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Department of Energy
Albuquerque Operations Office
P.O. Box 5400
Albuquerque, New Mexico 87115

SEP 11 1980

R. E. Batzel, Director, LLNL
ATTN: Seymour Sack

BERYLLIUM METAL COSTS (U)

Please refer to your memorandum, dated July 21, 1980, same subject.

AL's "Beryllium Supply Program Update" dated March 11, 1980, quoted an average cost to the weapons complex of \$1500/lb of beryllium metal for FY 1980.

The actual cost of beryllium metal procured in FY 1980 to date averages \$1642/lb. This represents a 9% estimating error, largely due to the use of an average value to describe a diverse product mix. The remainder of the 9% error may be attributed to forecasting error, which is a reasonable expectation.

Actual beryllium costs for production in FY 1980 include the W70-4, W76, W78, and W80. The average cost/lb of beryllium for these programs is as follows:

<u>PROGRAM</u>	<u>AVERAGE COST/LB</u>
W70-4	
W76	
W78	
W79	
W80	

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1ST REVIEW-DATE: 5/19/88	(DETERMINATION (CIRCLE NUMBER(S)))
AUTHORITY: 2800 DD	1. CLASSIFICATION RETAINED
NAME: Jon Henry	2. CLASSIFICATION CHANGED TO:
2ND REVIEW-DATE: 8/17/88	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: DD	4. COORDINATE WITH:
NAME: Kenneth H. ...	5. CLASSIFICATION CANCELED - 148
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Classified by Michael Q. Guy SFB WPD
Title Engineer Date 8-28-80

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As in the past, we will continue to employ the calculational and forecasting techniques which appear to be most accurate. Along these lines, we appreciate suggestions for improvement.

As you suggest, the relevance of W76/W78 programs to the B83 is questionable; however, in the case of beryllium metal, there appears to be a relationship in that the sole supplier, Brush Wellman, produces all beryllium metal for our programs. This commonality across program boundaries suggests that there will be common cost and pricing practices based on common cost and pricing data inputs. Certainly, as the inputs vary, so will the cost/pricing results.

The B83 program beryllium costs are known to be lower than those of other programs.

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Five hundred dollars/lb of beryllium is equal to the price of log today in 1980. We do not believe that the B83 program will enjoy beryllium log prices for component parts in 1983-1987, just as it does not today. We do expect that the B83 material efficient fabrication study results will produce appreciably lower costs for Brush Wellman and in turn, the prices paid on the B83 program, but the values will nevertheless be high.

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As you note, it is difficult to forecast escalation. It is convenient to use averages because identification of the timing, quantity and cost of supplies at point of purchase by Brush Wellman from their suppliers is neither necessary nor feasible. It is difficult to forecast specific beryl ore/bertrandite ore cost/pricing data apart from employing averaging techniques. There has been no intent on the part of AL or OMA to employ averaging techniques for other than practical cost/price estimating reasons. Your contention that their use as the basis for major facilities investment is unreasonable is correct. To our knowledge, no one in DOE has ever held any other opinion, so it appears to be unanimous.

Again you are correct in your statement that one-time price jumps following the end of a competitive pricing situation, or cost increases associated with capital investment required to meet OSHA standards or modernize facilities do not require 20 percent per year escalation over an eleven year period. The 1979 one-time price jump was 35% plus 9% escalation due to labor and materials cost increases. The cost of a \$50 million dollar modernization project, as proposed by Brush Wellman, spread over a ten year

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period, if amortized across product sales, would result in a \$100 million dollar price increase, or \$10 million dollars per year for each of 10 years. This estimate by Brush Wellman was made to illustrate the point that profitability, pricing and tax issues compound price increases. Such an increase would generate much more than the 20 percent per year increase you suggest is excessive. In fact, the "Beryllium Supply Program Update" of March 11, 1980, makes no reference to modernization projects, OSHA standards compliance costs, or any capital investment. AL's use of a 20 percent per year price increase was at the time of its use a reasonable value. Today, 15 percent to 20 percent per year escalation appears to be reasonable on a gross basis.

Realistic estimating, using readily available data, indicates the magnitude of the beryllium metal cost problem, as shown in the March 11, 1980, "Beryllium Supply Program Update". As intended, the report updated work-in-progress and confirmed requirements. The next update, which will be formally published in September, 1980, within the context of AL's beryllium program management plan, will probably duplicate the information shown below. It is provided to you now to give you ample time to critique the data, as you see fit.

Beryllium Procurement Estimate
(Millions of Dollars)

FY:	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
1980 \$	14.5	21.8	20.1	23.4	18.6	24.8	123.20
5%/YR	15.2	24.0	23.0	28.6	23.8	33.2	147.80
10%/YR	15.9	26.4	26.7	34.2	29.9	43.9	177.00
15%/YR	16.7	28.8	30.6	40.9	37.4	57.3	211.70
20%/YR	17.4	31.4	34.8	48.7	46.5	74.4	253.20
3/80 UPDATE	27.0	36.7	51.8	62.2	82.1	67.2	327.00

As a matter of interest, the total FY1981-1986 cost estimate in the 3/80 update, at 20 percent per year escalation, when compared to the 20% per year line in the forthcoming update, indicates the total cost (magnitude) in the 3/80 update to be conservative by \$74M, or 23 percent. Of the 23 percent adjustment, 15 percent reflects a 1/3 decrease in B83 baseline 1980 estimates, due to expected results of more efficient beryllium processing. The net adjustment of 8 percent is primarily a result of using specific weapon beryllium costs per pound rather than an average.

If you have any questions or comments on the above, please call.

T. C. Jones
T. C. Jones, Director

Weapons Production Division

WPN:MQG

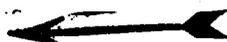
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R. E. Batzel

cc: H. E. Roser, Manager, ALO
R. E. Caudle, Director, Division of Operations, OMA, HQ
D. Ofte, Area Manager, RFAO
R. O. Williams, Vice President & General Manager, Rockwell
International, RFP
J. E. Dorr, Rockwell International, RFP
C. W. Weidner, Rockwell International, RFP
J. J. Wechsler, LANSL, WX-DO
W. B. Shuler, LLNL
W. E. Nelson, LLNL
R. A. Woelffer, LLNL
F. J. Fulton, LLNL

bcc: H. N. Meyer, Jr., Director, Resources Management Div., ALO
J. H. Hines, Acting Director, Weapons Development Div., ALO



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