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In summary, may I emphasize again my belief that economics of chemical processing will undoubtedly, and in the not too far distant future, require a change of process at W. With this in view, it seems to me that the country can well afford to complete at this time the development of a very promising alternative method. The important costs involved will include labor, materials and storage facilities. Since this new process will require much less storage than the existing one, the question is likely to arise in the near future whether to build more storage facilities or go to a new process.

You will note that no reference has been made above to the need for this or a similarly desirable process in connection with future piles. I believe this need is already adequately understood.

Chas. M. Cooper

GMC/c

cc-E. J. Murphy (5)
J. C. Stearns (3)
M. D. Whitaker (3)
R. S. Mulliken (2)
N. Hilberry
F. H. Spedding
C. A. Thomas
R. Williams (2)
W. M. Latimer (2)
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W.M.L.

To: A. H. Compton

From: G. M. Cooper

In Re: Importance of Hexone Extraction Process

Following your request, I spent some time this trip with Messrs. Daniels, Seaborg, Lawroski and other interested people in the Chemistry Division going over their results and planning in connection with the development of a complete hexone extraction process which would provide for three products - decontaminated, purified and concentrated plutonium, a decontaminated solution of tuballoy, and a fission product's fraction from which individual fission products could be easily recovered. The following comments cover my conclusions in the matter.

There can be little doubt that the existing W process is much more complicated, requires much more expensive equipment, and costs a great deal more to operate than other methods about which we now know enough to be confident of the results which they can be made to yield. Hence, it is not only unlikely that no further plants similar to the W chemical units will be built, but it becomes probable that economic considerations alone will, in the future, force the abandonment of the present processes and the substitution of the more desirable and economic ones. With this in view, it would seem to me imperative to carry through the hexone extraction process development to the point where sufficient information has accumulated to permit actual plant designs. I gather that the program at present envisaged should accomplish this end, but I would feel that the accomplishment of this end will certainly be of sufficient future importance to warrant continuation, if necessary, beyond the completion dates at present contemplated.

It seems probable to me that after perhaps a year of operation at W, sufficient product will have been accumulated to meet immediate requirements. When this happy state has been attained, it would seem reasonable to expect that chemical processing as a regular operation would cease, but that pile operation would continue more or less indefinitely. Material would then be processed only as rapidly as efficient use of the parent material would indicate. This might result in product concentrations of the order of 2500 grams/ton instead of the present 250. Remembering that the present plant has been designed for a 250 gram/ton level, it is probable that the much higher concentration could not be handled without considerable changes in the process and probably involving dilution of the tuballoy to such a point that the plutonium concentrations are not substantially higher than at present contemplated - if present processing equipment is to be employed. I believe the hexone process can be readily adapted to handle such high concentrations. This, then, would be another reason for completing this development.

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BY AUTH. *Senigaglia Flr 11-14-95*

BY *W.E. ...* DATE *12-8-95*

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