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Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Rulemakings and Adjudications Staff

Subject: TLG Services, Inc., Comments on Epstein's Petition
Docket No. PRM-50-70

Dear Mr. Secretary:

Attached are my comments on the Petition for Rulemaking by Mr. Eric Joseph Epstein (Docket No. PRM-50-70). I also filed a copy of these comments with Mr. David L. Meyers by E-mail on July 26, 2000, the required submittal date.

Thank you for your attention. If you have any questions, please call me at (860) 355-2300.

Sincerely,

Thomas S. LaGuardia

Thomas S. LaGuardia, PE, CCE
President
TLG Services, Inc.

cc: David L. Meyer - Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
U.S. Nuclear Regulatory Commission

**TLG Services, Inc., Comments Regarding the
Petition for Rulemaking by Eric Joseph Epstein
Docket No. PRM-50-70**

Mr. Thomas S. LaGuardia, PE, CCE, President of TLG Services, Inc., (TLG) hereby submits these comments regarding statements made by Mr. Epstein in his filing of a petition for proposed rulemaking. The purpose of these comments is to clarify statements made by Mr. Epstein regarding TLG's cost estimates bases, assumptions, and terms used by Mr. Epstein in his petition. The comments are directed to the Petition for Rulemaking as docketed in the Federal Register Notice Vol. 65, No. 93, dated Friday, May 12, 2000. The comments are organized by petition section and paragraph.

II. STATEMENT OF THE ISSUES

**B. Current Problems Associated With Cost Estimates for
Radiological Decommissioning**

PARAGRAPH 1 - STATEMENT

The petitioner questions the reliability of nuclear decommissioning cost projections provided by industry consultant, Thomas LaGuardia, and TLG [Services], Inc. The petitioner states that, "And TLG continues to base decommissioning estimates on flawed and specious field studies..."

RESPONSE

TLG's data base for developing decommissioning cost estimates is in fact based on a combination of actual field performance data from earlier and recent decommissioning projects and related removal work, as well as from published performance data from industry, vendors, and federal government funded research programs. TLG follows cost estimating techniques provided by the Association for the Advancement of Cost Engineering, International (AACE). This organization is an international organization dedicated to developing accurate and reliable cost estimates for all types of construction, operation, and demolition activities. The AACE encourages and endorses the use of field data upon which to base cost estimates for current and future activities. I am a member of the AACE, and a Certified Cost Engineer (by examination) under its charter.

The AACE identifies three levels of cost estimating accuracy as follows:

Order-of-Magnitude Estimate	-30% to +50%
Budgetary Estimate	-15% to +30%
Definitive Estimate	-5% to +15%

The TLG estimates prepared to date, when compared to actual decommissioning projects have been within the definitive estimate range of accuracy.

TLG uses an activity-based costing (ABC) methodology that is widely accepted by both the AACE and the U.S. Department of Energy (US DOE). The US DOE has devoted Chapter 24, "Activity Based Costing," of its Cost Estimating Guide (DOE G 430.1-1) to this subject. In Section 3 of Chapter 24, "Application of Activity Based Costing," the US DOE states, "...ABC can be a useful cost estimating tool for non-conventional and construction projects." Decommissioning fits this definition.

TLG's Activity-Based Costing

TLG's activity-based costing approach uses a "bottoms up" foundation, applying direct data from actual removal records of man-hours, equipment, and consumables used in dismantling reactor components and structures at early and recent decommissioning and plant modification projects. TLG also uses well-recognized industry sources such as R.S. Means, "Building Construction Cost Data." Since nuclear power reactors are constructed primarily from piping and components of standard sizes of pipe (diameters and wall thicknesses), valves, tanks, heat exchangers, filters, ducts, concrete, and steel, etc., the removal of this equipment is independent of the size (i.e., electrical megawatts) of the power plant. The same diameter sizes of pipe are used in small reactors as are used in large reactors, except that there are longer lengths of piping in a larger plant. It takes just as long to cut a 6-inch pipe in a 100 MWe power plant as in a 1000 MWe power plant. Certainly, larger sized plants also have larger sized diameter piping and components. This issue will be addressed later in these comments under the topic of "*Power Plant Size Factors*."

From the very beginning of tracking actual field performance of its decommissioning projects, TLG carefully monitored crew productivity. During the Shippingport Decommissioning Project, for example, TLG's crews removed more than 96,000 feet of contaminated and clean pipe, valves, ducting, etc., and other power plant components. The man-hour productivity rates were recorded for each range of pipe size, and compared to the TLG estimate for such removal (upon which TLG based its fixed-price bid to perform this work). The resulting comparison validates TLG's estimating approach. Similar comparisons were made for large and small tanks of various sizes, and comparable validation was demonstrated. Additional data was recorded from actual removal projects of other contractors at other sites where significant decommissioning activities were performed. TLG has been actively involved in several large and small decommissioning projects, and this experience is routinely incorporated into the database from which estimates are developed.

Direct removal time is only part of the estimating process. TLG also estimates the work difficulty factors associated with radiological conditions (dose, and surface contamination), ALARA requirements, accessibility (including the need for scaffolding, working at heights or confined areas such as pipe tunnels), allowances for donning protective clothing, productivity loss for wearing respiratory protection, and time lost for

work breaks per work day. These work difficulty factors are used to account for an increase in the time required to remove contaminated equipment for disposal.

Cost estimates must include structural dismantling activities as well as process system removal costs. TLG's estimates are based on "as built" drawings, supplemented by on-site visits to confirm the inventory of systems and structures to be decommissioned. As these systems and structures are modified (or new ones added), and as the radiological conditions change over the operating life of the facility, the periodic updates of these estimates (as mandated by state public utility commissions) take into account these changes. Accordingly, the estimates accurately represent the expected physical and radiological status of the facility expected at the projected end of operating life of the power plant.

While the petitioner claims he, "does not dispute the nuclear industry's contention that radiological decommissioning and radioactive waste isolation expenses are subject to change and likely to increase," (INTRODUCTION, paragraph 2), the petitioner does not acknowledge those changes in his characterization of, "The wild fluctuation in the cost estimates for radiological decommissioning..." as stated in Section II, Paragraph 3. The very cornerstone of public utility rate regulation is to account for changes in cost as they occur. The petitioner fails to make this connection.

Low-Level Radioactive Waste Disposal

The cost estimates must address where the radiologically contaminated and activated waste will be sent for disposal. In the U.S., there are currently three commercial low-level radioactive waste disposal sites in operation: Chem-Nuclear Systems operates the Barnwell, SC facility, US Ecology operates the Hanford, WA facility, and Envirocare operates the Clive, UT disposal facility. These three sites are actively receiving wastes for disposal, and will continue to do so for many years. Under federal law, states are to form regional compacts for the disposal of radioactive wastes. Although this process is behind schedule; states are beginning to re-align themselves with existing disposal sites to handle waste shipments (e.g., Connecticut and New Jersey have formally joined South Carolina to send their wastes to Barnwell). Envirocare recently submitted an application to the State of Utah to expand the types of radioactive waste it can accept. If this application is approved, Envirocare may become a viable alternative disposal site when the Barnwell site ultimately reduces its receipt capacity to out-of-compact waste generators. In addition, several waste processors have developed thriving businesses decontaminating equipment, achieving free-release, thereby minimizing the amount of waste that must be buried. TLG's estimates consider these available waste processing and disposal technologies. There is little question as to how this waste is to be treated and prepared for disposal, or whether there will be available disposal capacity to handle decommissioning wastes.

The cost for disposal is expected to change to reflect increasing costs for labor inflation, regulatory requirements, fees to local and state governments, and new facility siting and/or licensing costs. The TLG estimates accurately reflect present costs for disposal, and the utility (licensee) includes its inflation factors to address how these costs may change with time. As noted earlier, periodic updates to these decommissioning estimates will recognize such changes as they occur. This makes for good rate-regulatory sense, and estimating accuracy.

On-Site Spent Fuel Storage

The costs for on-site spent fuel storage is another area generally included in TLG cost estimates. The utility's fuel management group usually provides to TLG the estimated inventory of spent nuclear fuel assemblies projected at shut down. The utility decides a spent fuel storage strategy, i.e., whether to store the assemblies wet in the spent fuel storage pool, or dry in spent fuel storage casks. If dry storage is selected, the number of casks required is a relatively simple calculation for the selected type of cask to be used. The duration of storage is a function of when the US DOE is expected to begin receiving spent fuel at the federal waste repository, as well as the spent fuel acceptance rate. The generally accepted current estimate for the US DOE to begin accepting spent fuel is the year 2010. Earlier decommissioning cost estimates assumed the previously published US DOE spent fuel receipt date of 1998. The revision to the year 2010 may significantly increase utility on-site spent fuel storage costs, and most likely increase decommissioning costs. The queue of when each reactor's inventory will be shipped is published by the US DOE (which is updated periodically by the US DOE). TLG's estimates accurately reflect this published schedule. If the schedule changes, appropriate adjustments will be made as part of the periodic updates to the decommissioning costs. The cost for spent fuel disposal is being funded separately by each utility through a charge per kilowatt-hour usage rate established by the US DOE. Spent fuel disposal costs are not part of the TLG estimates.

Summary

Decommissioning cost estimates are well founded, based on actual decommissioning experience of large and small reactors, industry-recognized sources of productivity data, and are periodically updated to reflect changes as they occur. This is consistent with good estimating practice and mandated regulatory requirements.

PARAGRAPH 1 - STATEMENT

The petitioner states that TLG based decommissioning estimates on studies extrapolated from small, minimally contaminated, and prematurely shutdown nuclear reactors. The petitioner further claims in Paragraph 3, "The wild fluctuation in the cost estimates for radiological decommissioning are attributable to the lack of actual decommissioning

experience at large nuclear generating plants over 1,000 MWe, or at plants that have operated for their full, planned lifespan.”

RESPONSE

Power Plant Size Factors

As noted earlier, the TLG estimates are based on a “bottoms-up” decommissioning approach using actual field data from dismantling piping and components of standard sizes. The same size piping and components exist in small (*e.g.*, 70-MWe Shippingport) and large (*e.g.*, 1150-MWe Trojan) sized nuclear power plants. It takes just as long to cut a 6-inch pipe in a small plant as it does in a large plant. Shippingport had reactor coolant piping as large as 14 inches. As noted earlier, larger sized plants also contain larger diameter piping and other components. The cutting time for larger piping and components is readily adjusted by calculating the circumference of the larger pipe and ratioing the cutting time appropriately. There is no problem extrapolating such data in developing reasonable estimates for larger piping and components. This is recognized practice in any industry. The nuclear industry should take credit for building on what has been learned from earlier decommissioning projects and plant modification programs such as steam generator replacements, recognizing the availability of a limited number of completed decommissioning programs.

If TLG used Shippingport to estimate the Shoreham cost by direct megawatt ratio, the estimate would have been much higher for Shoreham. Shippingport cost \$96 million to decommission the 70-MWe plant. By megawatt ratio, Shoreham (800-MWe) would have cost \$1.097 billion ($800/70 \times \96 million). Shoreham's actual decommissioning cost was \$182 million, as compared to the TLG estimate of \$186 million. Clearly the use of such crude ratioing techniques is not appropriate, and underscores the preferred “bottoms-up” approach.

Similarly, the smaller Pathfinder Reactor (60 MWe) was decommissioned for \$13.7 million. TLG's estimate was \$15 million, an accuracy of +9%. This is well within the AACE definitive accuracy range.

The Trojan Nuclear Plant (1150 MWe) is currently undergoing decommissioning. TLG estimated the cost of removal of the steam generators and pressurizer at approximately \$14.7 million. This major decommissioning activity was completed at a cost of \$14.2 million, an accuracy of +3%.

Maine Yankee contracted with a decommissioning operations contractor (DOC) on a fixed-price basis to manage and implement the decommissioning program. The fixed-price bid combined with the Maine Yankee utility staff cost estimate, was within 2% of the TLG \$509 million estimate.

As applicable plant data from active decommissioning projects are made available, TLG incorporates such information in updating its computer model and methodology. New techniques are added as they are proven in the field, and older approaches are replaced with more effective techniques.

Contamination Levels

The issue of whether a plant is minimally contaminated, as was the case at Shoreham, is further evidence of the estimating accuracy possible from the "bottoms-up" estimating methodology. TLG accounted for the lower levels of contamination at Shoreham in its decommissioning estimate for that plant. Accordingly, the TLG estimate for decommissioning Shoreham was \$186 million, and the completed cost was \$182.6 million. That is an accuracy of about 2%.

Summary

These examples are indicative of the highly accurate methodology employed by TLG in estimating decommissioning costs. In every case, the actual costs were within a few percent of the estimated costs. In every case, TLG accurately accounted for the differing levels of contamination expected to be encountered during the decommissioning activities. End-of-life reactor decommissioning estimates are just as accurate as prematurely shut down reactor decommissioning estimates. The actual field data reported by the plants undergoing active decommissioning supports TLG's estimating methodology.

PARAGRAPH 5 - STATEMENT

The petitioner states, "Yankee Rowe, however, is a small commercial plant (167 MWe) that had a unique advantage which make[s] it an unlikely predictor of decommissioning costs at other plants: The most significant component removal, steam generators, was completed without Nuclear Regulatory Commission approval."

RESPONSE

The petitioner is incorrect to state that the Yankee Rowe steam generators were removed without NRC approval. The steam generators were removed in accordance with the NRC regulation 10 CFR 50.59, which permits plant changes or modifications to be made provided there are no unreviewed safety implications. The Yankee Atomic Electric Company properly performed the 50.59 safety review in accordance with NRC regulations.

The cost of removal of the steam generators is independent of NRC approval. Such regulatory approval costs would be captured under the licensing and engineering

categories of the cost, not the direct removal cost. The Yankee Rowe steam generators, pressurizer and reactor vessel internals were removed at a cost of \$28 million versus the TLG estimate of \$32 million. Yankee Atomic Electric Company was able to negotiate a lower burial cost than was available to TLG at the time of the estimate. This is still within the +15% definitive estimate accuracy recommended by the AACE.

PARAGRAPH 7 - STATEMENT

The petitioner states that, "As of this filing, no commercial nuclear power plant has been decommissioned, decontaminated, and returned to free-release."

RESPONSE

The petitioner fails to recognize that Fort St. Vrain, a 330 MWe commercial power reactor, was decontaminated, decommissioned, and the license terminated. The remaining facility has been free-released and repowered as a fossil-fueled power plant. The spent fuel is stored on-site in a dry storage facility under a separate 10 CFR Part 72 license. This arrangement is clear evidence that a nuclear power plant facility can be safely decommissioned as long as the fuel can be removed from the facility.

Similarly, the Shoreham Nuclear Plant (800 MWe) was decontaminated, decommissioned, and free-released, and its license terminated.

PARAGRAPH 7 - STATEMENT

The petitioner states, "There is a reluctance to undertake, initiate, or finance decommissioning research."

RESPONSE

The petitioner is apparently unaware of the US DOE's continuing program of research and development of small- and large-scale decommissioning technology development, that has been underway for several years at the national laboratories and government facilities. These programs are in place and are continually funded at Argonne National Laboratory, Idaho National Engineering and Environmental Laboratory, Hanford, Oak Ridge, Fernald, Rocky Flats, Savannah River, and similar facilities. The purpose of this development work is to identify and test new and emerging technologies useful to decommissioning.

PARAGRAPH 9 - STATEMENT

The petitioner quotes from the Response to Interrogatories of the Environmentalists, Set 3, Dated May 19, 1997, wherein PP&L stated: "However, at this time, the Company cannot predict future changes in decommissioning technology, decommissioning costs, or

nuclear regulatory requirements. Accordingly, the Company cannot anticipate future decommissioning cost requirements or the associated rate recovery levels." (Q. & A. 157)

RESPONSE

The Company's response was both truthful and accurate. This issue was clearly recognized by the public service commissions in their requirement of periodic updates to decommissioning costs. No one can predict the future with certainty, and the best we can do is to revisit these estimates in the future to account for changes in technology, regulations, and costs as they occur.

PARAGRAPH 10 - STATEMENT

The petitioner states that at the Susquehanna Steam Electric Station, projected costs for decommissioning have increased by at least 553% in the last 19 years.

RESPONSE

It is meaningless to make such percentage comparisons of decommissioning costs over so broad a range of time. During that period, low-level radioactive waste disposal costs became one of the major expenses in decommissioning. Increased costs for disposal began to reflect the major licensing activities appropriate for disposal facilities. Costs for decommissioning program management increased as regulatory requirements mandated larger organizations to maintain the facility and its license during decommissioning. Inflationary effects also influence such estimates and it is not appropriate to make such comparisons without reflecting inflation factors. Nineteen years ago on-site spent fuel storage was not an issue, as the Congress had enacted the Nuclear Waste Policy Act of 1982 to construct and accept spent fuel at a federal repository beginning in 1998. It is not appropriate for cost estimators to speculate what might happen in the future and to include costs for such speculation. The public utility commissions wouldn't permit the inclusion of these speculative costs.

PARAGRAPH 10 - STATEMENT

The petitioner states that, "The 1994 cost estimate remained steady at \$724 million, but the market value of securities held and accrued in income in the trust funds declined, and thus the estimate reflected another increase in decommissioning costs."

RESPONSE

The TLG prepared decommissioning cost estimate for Susquehanna was prepared independent of any consideration of the market value of securities, or earnings from trust funds. The petitioner fails to recognize that over the last two years, the value of securities

held in trust have over-performed their anticipated return. Several utilities have not requested a rate increase to adjust their decommissioning trust fund contributions. Their trust fund balance is ahead of projections

Over the operating life of a power plant, such positive and negative fluctuations are likely to occur, and adjustments to the electric rates are an expected part of the rate regulatory process.

C. Proportional Confusion: the Case of the Allegheny Electric Cooperative and Pennsylvania Power & Light, Inc.

PARAGRAPH 10 – STATEMENT

The petitioner states that, “AEC’s tenuous financial position in regard to inadequate decommissioning savings will place a greater fiscal burden on PP&L; and thereby; 1) Create further uncertainties about PP&L’s ability to meet its financial commitments to decommission SSES; 2) Undermine TLG’s net decommissioning estimates; and, 3) Radically skew TLG’s contingency factor.”

RESPONSE

TLG’s decommissioning estimates do not address the method of funding or levels of collection from ratepayers. The estimates are prepared in current year dollars, and the utility determines the appropriate level of collections needed to accumulate sufficient funds to decommission the plant at the end of its useful life.

The level of collections determined by the utility to fund decommissioning similarly does not affect TLG’s contingency factors. TLG’s contingency covers only factors of cost increases that are expected to occur in the field during decommissioning activities. TLG’s definition of contingency is clearly identified in every one of its cost study reports, and does not address funding issues. The petitioner’s statement is incorrect.

PARAGRAPH 11 – STATEMENT

The petitioner states that, “The cost estimates for non-radiological decommissioning, (an imprecise term), are not mandated by the NRC although the agency stipulates that all nuclear power plants be returned to Greenfield, i.e. the original environmental status of the facilities prior to construction of the nuclear power plant.”

RESPONSE

The NRC does not stipulate that all nuclear power plants be returned to Greenfield. On the contrary, the NRC's decommissioning jurisdiction is limited to removal of radioactivity to acceptable levels, and termination of the license.

In many states, the public service commissions have endorsed and stipulated the plant be returned to Greenfield, or the original pre-construction condition of the site.

PARAGRAPH 11 – STATEMENT

The petitioner states that, "Furthermore, Greenfield has not been achieved by any large commercial nuclear plant and utilities are not required to save for this mandated eventuality, placing additional strain on the companies ability to finance radiological and non-radiological decommissioning."

RESPONSE

The petitioner is correct that no large commercial nuclear plant has been brought to Greenfield, but Elk River (17 MWe), and Shippingport (70 MWe) were decommissioned to Greenfield. The Pathfinder (67 MWe) reactor building and fuel storage building were decommissioned to Greenfield, but the utility maintains a 10 CFR Part 30 license for the turbine building's low levels of contamination. The utilities currently involved in active decommissioning of their plants (Big Rock Point, Maine Yankee, Connecticut Yankee, Yankee Rowe, Trojan, Rancho Seco, and San Onofre) intend to bring these plants to Greenfield.

The cost estimates prepared by TLG for these plants include the activities necessary to accomplish this objective. The state public utility commissions, and the Federal Energy Regulatory Commission (as applicable) in many cases have approved funding levels to achieve Greenfield.

D. Planned Operating Life for Nuclear Generating Stations

PARAGRAPH 1 ET.SEQ. – STATEMENT

The petitioner states that experience at large commercial nuclear plants has clearly demonstrated that TLG's assumption that nuclear units will operate for 40 years contradicts existing nuclear reactor experience.

RESPONSE

The utility provides TLG with the projected plant shutdown date used for the decommissioning cost estimate. The petitioner is correct that there have been several

large commercial nuclear plants that have been shut down for decommissioning prior to their expected 40-year operating life. However, the petitioner has failed to recognize the successful plant license extension efforts at Baltimore Gas & Electric for its Calvert Cliffs units, and the Duke Power Oconee units. The petitioner also ignores the recent flurry of purchase and sales of nuclear power plants with the stated intent to run them to their full license life. Once the full effect of the 1992 Energy Act is manifested, it is likely that all generating capacity, nuclear or otherwise, will increase in value and will be used as long as possible. One cannot generalize from a few isolated examples of premature shut downs during a generation restructuring period in our nuclear history.

E. Spent Fuel Isolation

PARAGRAPH 2 – STATEMENT

The petitioner states, “For example, at the Susquehanna Steam Electric Station spent fuel costs were omitted from TLG’s decommissioning estimate: ‘None of the estimates we have prepared include the cost of disposal of spent nuclear fuel, ‘PP&L Base Rate Case, page 1032, Lines 20-12).”

RESPONSE

The petitioner misinterpreted the statement regarding the cost of disposal of spent nuclear fuel. The statement was referring to the ultimate disposal of spent nuclear fuel at the federal repository. The cost for disposal is being funded separately by each utility through a charge per kilowatt-hour usage rate established by the US DOE. This was not part of the TLG PP&L estimate.

TLG did include the cost of on-site storage of the last core load of fuel in the spent fuel pool, for a period of five years. This period is needed to allow the fuel to cool sufficiently so it may be shipped to the federal repository in the US DOE-designed and supplied shipping casks. The on-site fuel storage affects the decommissioning schedule, and therefore costs, by interfering with the planned orderly sequence of activities to terminate the license. The spent fuel discharged from earlier cores was assumed to be shipped to the federal repository starting in 1998, in accordance with the US DOE’s scheduled queue for each nuclear power plant.

PARAGRAPH 2 – STATEMENT

The petitioner states, “But spent fuel is the main contributing factor in the escalation of decommissioning costs at Yankee Rowe.”

RESPONSE

The petitioner again misinterpreted the statement. At the time of the Yankee Rowe decommissioning activities, the US DOE's projected date for beginning receipt of spent nuclear fuel changed from 1998 to 2010. Accordingly, Yankee Rowe elected to make special provisions to purchase spent fuel dry storage casks to discharge the fuel from the fuel storage pool so that decommissioning of the fuel building could be completed. The large increase in Yankee Rowe's estimated cost to decommission included the capital expenditure to purchase these casks, license and construct an Independent Spent Fuel Storage Installation (ISFSI), and to store and monitor this fuel at the on-site ISFSI. The cost increase was for temporary storage, not for the disposal of spent nuclear fuel, but to accommodate the failure of the U.S. DOE to fulfill its contractual obligations to Yankee Atomic Power Company to begin receipt of spent nuclear fuel in 1998. The Federal Energy Regulatory Commission would not have accepted costs that speculated that DOE would fail in this regard prior to the actual date of failure; therefore this cost increase was unavoidable in a regulatory sense.

PARAGRAPH 7 – STATEMENT

The petitioner states that, "Isolation of high-level radioactive waste, which is primarily composed of spent nuclear fuel, can not be separated from nuclear decommissioning. At the earliest, Yucca Mountain will be available in 2010. Nuclear generating stations cannot be immediately decontaminated and decommissioned with the presence of spent nuclear fuel on-site or inside the reactor vessel. Aggressive and destructive decontamination clean-up processes will be unavailable until the spent fuel is removed [from] the nuclear generating stations' temporary storage facilities."

RESPONSE

The petitioner is again confusing the disposal of spent nuclear fuel at a federal repository, with the on-site dry cask storage of spent fuel. Disposal is separately funded by utilities through a kilowatt-hour charge. On-site storage in dry storage casks away from the plant buildings (as many plants are currently placing the ISFSI) is a reasonable method of removing fuel from the buildings to allow decommissioning to progress using aggressive demolition techniques.

Further, at least two long-term storage options are being developed at away-from-reactor facilities. These facilities are located in Utah and Wyoming. These options offer reasonable alternatives to on-site storage ISFSIs. This option would be considered in determining a spent fuel storage strategy. The cost for this storage would be included in the decommissioning cost estimates when they become operable.

F. Low Level Radioactive Waste Isolation

PARAGRAPH 1 – STATEMENT

The petitioner states that the PP&L estimates assumed low-level radioactive wastes would be shipped to the Appalachian Compact, and that the cost for disposal would have to be recomputed for shipment of wastes to Barnwell, SC.

RESPONSE

TLG's cost estimate for the Susquehanna units assumed the wastes would be shipped to the Appalachian compact, and assumed the burial rates were the same as the Barnwell schedule since no information was available for the Appalachian Compact. Accordingly, no appreciable change in burial costs would be warranted if the wastes were shipped to Barnwell (except for the periodic update to costs from Barnwell rates in 1993 to current Barnwell rates). The only change would be the slightly increased transportation costs for the trip to Barnwell, SC. However, this cost was approximately 1% of the total decommissioning costs, and would have only a minor overall affect on the overall project costs.