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Mike Guy

July 21, 1980

T. C. Jones, Director
Weapons Production Division
Department of Energy
Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87115

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW-DATE: 5/19/99	DETERMINATION [CIRCLE NUMBER(S)]
AUTHORITY: ☒ DC ☐ DD	1. CLASSIFICATION RETAINED
NAME: Jim Greening	2. CLASSIFICATION CHANGED TO:
	3. CONTAINS NO DOE CLASSIFIED INFO
2ND REVIEW-DATE: 4/20/98	4. COORDINATE WITH:
AUTHORITY: DD	5. ~~CLASSIFICATION CANCELED~~ HPS
NAME: [illegible]	6. CLASSIFIED INFO BRACKETED
HPS Schmidt 6/17/98	7. OTHER (SPECIFY):

REF: SRD report "Beryllium Supply Update", Jones to Distribution, dated March 11, 1980 (U)

Dear Mr. Jones:

The referenced report, which has just come to my attention, promulgates gross misinformation about the beryllium metal cost picture and beryllium fabrication technology. The most blatant errors are associated with the B83 program, which is of importance in this context because the B83 is a large user of beryllium metal.

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I believe that this assumption is largely based on the current cost of blanks used in the W76 and W78 programs; these blanks and costs are not relevant to the B83 (or the W84).

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An LLNL funded study was instituted in 1979 to investigate the applicability of material efficient fabrication technology to B83 beryllium parts as well as to establish a realistic cost baseline for B83 beryllium. The study results from BWI revealed that conventional techniques, designed to efficently obtain the entire set of required B83 blanks from a log, would produce a one-third reduction in cost for production scale purchases. These results were available to RIRF in August, 1979, and were used in RF input to the B83

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Baseline Life System Cost Report in October 1979. They have additionally been "audited" by ALO, WDD.

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A factor of three correction to the cost of half the projected Be usage suggests that the entire cost picture be reexamined. We have made sure that the data is available for the B83. Much of the remaining use is in systems which are inproduction or systems near enough to FPU so that real cost data should be available; there is no need to use irrelevant and misleading averages.

It is difficult to forecast escalation. Assumption of a continuing 20 percent per year cost increase makes for conservative budgeting, as well as providing an interesting exercise in compound interest. It is not a reasonable basis for major facilities investment. We have clearly not even seen the official escalation rate in B83 beryllium purchases. 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 large jump in cost of the blank presented in Fig. 1 of the attachment is rationally interpreted as an adjustment following a competitive (predatory) pricing policy for the only blank being purchased for RF production; it does not set an escalation rate to be extrapolated for 10 years. It is also difficult to understand why the procurement costs are projected in Attachement 1 for a total of 2.2 times the finished weight required for production.

There would seem to be even less basis, in OSHA rules or equipment modifications, for the assumption of 20 percent annual escalation in BeO costs.

The section on improved fabrication technology status is also misleading. The B83-funded study said that conventional technology ("hogging" blanks from a log) was the cheapest approach, if production quantities were involved and all parts required for the B83 were considered jointly. This is of course "material-efficient technology," since it minimizes the throughput of Be required to produce

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a set of parts. Only one part, of the six major B83 parts, was adaptable to forming technology; the estimated cost savings of five percent for this part is in the noise as compared to the forming development cost and potentially greater part loss with the more complex process. We have repeatedly informed RF that the B83 has no interest in forming development for the one major part for which it may be feasible. Alternate fabrication technology development should be consentrated in appropriate areas; an example is the W76/W78 blank which is the basis for most of the high cost assumptions. There are two obvious approaches, the ingot sheet process and forming from slices of hot pressed Be. These have been studied repeateadly over the past 12 years for an essentially identical blank used in the W62/W68 program; updated process cost estimates can be directly measured against current procurement costs. Another area for fabrication development is the new part shape introduced in the W78 (and MX) and W80, representing nearly 30 percent of the finished part metal use. Work in these areas should have begun two years ago, when the beryllium cost and availability issues first surfaced.

I do not mean to understate the potential for Be metal cost and availability problems. But realistic costing, using readily available data, will indicate the correct magnitude of the problem, and indicate those areas where alternate fabrication techniques may prove effective. We have done this job, on our own initiative, for the B83. Surely ALO and RF can do this kind of job for other weapons requirements, as a prerequisite to consideration of a major internal development effort.

Accept my apologies for the vagaries of the LLNL information distribution system, which have delayed for four months these comments on the referenced report.

Sincerely,

Seymour Sack

Seymour Sack
B83 Program Manager, LLNL

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