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Commanding General
Manhattan Engineer District
Box 2610
Washington, D. C.

Dear Sir:

Subject: Little Boy Procurement Program

In order to meet a new requirement for the stockpile of weapons, the number of Little Boy bombs has been increased. This program cannot be filled from mechanical components now existing at Los Alamos, consequently some fifteen new units, complete with the special gun tubes and breech blocks, must be manufactured.

The Bureau of Ordnance supervised this program originally. The gun tubes and breech blocks were manufactured at the Naval Gun Factory, and most of the balance was made at the Naval Ordnance Plant, Centreline, Michigan.

Los Alamos has started on the inventory and preparation of components at Site Y to complete the initial figure for stockpile. The quantity of shop work required to put this material in shape proves to be more than our own shop facilities can handle. Therefore we are in the process of arranging to have the work completed at the Naval Ordnance Depot, Centreline, through the M.E.D. Detroit office operating on a purchase order basis directly with Centreline. In order to prepare for the possible increase in the number of weapons for stockpile, an educational order has been under discussion with the M.E.D. Detroit representative to insure the existence of tools, jigs, and fabrication drawings from the several vendors originally involved.

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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW DATE: 11/96	2ND REVIEW DATE: 4/1/96
AUTHORITY: D AOS (READ) D ADD	
NAME: [Redacted]	
STIPULATION (CIRCLE NUMBER)	
1. CLASSIFICATION RETAINED	
2. CLASSIFICATION CHANGED TO:	
3. CONTAINS AND DOES NOT CLASSIFIED INFO	
4. CORRELATE WITH:	
5. CLASSIFICATION CANCELLED	
6. CLASSIFIED INFO ENHANCED	
OTHER (SPECIFY):	

SPECIAL RE-REVIEW
FINAL DETERMINATION
CRD, DATE: JAN 14 1987
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RESTRICTED DATA

UNCLASSIFIED

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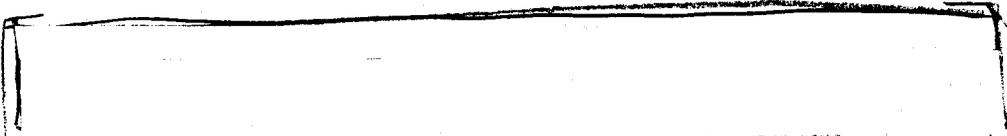
Commanding General

- 2 -

23 October 1946

It is now desired:

- 1 - that the Navy Department be asked to assume the entire burden for the fabrication of the fifteen new weapons,
- 2 - that the Navy Department advise whether Centrelino is the proper activity to build the breech blocks required under the original requirement,
- 3 - that the Naval Ordnance Plant, Centrelino, be made the final inspection and assembly point,



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- 5 - that sufficient funds be allocated to the Navy Department to complete this production program by September 1948 at the latest.

From the point of view of following up on the inspection and progress under the circumstances existing at Los Alamos, Sandia, and Detroit with respect to the limited "know how" available now, this activity would prefer that Naval Ordnance Depot, Centrelino, be given as much detail production as the Bureau of Ordnance believes proper.

Sincerely yours,

R. S. Warner, Jr.
Z-Division

RSH:rah

- cc: Capt. R. A. Larkin ✓
- Lt. Col. Wilhoyt
- Col. G. Dorland (2)
- Mr. H. W. Russ, Z-11
- 1-File

(s) N. E. Bradbury
N. E. Bradbury
Director, Los Alamos

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NAME	SALARY	ARR. IN DORMITORY	LEAVE DORMITORY	MOVED INTO QUARTERS	MARRIED OR SINGLE
Agnew, H. M. S.	\$230.				
Anderson, E.	300.	4/16			
Bailey, C. L.	260.	4/18			
Baker, C. H. P.	390.				
Baker, R. D.	250.				
Bethe, H. A.	850.	3/25	4/24	4/24	
Bleir, J. K.	250.	4/21/			
Bloch, Felix	500.				
Bacher, R. F.	750.				
Bradner, Hugh	325.	4/15			
Brewer, M.	460.			4/11	
Bridge, H.	225.			4/21	
Brockmann, H. C.	460.			4/7	
Caldes, Wm.	180.	4/22			
Christy, R. F.	400.	4/3	4/7	4/7	
Clerk, Al	450.	3/30	4/19	4/19	
Clark, W. F.	175.				
Compton, Eugene	450.			4/12	
Cook, Ruel R.	275.			4/1	
Coon, J. A.	330.				
Cornog, K.	400.	4/18			
Critchfield, C. L.	400.				
Davis, R. A.	240.	4/4	4/7	4/24	
Davis, Roland	140.				
Dennes, W. R.	500.	4/15			
Delire, John	280.	4/1	4/5	4/8	
Diven, Ben C.	240.	3/13			
Dowson, Sara	200.	4/14			
Duffield, R.	300.	4/14			
Ehrlich, Richard	240.				
Farr, David	290.	4/2			
Feynman, Richard	330.	4/3			
Fowler, J. L.	280.	3/26			
Frankel, S. P.	300.	4/4	4/47	4/7	
Fredericks, Eleanor	150.	4/18			
Frisch, E. H.	250.			4/22	
Froman, Derol K.	500.	4/13			
Garner, C. S.	380.			4/28	
Gary, G. Pauline	180.				
Gordon, Carrol	450.	3/30	4/21	4/21	
Graves, Alvin	350.				
Greene, DeMotte	200.	4/19			
Greene, Priscilla	250.	4/17			
Greisen, Kenneth	305.				
Grubman, Anton	290.			4/15	
Hall, Stanley	160.	3/31			
Hane Wilbur	280.				
Hanson, Alfred O.	305.				
Hanson, J. H.	460.				
Hempelmann, Dr. Louis	355.	4/19			
Howell, Leigh	460.				
Hush, James M.	250.				

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BY: [Signature]

CLASSIFICATION CANCELLED
PER DOC REVIEW JAN. 1973
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NAME	SALARY	ARR. IN DOMITORY	LEAVE DOMITORY	MOVED INTO QUARTERS	MARRIED OR S.I.L.
Jensen, Kenneth S.	\$225.				
Jorgenson, Theo.	400.	4/6	4/8		
Kahn, Milton	240.			4/16	
Kamm, Robert L.	280.			4/25	
Kennedy, J. W.	415.	4/15	4/27	4/27	
King, L. D. P.	360.				
Klema, Ernest	200.	3/31			
Konopinski, E. J.	400.	4/1			
Koontz, P. G.	400.				
Krohn, Robert	220.	4/22			
Lavatelli, Leo S.	250.	4/2	4/12		
Lawlor, Glenn	400.				
Linenberger, G. A.	240.				
Lipkin, David	380.				
Mack, J. E.	475.				
Mastick, D. F.	220.	3/30			
Mitchell, Dana P.	600.	4/15			
Muncy, J. A. D.		4/15	4/22	4/22	
McDaniel, Boyce	250.				
McKibben, J. L.	400.			4/18	
McMillan, E. K.	500.	3/29	4/3	4/29	
Neddermeyer, Seth	400.	4/15			
Nelson, Eldred	305.	4/15			
Nicodemus, D.	240.				
Nobles, R. A.	170.	4/5	4/8		
Nolan, James	355.	4/12	4/19	4/19	
Nuckolls, R. G.	310.	4/14			
Oathout, J. D.	298.			4/22	
Olum, Paul	250.			4/24	
Perlman, M. L.	350.				
Perry, Rolland	250.	4/22		4/23	
Prestwood, Rene J.	220.	4/22			
Resmussen, S. A.	450.	3/30	4/19	4/19	
Richards, R. T.	305.	4/3			
Richman, Chaim	280.				
Roberg, Jane	305.	4/6			
Ryan, John G.				4/7	
Schafer, Wm. D.	180.			4/8	
Schelberg, Arthur	200.	4/7			
Schoppy, Margaret	175.	4/15			
Schreiber, Raemer E.	360.				
Schultz, Gus H.	643.			4/28	
Serber, Robert S.	500.	3/29	4/25	4/25	
Smith, C. S.	675.	4/15			
Snyder, Thoma M.	300.	3/31			
Stevenson, J. H.	425.				
Stokes, F. E.	250.			4/24	
Streib, J. S.	375.				
Sutton, Roger B.	280.	3/31	4/12		
Taschek, R. F.	325.				
Teller, Edward	660.	4/4	5/5		
Thompson, R. W.	200.				
Toft, Clement	185.50	4/26			
Turner, Clarence M.	280.				
Wahl, Arthur C.	305.	4/3			
Waldmen, Bernard	400.	4/5	4/8		

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<u>NAME</u>	<u>SALARY</u>	<u>ARR. IN DOMINION</u>	<u>LEAVE DOMINION</u>	<u>MOVED INTO CLASS</u>	<u>MARRIED SINGLE</u>
Wallace, Dixie	\$150.	4/16			
Weissman, S. I.	380.				
Wiegand, C. L.	350.				
Wieneke, John	250.				
Williams, J. H.	480.	11/5/50	2/1/51	12/2/51	
Williams, R. W.	225.	3/31			
Wilson, R. R.	450.	3/22	4/5	4/5	
Woodward, Em. W.	280.			4/27	
Woods, Leona	280.				

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1 copy to Colonel Harman
2 copies filed

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PER DCS REVIEW JAN. 1973

THE BRITISH SUPPLY COUNCIL IN NORTH AMERICA

TELEPHONE
HANOVER 2-2460



P. O. Box 51
WALL STREET STATION
NEW YORK 5, N. Y.

~~FEB 23 1944~~

~~SECRET~~

15th February, 1944.

Dr. J. R. Oppenheimer,
c/o Dr. W. L. Webster,
641 Grafton Annex,
WASHINGTON, D.C.

FINAL DETERMINATION
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L. M. Redinan
OCT 29, 1979

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Dear Oppenheimer,

I have been trying to reconstruct a refinement in the use of the optical analogy which Frisch and I discussed about a year ago. It seems to me now that this method is easier than I expected and may not have to rely on excessively accurate measurements. I would like, therefore, to submit this for the consideration of your group and for convenience I enclose a copy of this letter for Frisch.

Consider the model to have scattering coefficient β and absorption coefficient of $\beta - \alpha$ in our usual notation. Then the quantity which can be deduced from optical experiments is the probability of a light quantum that starts from a source distributed uniformly over the body being absorbed before leaving the body.

If we denote by D the operator which defines our usual integral equation so that if f represents one generation of particles, then Df represents the next generation, then the probability defined above may be written as

$$F = (1 - \frac{\alpha}{\beta}) \sum_{n=0}^{\infty} \int (D^n f) dv \cdot \beta^n$$

This can in principle be measured as a function of β if models can be made with varying scattering and absorption coefficients. In principle it is therefore possible to analyse this function into a Taylor series and each term will give a better approximation to the correct eigenvalue than the preceding. A better approximation is probably obtained by taking the ratio of successive terms in the expansion which again approximates to the correct eigenvalue. Probably the best approximation which does not make excessive demands on the accuracy of the experiments consists in considering the series

$$\phi(\beta) = \frac{F}{1 - \alpha/\beta}$$

and form the expression $\phi(\beta) - \phi_0$ which is obtained by subtracting the value measured for a purely absorbing sphere with the same mean free path. In the remainder it is probably very nearly true that the ratio between successive terms is equal to the proper eigenvalue and assuming this one can sum the series

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Dr. J. R. Oppenheimer

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15th February, 1944.

and it then remains a function of a single parameter. In other words

$$\phi(\beta) - \phi(0) = \sum_{n=0}^{\infty} \beta^n \int (D^{n+1}) dv \approx \beta \cdot \frac{\int D^2 dv}{1 - \beta/\beta_0}$$

The numerator in this expression depends on the variation integral for the first iterated distribution. The denominator relies on the ratio of successive terms, in further iteration.* The best means of fitting the eigenvalue to an experimental curve will depend partly on experience.

I suggest it is worth discussing the amount of trouble that such experiments with maximum absorber and scatterer would involve and to calculate for a case in which the terms of the series are known theoretically, e.g. a fairly small sphere, ~~an~~ ^{what} approximation can be achieved by this means.

Many thanks again to all of you for making my visit so interesting and pleasant.

I shall continue to send letters through Washington until I hear from you that you have made arrangements to get letters with our Box Number passed unopened.

Yours sincerely,

R. Peierls

R. Peierls
Room 2500 Wall

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* β_0 being the eigenvalue

RF:jeg.

c.c. Dr. Webster
Dr. Frisch

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