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February 1, 1982

Secretary, Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20545

Clinch River Breeder Reactor Plant
Docket No. 50-537

Dear Sir:

As stated in my letter of January 28, 1982, I am enclosing herewith for filing the signed original of Charles Komanoff's supplemental statement in the above-captioned proceeding.

Sincerely,

TUTTLE & TAYLOR

By
Eldon V. C. Greenberg

EVCG:ejg

Enclosure

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DOCKET NO. 50-537
SUPPLEMENTAL STATEMENT OF CHARLES KOMANOFF
PRESENTED TO THE NUCLEAR REGULATORY COMMISSION
ON JANUARY 28, 1982
IN OPPOSITION TO APPLICANTS' EXEMPTION REQUEST
UNDER 10 CFR §50.12

Applicants' answers to Questions 9(a) and (b) provide the source and basis of Applicants' estimate of a cost of $10-20 million per month of delay in commencement of site preparation activities. However, examination of the three sources of delay costs raised by Applicants confirms the conclusion in my January 18 comments that the net costs of delay are, at most, extremely small relative to Applicants' estimate and may, in fact, be negative.

(1) Costs of Unavoidable Management Activities: Applicants state that the cost of maintaining the various management groups for an additional 1-2 year period is $42.3 million per year. Applicants have not demonstrated the point but have only asserted it. Applicants' support for this figure consists merely of (i) assertions that, due to long lead times in re-hiring or to the essential nature of management functions even during project delays, project management staff must be maintained essentially at present levels; and (ii) calculation of the current costs in salary and overhead of maintaining project management staff. No demonstration is provided of the impracticality of

re-assigning staff to non-CRBRP work during delay periods, even though such an assumption implicitly underlies Applicants' response.

Moreover, examination of Applicants' response turns up several other assumptions suggesting that the estimate of management costs is overstated.

First, some of the job positions included in Applicants' estimate pertain to functions that are characterized elsewhere as having been largely completed. For example, the Westinghouse LRM team, which accounts for $11.2 million of Applicants' total annual cost estimate of $42.3 million for retaining management personnel, has as one of its prime functions the provision of project design work. [1/] Yet elsewhere Applicants have estimated that CRBRP "design work is approaching 90 percent completion". (Attachment A to DOE Letter to NRC Commissioners, December 31, 1981, p. 13.) On the face of it, the $11 million-per-year maintenance of a management team to provide, as one of its

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[1/] Applicants state that the "specific functions" of the Westinghouse LRM team are said to include "guidance for the planning and implementation of the reactor manufacturers' work in the design . . . of the NSS of the CRBRP . . . integration of the NSSS through top level design guidance . . . review of designs in order to assure appropriate design consistency . . . participat[ion] in system design reviews . . . continuing co-ordination with the Architect-Engineer, including review of designs relating to the nuclear island . . . ." (See p. 56 of Applicants' Answers.)

main activities, design-related work appears to be excessive for a project whose design work is close to 90% complete.

Second, the unit costs of retaining managerial personnel appear excessive in some cases. For example, the $110,500 annual per-person estimate for salaries and ancillary costs for the Westinghouse LRM team (Applicants' Answers, p. 60) is an unusually high rate. The charging rate includes, inter alia, R&D costs (ibid., p. 60n). Yet Applicants estimate that "engineering research and development is approximately 95 percent complete". (Attachment A, op. cit., p. 13).

Third, Applicants' estimate of costs for retaining managerial staff assumes implicitly that during a delay period staff will not (or cannot) perform beneficial activities that would offset the gross costs, at least in part. This assumption flies in the face of experience with the CRBRP. Elsewhere in Applicants' Answers are descriptions of major design changes which occurred during the period of previous delay. These changes include: 18-foot increases in basemat width and length to accommodate a confinement building around the reactor containment; a 9-foot increase in basemat thickness; increases in foundation sizes of the diesel generator, reactor service and steam generator buildings and of the cooling tower; relocation of roadways and support facilities to optimize flow of materials and equipment;

increase in the size of the turbine-generator building; addition of an emergency cooling tower; etc. (See Applicants' Answers, pp. 26-28). Presumably, such changes have been instituted to satisfy various safety, environmental, economic, and/or R&D objectives. It is reasonable to assume that the approximately 640 management and technical personnel who, Applicants contend, must be retained during construction delays, have the capability to make further design changes to optimize the CRBRP. None of the benefits of such changes, including the obvious benefits of making them prior to start of construction, are reflected in Applicants' Answers.

(2) Inflation: In my earlier comments, I indicated that inclusion of the time value of money in calculations of the effect of deferring project expenditures results in net savings, so long as the interest rate (the measure of the saving from deferral) exceeds the inflation rate (the measure of the cost of deferral). Two points, however, deserve elucidation.

First, the estimate in Intervenors' Comments of a $30 million benefit per year of delay (p. 33) assumes 11% current interest and 8% anticipated inflation; at today's actual 14% interest and 8% anticipated inflation, the benefit of delay in the immediate future would be approximately twice the $30 million estimate.

Second, Applicants' simplistic calculation of inflationary impacts outside of a present-worth context (i.e., exclusive of the time value of money) essentially duplicates calculations made during 1981 by DOE, NRC Staff and nuclear industry representatives of the costs of delays in granting operating licenses for light water reactors nearing completion. Such calculations were without merit then and are without merit in the present context as well. [2/] Inflation *per se* does not add to the *real* costs of capital projects if it operates through delays that also postpone the public's responsibility for payment.

(3) *Interest*: The last category of costs incurred through delay is said by Applicants to be interest on expended capital that will accrue during the delay period. In Applicants' own words,

> Whenever an organization, including the United States Government dedicates funds to a capital project, it foregoes the opportunity to invest those funds in alternative projects which will earn an equal or greater return on investment *or* to pay off debt on which the capital costs are being incurred. In short, the organization "ties-up" capital and incurs an opportunity cost. Although certain components of the cost may be difficult to measure, it is, in an economic sense, a real cost . . . .(Applicants' Answers, p. 45.)

[2/] There may, of course, as acknowledged in my earlier statement, be a separate cost of delay: the postponement of the substitution of fossil generation by nuclear generation with lower running costs.

Applicants are correct, but on the wrong point. It is true that in expending capital funds the U.S. Government foregoes the benefits from alternative capital projects. Indeed, this is precisely why the deferral of expenditures on CRBRP produces benefits that offset -- indeed, more than offset, given interest rates above the inflation rate -- the inflationary costs of delay. Applicants' statement corroborates Intervenors' contention that, in the realm of "inflation", there is no net cost, but a net benefit, to any deferral of expenditures at this stage of the CRBRP.

However, the statement does not serve Applicants' intent. Contrary to Applicants' wishes, the future rate and level of expenditures on CRBRP have no bearing on the costs of past expenditures on CRBRP. Any future delay in project schedule will not result in additional cost on expended capital. Payments from the U.S. Treasury to holders of federal bonds or notes issued to pay for past expenditures on CRBRP will continue at the rates stipulated in those bonds or notes, regardless of the future fate of CRBRP. There is no linkage whatsoever between the progress of CRBRP and the Government's obligation to pay the fixed costs of financing past expenditures. Applicants' very correct observations concerning opportunity costs of capital refer entirely and only to future, avoidable expenditures. They have no

relevance to expenditures already made. [3/]

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[3/] Applicants' citation (p. 45) of Cost Accounting Standard 417 also has no relevance to past expenditures. That standard specifies that interest costs may be included in the computation of capital costs for rate-making purposes. It has no bearing except in a rate-making context. In any case, although inclusion of interest costs does add to a project's calculated capital cost, it does not add to the net societal costs of a project. Interest costs are society's means of placing the responsibility for costs during construction upon the contractor. At completion the ratepayer bears the higher project cost due to interest, but this is offset by the ratepayer's avoidance of cost responsibility during construction. The offset exactly equals the cost if ratepayers' and contractor's interest costs are equal, and it exceeds the cost (i.e., delay is beneficial to ratepayers) if ratepayers' interest costs are greater.