in such a case to consideration of an applicant's ability to provide the funds, or to show that it has reasonable assurance of obtaining the funds, necessary to cover the estimated costs of permanent shutdown and maintenance of the facility in a safe condition.

* * * * *

3. A new paragraph (v) is added to § 50.54 to read as follows:

§ 50.54 Conditions of licenses.

* * * * *

(v) Each electric utility licensee under this part for a production or utilization facility of the type described in § 50.21(b) or § 50.22 shall, within 90 days of the date this regulation becomes effective, have and maintain the maximum available amount of commercial on-site property damage insurance or demonstrate to the satisfaction of the Commission that it possesses an equivalent amount of protection covering such facility.

4. A new paragraph (f) is added to § 50.55 to read as follows:

§ 50.55 Conditions of construction permits.

* * * * *

(f) Each electric utility that is a construction permit holder under this Part for a production or utilization facility of the type described in § 50.21(b) or § 50.22 and who is also the holder of a license under Part 70 of this chapter authorizing only ownership, possession, and storage of special nuclear material at the site of the nuclear reactor for use as fuel in operation of the nuclear reactor after issuance of an operating license under Part 50 of this chapter, shall, within 90 days of the date this regulation becomes effective, have and maintain the maximum available amount of commercial on-site property damage insurance or demonstrate to the satisfaction of the Commission that it possesses an equivalent amount of protection covering such facility.

5. Paragraph (a)(4) in § 50.57 is revised to read as follows:

§ 50.57 Issuance of operating licenses.

* * * * *

(a) * * *

(4) The applicant is technically and financially qualified to engage in the activities authorized by the operating license in accordance with the regulations in this chapter, *provided*, however, that a finding of financial qualification shall be made only in the case of an application to operate a production or utilization facility of the type described in § 50.21(b) or § 50.22 and shall be limited in such a case to the applicant's ability to provide the funds, or to show that it has reasonable assurance of obtaining the funds, necessary to cover the estimated costs of permanent shutdown and maintenance of the facility in a safe condition.

* * * * *

6. Part 50 is amended by removing Appendix C.

Appendix C—[Removed]

Dated at Washington, D.C. this 13th day of August, 1981.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Acting Secretary.

[FR Doc. 81-24068 Filed 8-17-81; 8:45 am]

BILLING CODE 7590-01-M

SECURITIES AND EXCHANGE COMMISSION

17 CFR Parts 230 and 239

[Release No. 33-6339; File No. S7-891]

Proposed Revision of Certain Exemptions from the Registration Provisions of the Securities Act of 1933 for Transactions Involving Limited Offers and Sales

AGENCY: Securities and Exchange Commission

ACTION: Proposed rulemaking.

SUMMARY: The Commission is publishing for comment a new regulation governing the offers and sales of certain securities without registration under the Securities Act of 1933. This action represents an effort by the Commission to coordinate the various limited offering exemptions and to streamline the existing requirements applicable to private offers and sales of securities. Proposed Regulation D, if adopted, would replace the existing limited offering exemptions contained in Commission Rules 146, 240, and 242.

The Commission is requesting comments on the specific provisions of the proposed rules and also whether the proposals considered together provide a more coordinated exemptive scheme for limited offering transactions particularly as they relate to the capital formation needs of small business.

DATE: Comments must be received on or before October 5, 1981.

ADDRESSES: All communications on this matter should be submitted in triplicate to George A. Fitzsimmons, Secretary, Securities and Exchange Commission, 500 North Capitol Street, Washington, D.C. 20549. Comments should refer to File No. S7-891 and will be available for public inspection and copying in the Commission's Public Reference Room, 1100 L Street, N.W., Washington, D.C. 20549.

FOR FURTHER INFORMATION CONTACT: Paula L. Chester, (202)/272-2644 Office of Small Business Policy, Division of Corporation Finance, Securities and Exchange Commission, 500 North Capitol Street, Washington, D.C. 20549.

SUPPLEMENTARY INFORMATION: The Commission is proposing for comment Regulation D, a series of new rules governing the limited offer and sale of securities pursuant to the Securities Act of 1933 (the "Securities Act") [15 U.S.C. 77c(b), 77d)2)]. Proposed Regulation D is intended to result in a more coherent pattern of exemptive relief, particularly as it relates to the capital formation needs of small business. In this regard, proposed Regulation D brings together the current limited offering exemptions contained in Rules 146 [17 CFR 230.146], 240 [17 CFR 230.240], and 242 [17 CFR 230.242]. Thus, certain common terms such as "accredited investor" and "securities of the issuer" are defined as those terms are used throughout the regulation, and a common rule sets forth the informational requirements, the limitation on the manner of the offering, the limitations on resale, the safe harbor provision with respect to integration, and a uniform notice-of-sales for the three exemptions contained in the Regulation. In addition, proposed Regulation D would result in a number of significant substantive changes from present Rules 146, 240, and 242 as explained below.

I. Background

The registration requirements of the Securities Act and the exemptive

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
ARIZONA PUBLIC SERVICE	)	Docket Nos. STN 50-528
COMPANY, et al.	)	STN 50-529
	)	STN 50-530
(Palo Verde Nuclear Generating	)	
Station, Units 1, 2 and 3)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "Joint Applicants' Motion for Summary Disposition of Intervenor's Contention No. 7" have been served upon the following listed persons by deposit in the United States mail, properly addressed and with postage prepaid, this 29th day of January, 1982.

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Washington, D.C. 20555

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