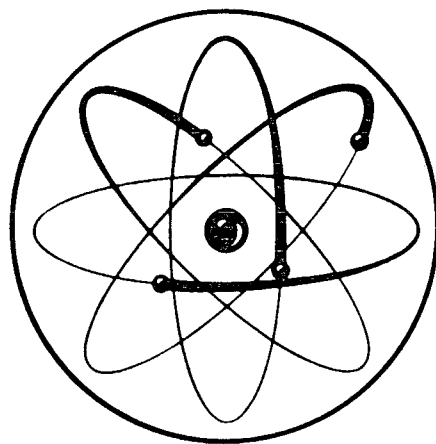


A STATISTICAL SUMMARY OF THE
PHYSICAL RESEARCH PROGRAM

JUNE 30, 1967



DIVISION of RESEARCH

UNITED STATES ATOMIC ENERGY COMMISSION

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AS OF JUNE 30, 1967

Prepared by:
Division of Research
November 1967

NOTE: Dollar amounts shown in the following pages reflect AEC Cost-Budget costs for major research centers. For all other types of contracts, dollar estimates are based on budgets approved at time of contract approval or renewal.

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FOREWORD

The Physical Research Program covers mostly basic research undertaken to discover new scientific knowledge, but also includes some applied investigations undertaken to develop certain aspects of the practical utilization of nuclear energy. The research is in the fields of physics and mathematics, chemistry, metallurgy and materials, and controlled thermonuclear reactions. Approximately three-fourths of the program costs are associated with the support of research conducted in AEC-owned major research centers and a little more than one-fourth of the program costs are associated with the contract support of research carried out in other laboratories. The major portion of the research conducted at sites other than AEC-owned major research centers is conducted at educational institutions.

MAJOR RESEARCH CENTERS

There is no clear line of demarcation between major research centers and other laboratories. The AEC investment in facilities ranges from zero for some contractors to tens of millions of dollars for others, and the annual level of AEC support ranges from a few thousand for some contractors, to tens of millions of dollars for others -- the spectrum is broad with no significant peaks or breaks. For purposes of this report the following are considered major research centers operated for the AEC: (The listing is consistent with "major research centers" as defined for National Science Foundation reports.)

<u>Laboratory</u>	<u>Contractor</u>
1. Ames Laboratory	Iowa State University
2. Argonne National Laboratory	University of Chicago
3. Brookhaven National Laboratory	Associated Universities, Inc.
4. Cambridge Electron Accelerator	Harvard University & Massachusetts Institute of Technology
5. Lawrence Radiation Laboratory	University of California
6. Los Alamos Scientific Laboratory	University of California
7. Oak Ridge National Laboratory	Union Carbide Corporation
8. Plasma Physics Laboratory	Princeton University
9. Princeton-Pennsylvania Accelerator	Princeton University & University of Pennsylvania
10. Stanford Linear Accelerator Center	Stanford University

Some of the major research centers are engaged in research and development activities other than under the Physical Research Program; namely activities for the Production, Weapons, Biology and Medicine, and Reactor Development Programs. The Physical Research Program at these multiprogram laboratories provides, in varying degrees, the basic investigations underlying the applied and development activities of the individual laboratory. The group also includes some laboratories that are engaged in research in a single, well defined area. Some are "National Laboratories", some are "weapons laboratories", others are "university laboratories". They all have the following common characteristics:

1. They are treated as national facilities.
2. They represent large investments (several millions of dollars) in AEC-owned capital facilities.
3. They have large annual levels (several millions of dollars) of AEC support.
4. It is implicit that they have continuing AEC support.
5. The guidance of smaller scientific efforts within each laboratory is usually vested in the laboratory management with only major overall research guidance supplied by the AEC.

CONTRACT-RESEARCH PROGRAM

In addition to the research conducted at the major research centers, the AEC supports, by means of the contract-research program, research investigations at educational institutions, other non-profit research institutes, and industrial laboratories. In the contract-research program, the Division of Research in AEC Headquarters is responsible for the approval of AEC support and for the review of the technical progress of research projects that fall within the fields of physics and mathematics, chemistry, metallurgy and materials, and controlled thermonuclear reactions. The AEC's field offices negotiate and administer the non-technical aspects of the contracts. Proposals for contracts in basic research are usually initiated by the scientist interested in performing the work.

As a supplement to the AEC's program at the major research centers the contract-research program has a number of distinct benefits:

1. When the amount provided by the AEC is added to the other funds available to the contractor, the effectiveness of the contractor's program, as well as the basic research effort of the AEC's program is increased.

2. The AEC receives the services, in basic research activities fundamental to the AEC's future capabilities, of highly qualified scientists who prefer employment at outside laboratories or who prefer to teach and to do research at educational institutions.
3. The contract-research program, by providing for the conduct of research at educational institutions, contributes to the supply of scientists in fields relevant to the AEC's program.

In conducting this program, the AEC generally uses either a fixed-price or cost-reimbursement contract. The fixed-price contract is used primarily when the annual cost to the AEC is on the order of \$250,000 or less and when the cost can be estimated in advance with reasonable accuracy. In consideration for the outside organization carrying out the agreed investigations, the AEC agrees to pay a lump sum based upon an agreed part of the estimated total cost of the project. This total cost estimate is reflected in a budget, submitted by the prospective contractor, that includes such items as salaries, materials and supplies, equipment, travel, communication, publication, and indirect expenses. In most cases, the contractor proposes to share in the cost of the work conducted under the contract.

The cost-type contract provides for the reimbursement, to the extent prescribed in the agreement, of defined costs incurred in the performance of the contract. This type of contract is generally used for large projects with an annual AEC contribution exceeding \$250,000, or for projects that do not lend themselves to accurate cost estimates. Under this agreement a total cost estimate is established to provide a base for obligating funds and to stipulate a ceiling that the contractor cannot exceed (except at his own expense) without the approval of additional funds by the AEC. The total costs of the research may be shared by the contractor and the AEC.

Occasionally, no-fund contracts are used in the contract-research program when the AEC loans property to an outside organization as AEC's support to the research project or when the organization wishes to enter into a study contract in a certain area of research before it actually undertakes the research. In addition to these reasons, contracts are sometimes extended without additional funds being added to the contract because the research project is to be terminated and additional time is required to bring the project to an orderly close.

REPORTING RESULTS OF RESEARCH

Scientific reports on the research investigations undertaken under the Physical Research Program are reported in the open literature to the greatest extent practicable. The AEC recognizes open publication and wide dissemination as the normal and most desirable means for reporting the findings of fundamental research.

In the following pages there is presented a statistical analysis of the Physical Research Program. Separate analyses are made for the physical research activities conducted at the AEC's major research centers, at educational institutions, at other non-profit research institutes, and at industrial laboratories.

This report does not include the portion of the Physical Research Program supported through agreements with other Government agencies. On June 30, 1967, there were four such agreements between the AEC and the following Government agencies amounting to a total project cost of \$841,098 as follows:

Environmental Science Services Administration	\$ 40,000
National Bureau of Standards	684,401
Navy -- Bureau of Ships	<u>116,697</u>
TOTAL	\$ 841,098

SUMMARY OF PHYSICAL RESEARCH PROGRAM
(Dollars in Thousands)

<u>Activity</u>	TOTAL	Major Research Centers		Educational Institutions		Research Institutes		Industrial Laboratories	
	Scientific Man-Years	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years	Amount	Man-Years
High Energy Physics	<u>a/</u> 1,808	\$112,495	1,475	<u>b/</u> \$ 21,213	332	<u>b/</u> \$ 35	1	<u>b/</u> \$ 0	0
Medium Energy Physics	184	8,108	136	5,842	48	0	0	0	0
Low Energy Physics	707	16,938	321	18,682	377	159	4	403	5
Mathematics & Computer ...	135	2,443	69	7,174	65	29	1	0	0
Chemistry	1,195	44,310	874	12,264	297	679	18	298	6
Metallurgy & Materials ...	585	18,479	384	11,202	184	173	3	571	14
Controlled Thermonuclear .	361	21,606	309	2,232	47	0	0	340	5
Other <u>c/</u>	0	3,251	0	0	0	0	0	0	0
TOTAL	<u>4,975</u>	<u>\$227,630</u>	<u>3,568</u>	<u>\$ 78,609</u>	<u>1,350</u>	<u>\$ 1,075</u>	<u>27</u>	<u>\$ 1,612</u>	<u>30</u>

a/ Does not include part time employment of 3,476 students engaged in performing research and/or participating in summer programs.

b/ Represents amount of AEC obligations included in the latest extension of contracts in effect as of 6/30/67. (Contracts are usually written for one year and extended annually if necessary.)

c/ Multi-purpose support equipment.

MAJOR RESEARCH CENTERSCosts and Manpower
As of June 30, 1967

<u>Laboratory</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
Ames	\$ 7,831,000	142	0	214	201
Argonne National Laboratory	46,470,000	692	45	187	566
Brookhaven National Laboratory	41,662,000	465	62	22	246
Cambridge Electron Accelerator	9,829,000	129	17	185	95
Lawrence Radiation Laboratory	44,081,000	662	107	324	681
Los Alamos Scientific Laboratory	5,645,000	78	1	11	53
Oak Ridge National Laboratory	34,199,000	634	23	59	525
Plasma Physics Laboratory, Princeton U.	6,715,000	77	9	29	45
Princeton-Pennsylvania Accelerator	8,695,000	169	1	60	104
Stanford Linear Accelerator Center	22,503,000	250	5	29	24
TOTAL	\$227,630,000	3,298	270	1,120	2,540

AMES LABORATORY

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$ 426,000	10	0	4	16
Medium Energy Physics	466,000	7	0	10	6
Low Energy Physics	735,000	11	0	9	14
Mathematics & Computer	102,000	2	0	4	6
Chemistry	3,331,000	57	0	125	90
Metallurgy & Materials	2,655,000	55	0	62	69
Other ^{1/}	116,000	0	0	0	0
TOTAL	\$7,831,000	142	0	214	201

^{1/} Multi-purpose support equipment

MAJOR RESEARCH CENTERS

ARGONNE NATIONAL LABORATORY

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$24,599,000	227	17	133	71
Medium Energy Physics	288,000	4	1	0	0
Low Energy Physics	4,729,000	81	5	33	90
Mathematics & Computer	1,190,000	31	3	9	75
Chemistry	9,892,000	225	12	5	199
Metallurgy & Materials	5,781,000	124	7	7	149
Other ^{1/}	(9,000)	0	0	0	0
TOTAL	\$46,470,000	692	45	187	584 ^{2/}

^{1/} Multi-purpose support equipment

^{2/} Actual publications totaled only 566. The above of 584 includes 18 publications which were credited to two programs.

BROOKHAVEN NATIONAL LABORATORY

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$24,628,000	237	24	6	69
Low Energy Physics	4,962,000	59	11	5	44
Mathematics & Computer	602,000	16	2	0	14
Chemistry	5,717,000	114	19	5	82
Metallurgy & Materials	2,813,000	39	6	6	37
Other <u>1/</u>	<u>2,940,000</u>	0	0	0	0
TOTAL	41,662,000	465	62	22 <u>2/</u>	246 <u>3/</u>

1/ Multi-purpose support equipment

2/ Includes those summer students who are engaged in specifically defined technical activities.

3/ Publications by visiting and guest scientists not included.

MAJOR RESEARCH CENTERS

CAMBRIDGE ELECTRON ACCELERATOR

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of</u> <u>Graduate Students</u> <u>Engaged in Research</u>	<u>Number of</u> <u>Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$ 9,829,000	129	17	185	95

LAWRENCE RADIATION LABORATORY

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of</u> <u>Graduate Students</u> <u>Engaged in Research</u>	<u>Number of</u> <u>Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$21,333,000	310	69	104	247
Medium Energy Physics	2,102,000	28	6	10	23
Low Energy Physics	375,000	8	0	6	16
Mathematics & Computer	167,000	4	0	0	5
Chemistry	10,799,000	176	26	122	261
Metallurgy & Materials	1,910,000	38	2	71	113
Controlled Thermonuclear	7,191,000	98	4	11	16
Other ^{1/}	204,000	0	0	0	0
TOTAL	\$44,081,000	662	107	324	681

^{1/} Multi-purpose support equipment

MAJOR RESEARCH CENTERS

LOS ALAMOS SCIENTIFIC LABORATORY

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
Medium Energy Physics	\$ 3,048,000	40	0	5	29
Controlled Thermonuclear	2,597,000	38	1	6	24
TOTAL	\$ 5,645,000	78	1	11	53

OAK RIDGE NATIONAL LABORATORY

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$ 482,000	9	1	2	34
Medium Energy Physics	2,204,000	50	0	7	35
Low Energy Physics	6,137,000	140	6	12	142
Mathematics & Computer	382,000	11	0	5	18
Chemistry	14,571,000	232	13	15	143
Metallurgy & Materials	5,321,000	110	3	8	112
Controlled Thermonuclear	5,102,000	82	0	10	41
TOTAL	\$34,199,000	634	23	59	525

MAJOR RESEARCH CENTERS

PLASMA PHYSICS LABORATORY
Princeton University

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of</u> <u>Graduate Students</u> <u>Engaged in Research</u>	<u>Number of</u> <u>Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
Controlled Thermonuclear	\$ 6,715,000	77	9	29	45

PRINCETON-PENNSYLVANIA ACCELERATOR

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$ 8,695,000	169	1	60	104

MAJOR RESEARCH CENTERS

STANFORD LINEAR ACCELERATOR CENTER

<u>Activity</u>	<u>Total Cost</u>	<u>Scientific Man-Years</u>		<u>Number of Graduate Students Engaged in Research</u>	<u>Number of Publications</u>
		<u>Permanent</u>	<u>Visiting</u>		
High Energy Physics	\$22,503,000	250	5	29	24

Breakdown of the number of projects, total costs and the Contractor and AEC
contributions in the Program by Activity
As of June 30, 1967

Activity	Number of Contracts	Total Project Cost	Contractor Contribution	Percent of Total	AEC Contribution	Percent of Total
High Energy Physics	35	\$21,212,500	\$ 2,731,365	13	\$18,481,135	87
Medium Energy Physics	12	5,841,768	813,943	14	5,027,825	86
Low Energy Physics	54	18,682,295	2,968,708	16	15,713,587	84
Mathematics & Computer	16	7,174,165	389,864	5	6,784,301	95
Chemistry	218	21,264,301	2,282,339	19	9,981,962	81
Metallurgy & Materials	164	11,202,521	2,025,255	18	9,177,266	82
Controlled Thermonuclear	31	2,231,800	216,018	10	2,015,782	90
TOTAL	530	\$78,609,350	\$11,427,492	15	\$67,181,858	85

EDUCATIONAL INSTITUTIONS

CONSOLIDATED BUDGET OF THE 530 PROJECTS
INCLUDED IN THE PHYSICAL RESEARCH PROGRAM

As of June 30, 1967
(Dollars in Thousands)

<u>Items of Expense</u>		<u>Total</u>	<u>%</u>	<u>High</u>	<u>%</u>	<u>Medium</u>	<u>%</u>
<u>Breakdown of Fixed-Price</u>		<u>Amount</u>		<u>Energy</u>		<u>Energy</u>	
<u>Projects</u>				<u>Physics</u>		<u>Physics</u>	
(1)	Salaries and Wages	\$13,754	51.6	\$ 1,380	49.3	\$ 73	32.2
(2)	Equipment	2,472	9.3	364	13.0	37	16.3
(3)	Materials and Supplies	3,586	13.5	373	13.3	80	35.3
(4)	Travel	442	1.6	69	2.5	7	3.0
(5)	Communications	59	.3	8	.3	0	0
(6)	Publication Costs	275	1.0	33	1.2	0	0
(7)	Indirect Expenses	6,036	22.7	572	20.4	30	13.2
(8)	TOTAL	<u>\$26,624</u>	<u>100.0</u>	<u>\$ 2,799</u>	<u>100.0</u>	<u>\$ 227</u>	<u>100.0</u>
(9)	Contributed by Universities	6,478	24.3	926	33.1	57	25.1
(10)	Supported by AEC	20,146	75.7	1,873	66.9	170	74.9
(11)	Including Unexpended Balance of.	885		37		0	

<u>Breakdown of Cost-Type</u>							
<u>Projects</u>							
(12)	Salaries and Wages	\$20,762	39.9	\$ 7,859	42.7	\$ 2,012	35.8
(13)	Equipment	11,443	22.0	2,294	12.5	1,836	32.7
(14)	Materials and Supplies	9,368	18.0	4,127	22.4	833	14.8
(15)	Travel	845	1.7	491	2.7	55	1.0
(16)	Communications	169	.3	81	.4	22	.4
(17)	Publication Costs	237	.5	97	.5	12	.2
(18)	Indirect Expenses	9,161	17.6	3,465	18.8	845	15.1
(19)	TOTAL	<u>\$51,985</u>	<u>100.0</u>	<u>\$18,414</u>	<u>100.0</u>	<u>\$ 5,615</u>	<u>100.0</u>
(20)	Contributed by Universities	4,950	9.5	1,806	9.8	757	13.5
(21)	Supported by AEC	47,035	90.5	16,608	90.2	4,858	86.5
(22)	Including Unexpended Balance of.	345		154		105	

EDUCATIONAL INSTITUTIONS

<u>Low Energy Physics</u>	<u>%</u>	<u>Math. and Computer</u>	<u>%</u>	<u>Chemistry</u>	<u>%</u>	<u>Metallurgy and Materials</u>	<u>%</u>	<u>Controlled Thermo-nuclear</u>	<u>%</u>	
\$ 1,506	51.0	\$ 466	59.8	\$ 5,152	52.5	\$ 4,362	51.7	\$ 815	51.1	(1)
321	10.9	15	1.9	773	7.8	811	9.5	151	9.5	(2)
402	13.6	53	6.7	1,348	13.7	1,159	13.7	171	10.7	(3)
60	2.0	14	1.8	164	1.7	97	1.2	31	1.9	(4)
7	.2	2	.3	21	.2	17	.2	4	.3	(5)
26	.9	8	1.0	104	1.1	90	1.1	14	.9	(6)
631	21.4	222	28.5	2,261	23.0	1,912	22.6	408	25.6	(7)
<hr/>										
\$ 2,953	100.0	\$ 780	100.0	\$ 9,823	100.0	\$ 8,448	100.0	\$ 1,594	100.0	(8)
<hr/>										
843	28.5	169	21.7	2,282	23.2	1,985	23.5	216	13.6	(9)
2,110	71.5	611	78.3	7,541	76.8	6,463	76.5	1,378	86.4	(10)
66		28		355		362		37		(11)
<hr/>										
\$ 6,798	43.2	1,423	22.3	1,132	46.4	1,175	42.7	363	56.9	(12)
3,323	21.2	3,384	52.9	235	9.6	322	11.7	49	7.7	(13)
2,470	15.7	776	12.1	491	20.1	622	22.6	49	7.7	(14)
194	1.2	36	.6	33	1.4	29	1.0	7	1.1	(15)
29	.2	9	.1	11	.5	17	.6	0	0	(16)
67	.4	19	.3	18	.7	19	.7	5	.8	(17)
2,848	18.1	747	11.7	521	21.3	570	20.7	165	25.8	(18)
<hr/>										
\$15,729	100.0	\$ 6,394	100.0	\$ 2,441	100.0	\$ 2,754	100.0	638	100.0	(19)
<hr/>										
2,126	13.5	221	3.5	0	0	40	1.5	0	0	(20)
13,603	86.5	6,173	96.5	2,441	100.0	2,714	98.5	638	100.0	(21)
78		2		0		2		4		(22)

EDUCATIONAL INSTITUTIONSNUMBER OF SCIENTIFIC EMPLOYEES, GRADUATE STUDENTS & PUBLICATIONS
UNDER THE PHYSICAL RESEARCH PROGRAM

<u>Activity</u>	<u>Principal Investigator</u>		<u>Research Associates</u>		<u>Other</u>		<u>Visiting</u>		<u>Graduate Students</u>	<u>Publications</u>
	<u>No.</u>	<u>MY's</u>	<u>No.</u>	<u>MY's</u>	<u>No.</u>	<u>MY's</u>	<u>No.</u>	<u>MY's</u>		
High Energy Physics	75	40	160	127	221	161	7	4	439	344
Medium Energy Physics ...	20	8	17	15	45	24	2	1	78	88
Low Energy Physics	110	49	167	135	267	181	33	12	556	565
Mathematics & Computer ..	21	9	10	9	65	43	7	4	65	45
Chemistry	264	80	232	194	49	19	13	4	575	681
Metallurgy & Materials ..	214	75	108	77	74	31	3	1	550	393
Controlled Thermonuclear.	34	10	13	7	55	28	4	2	88	88
TOTAL	738	271	707	564	776	487	69	28	2,351	2,204

EDUCATIONAL INSTITUTIONS

TYPE OF ORGANIZATION

<u>Projects with:</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
State Institutions	19	7	31	8	123	85	17	290
Private Institutions	16	5	23	8	92	78	14	236
Municipal Institutions ...	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>1</u>	<u>0</u>	<u>4</u>
TOTAL	35	12	54	16	218	164	31	530

OPERATIONS OFFICES ADMINISTERING

THE BUSINESS ASPECTS OF THE PROJECTS

<u>Operations Offices</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
Chicago	11	1	19	5	77	51	3	167
Idaho	0	0	0	0	1	0	0	1
New York	13	5	12	3	65	64	8	170
Oak Ridge	3	4	9	4	48	34	13	115
Richland	1	0	3	1	8	4	1	18
San Francisco	7	2	10	3	19	11	6	58
Savannah River	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
TOTAL	35	12	54	16	218	164	31	530

EDUCATIONAL INSTITUTIONS

<u>Type</u>	<u>TYPE OF PROJECT</u>							
	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
Cost	20	11	28	5	7	9	3	83
Lump-Sum	<u>15</u>	<u>1</u>	<u>26</u>	<u>11</u>	<u>211</u>	<u>155</u>	<u>28</u>	<u>447</u>
TOTAL	35	12	54	16	218	164	31	530

PROJECTS BY AEC DOLLAR LEVEL

<u>Dollar Level</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
0	0	1	2	0	0	1	3	7
1 - 9,999	0	0	0	0	17	4	2	23
10,000 - 19,999	1	0	1	1	46	16	3	68
20,000 - 29,999	0	0	2	1	42	48	4	97
30,000 - 39,999	2	1	2	1	39	32	1	78
40,000 - 49,999	1	0	3	3	26	25	3	61
50,000 - 59,999	0	0	3	3	17	6	4	33
60,000 - 69,999	0	0	1	0	3	5	2	11
70,000 - 79,999	0	0	3	0	6	3	1	13
80,000 - 89,999	0	0	3	0	5	6	2	16
90,000 - 99,999	1	1	1	0	6	3	0	12
100,000 - 249,999	10	2	11	2	8	13	5	51
250,000 - 499,999	8	1	10	3	1	1	1	25
500,000 +	<u>12</u>	<u>6</u>	<u>12</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>35</u>
TOTAL	35	12	54	16	218	164	31	530

PERCENT OF AEC CONTRIBUTION TO THE TOTAL COST OF THE RESEARCH

<u>Percentage</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
0 - 9	0	1	2	0	0	1	3	7
10 - 19	0	0	0	0	0	0	0	0
20 - 29	0	0	0	0	0	0	0	0
30 - 39	1	0	1	0	0	0	0	2
40 - 49	2	1	0	0	6	5	0	14
50 - 59	1	1	5	2	20	4	0	33
60 - 69	7	0	10	0	33	24	2	76
70 - 79	4	1	12	5	61	43	7	133
80 - 89	7	2	13	3	56	64	6	151
90 - 99	2	1	1	3	12	10	5	34
100*	<u>11</u>	<u>5</u>	<u>10</u>	<u>3</u>	<u>30</u>	<u>13</u>	<u>8</u>	<u>80</u>
	35	12	54	16	218	164	31	530

*Includes those educational institutions that as a matter of policy do not list their contribution.

EDUCATIONAL INSTITUTIONS

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo-nuclear</u>	<u>Division Total</u>
Alabama	0	0	0	0	0	1	0	1
Tuskegee Institute	0	0	0	0	0	1	0	1
Arizona	0	0	1	0	6	2	0	9
Arizona State University	0	0	0	0	1	0	0	1
Arizona, University of	0	0	1	0	5	2	0	8
Arkansas	0	0	0	0	3	0	0	3
Arkansas, University of	0	0	0	0	3	0	0	3
California	6	2	10	3	18	11	6	56
California Inst. of Tech.	1	0	1	0	4	2	0	8
California, University of	5	2	8	2	8	6	3	34
Harvey Mudd College	0	0	0	0	1	0	0	1
Southern California, U. of	0	0	1	0	2	0	0	3
Stanford University	0	0	0	1	3	3	3	10
Colorado	1	0	1	0	3	1	0	6
Colorado State University	0	0	0	0	1	0	0	1
Colorado, University of	1	0	1	0	2	0	0	4
Denver, U. of (Colorado Seminary)	0	0	0	0	0	1	0	1
Connecticut	1	1	4	0	4	4	0	14
Connecticut, University of	0	0	0	0	0	2	0	2
Yale University	1	1	4	0	4	2	0	12
Delaware	0	0	0	0	1	1	0	2
Delaware, University of	0	0	0	0	1	1	0	2
District of Columbia	0	0	1	0	2	1	0	4
Catholic University	0	0	0	0	1	0	0	1
Georgetown University	0	0	1	0	1	1	0	3

EDUCATIONAL INSTITUTIONS

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo- nuclear</u>	<u>Division Total</u>
<u>Florida</u>	1	0	0	0	12	3	2	18
Florida State University	1	0	0	0	6	0	0	7
Florida, University of	0	0	0	0	5	3	0	8
Miami, University of	0	0	0	0	1	0	2	3
<u>Georgia</u>	0	0	0	0	4	2	2	8
Georgia Inst. of Tech.	0	0	0	0	2	2	2	6
Georgia, University of	0	0	0	0	2	0	0	2
<u>Hawaii</u>	1	0	0	0	0	0	0	1
Hawaii, University of	1	0	0	0	0	0	0	1
<u>Idaho</u>	0	0	0	0	1	0	0	1
Idaho State University	0	0	0	0	1	0	0	1
<u>Illinois</u>	3	0	1	3	15	7	0	29
Chicago, University of	2	0	1	1	5	1	0	10
Illinois Inst. of Tech.	0	0	0	0	3	2	0	5
Illinois, University of	1	0	0	2	3	1	0	7
Northwestern University	0	0	0	0	4	3	0	7
<u>Indiana</u>	1	0	3	0	10	4	0	18
Indiana University	0	0	0	0	3	0	0	3
Notre Dame, University of	0	0	2	0	1	1	0	4
Purdue University	1	0	1	0	6	3	0	11
<u>Iowa</u>	0	0	0	0	2	0	0	2
Dort College	0	0	0	0	1	0	0	1
Iowa, State University of	0	0	0	0	1	0	0	1
<u>Kansas</u>	0	0	4	0	4	2	0	10
Kansas State University	0	0	2	0	1	0	0	3
Kansas, University of	0	0	2	0	3	2	0	7

EDUCATIONAL INSTITUTIONS

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo-nuclear</u>	<u>Division Total</u>
Kentucky	0	0	0	0	5	3	0	8
Kentucky, University of	0	0	0	0	5	2	0	7
Murray State University	0	0	0	0	0	1	0	1
Louisiana	0	0	0	0	2	1	0	3
Louisiana State University	0	0	0	0	2	1	0	3
Maine	0	0	0	0	0	1	0	1
Maine, University of	0	0	0	0	0	1	0	1
Maryland	1	2	3	2	5	3	2	18
Johns Hopkins University	0	0	2	0	2	1	0	5
Maryland, University of	1	2	1	2	3	2	2	13
Massachusetts	4	1	1	0	10	8	3	27
Brandeis University	1	0	0	0	2	1	0	4
Clark University	0	0	0	0	1	0	0	1
Harvard University	0	0	0	0	3	0	0	3
Massachusetts Inst. of Tech. ..	1	1	1	0	3	7	3	16
Massachusetts, University of ..	1	0	0	0	0	0	0	1
Tufts University	1	0	0	0	1	0	0	2
Michigan	2	0	2	0	11	10	1	26
Andrews University	0	0	0	0	0	1	0	1
Michigan State University	1	0	1	0	4	3	0	9
Michigan Technological Univ. ..	0	0	0	0	1	2	0	3
Michigan, University of	1	0	1	0	4	2	1	9
Wayne State University	0	0	0	0	2	2	0	4

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo-nuclear</u>	<u>Division Total</u>
Minnesota	1	1	1	0	1	5	0	9
Minnesota, University of	1	1	1	0	1	4	0	8
St. Mary's College	0	0	0	0	0	1	0	1
Mississippi	0	0	0	0	0	1	0	1
Mississippi, University of	0	0	0	0	0	1	0	1
Missouri	0	0	0	1	4	2	0	7
Missouri, University of	0	0	0	0	0	2	0	2
Washington University	0	0	0	1	4	0	0	5
Montana	0	0	0	0	0	1	0	1
Montana State University	0	0	0	0	0	1	0	1
Nebraska	0	0	1	0	1	1	0	3
Nebraska, University of	0	0	1	0	1	1	0	3
Nevada	0	0	0	0	1	0	0	1
Nevada, University of	0	0	0	0	1	0	0	1
New Hampshire	0	0	0	0	1	0	0	1
New Hampshire, University of ...	0	0	0	0	1	0	0	1
New Jersey	0	0	1	1	6	1	3	12
Princeton University	0	0	1	0	4	0	0	5
Rutgers University	0	0	0	0	2	1	0	3
Stevens Inst. of Tech.	0	0	0	1	0	0	3	4
New Mexico	0	0	0	0	2	0	0	2
New Mexico Highlands University.	0	0	0	0	1	0	0	1
New Mexico, University of	0	0	0	0	1	0	0	1

EDUCATIONAL INSTITUTIONS

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo-nuclear</u>	<u>Division Total</u>
<u>New York</u>	5	2	3	2	26	31	2	71
Brooklyn, Poly. Inst. of	0	0	0	0	1	1	0	2
Clarkson College of Tech.	0	0	0	0	3	1	0	4
Columbia University	1	1	1	0	5	3	0	11
Cornell University	1	0	1	0	2	13	1	18
Fordham University	0	0	0	0	2	0	0	2
New York, City University of ..	0	0	0	0	2	1	0	3
New York, State University of .	1	0	0	1	5	0	0	7
New York University	0	0	0	1	0	1	1	3
Rensselaer Polytechnic Inst. ..	0	0	0	0	3	7	0	10
Rochester, University of	1	1	1	0	1	1	0	5
Syracuse University	1	0	0	0	0	2	0	3
Yeshiva University	0	0	0	0	2	1	0	3
<u>North Carolina</u>	1	0	4	1	1	5	0	12
Duke University	1	0	2	1	1	0	0	5
North Carolina State of the University of North Carolina .	0	0	1	0	0	2	0	3
North Carolina, University of .	0	0	1	0	0	2	0	3
Wake Forest College	0	0	0	0	0	1	0	1
<u>North Dakota</u>	0	0	0	0	0	2	0	2
North Dakota, University of ...	0	0	0	0	0	2	0	2
<u>Ohio</u>	2	0	2	1	8	5	0	18
Case Institute of Technology ..	1	0	1	1	3	3	0	9
Kent State University	0	0	0	0	0	1	0	1
Ohio State Univ. Res. Found. ..	1	0	0	0	3	1	0	5
Ohio University	0	0	1	0	1	0	0	2
Toledo, University of	0	0	0	0	1	0	0	1

EDUCATIONAL INSTITUTIONS

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo-nuclear</u>	<u>Division Total</u>
Oklahoma	0	0	0	0	3	4	0	7
Oklahoma State University	0	0	0	0	3	0	0	3
Oklahoma, University of	0	0	0	0	0	4	0	4
Oregon	1	0	2	1	3	1	0	8
Oregon State University	0	0	1	1	1	1	0	4
Oregon, University of	1	0	1	0	1	0	0	3
Reed College	0	0	0	0	1	0	0	1
Pennsylvania	2	1	0	0	12	13	0	28
Carnegie Inst. of Tech.	1	1	0	0	3	4	0	9
Duquesne University	0	0	0	0	1	0	0	1
Lehigh University	0	0	0	0	1	0	0	1
Pennsylvania State University ..	0	0	0	0	2	5	0	7
Pennsylvania, University of	0	0	0	0	3	0	0	3
Pittsburgh, University of	1	0	0	0	1	3	0	5
Temple University	0	0	0	0	1	1	0	2
Puerto Rico	0	0	0	0	1	2	0	3
Puerto Rico, University of	0	0	0	0	1	2	0	3
Rhode Island	1	0	1	0	2	3	0	7
Brown University	1	0	1	0	2	2	0	6
Rhode Island, University of	0	0	0	0	0	1	0	1
South Carolina	0	0	1	0	2	1	0	4
Clemson University	0	0	0	0	0	1	0	1
South Carolina, University of ..	0	0	1	0	2	0	0	3

EDUCATIONAL INSTITUTIONSNUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo-nuclear</u>	<u>Division Total</u>
Tennessee	0	0	0	0	5	2	1	8
Tennessee, University of	0	0	0	0	3	1	1	5
Vanderbilt University	0	0	0	0	2	1	0	3
Texas	0	2	2	1	6	1	5	17
Houston, University of	0	0	0	0	1	0	0	1
Rice University	0	0	1	1	1	0	0	3
Texas A&M University	0	2	0	0	2	0	1	5
Texas Christian University	0	0	0	0	0	1	0	1
Texas, University of	0	0	1	0	2	0	4	7
Utah	0	0	0	0	3	6	0	9
Brigham Young University	0	0	0	0	1	1	0	2
Utah, University of	0	0	0	0	2	5	0	7
Vermont	0	0	0	0	0	1	0	1
Vermont, University of	0	0	0	0	0	1	0	1
Virginia	0	0	1	0	2	4	1	8
Roanoke College	0	0	0	0	0	0	1	1
Virginia Polytechnic Inst.	0	0	0	0	2	0	0	2
Virginia, University of	0	0	1	0	0	4	0	5
Washington	0	0	1	0	5	2	1	9
Washington State University	0	0	0	0	3	0	1	4
Washington, University of	0	0	1	0	1	2	0	4
Western Washington State College.	0	0	0	0	1	0	0	1

NUMBER OF PROJECTS BY STATES AND CONTRACTORSEDUCATIONAL INSTITUTIONS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Medium Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math and Computer</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermo- nuclear</u>	<u>Division Total</u>
West Virginia	0	0	0	0	0	1	0	1
West Virginia University	0	0	0	0	0	1	0	1
Wisconsin	1	0	2	0	5	4	2	14
Marquette University	0	0	0	0	0	1	0	1
Wisconsin, University of	1	0	2	0	5	3	2	13
Wyoming	0	0	1	0	0	0	0	1
Wyoming, University of	0	0	1	0	0	0	0	1
TOTAL	35	12	54	16	218	164	31	530

RESEARCH INSTITUTES

Breakdown of the number of projects, total costs and the contractor and AEC
contribution in the Program by Activity
As of June 30, 1967

Activity	Number of Projects	Total Cost	Contractor Contribution	Percent of Total	AEC Contribution	Percent of Total
High Energy Physics	1	\$ 35,000	\$ 0	0	\$ 35,000	100
Low Energy Physics	2	159,150	60,700	38	98,450	62
Mathematics & Computer	1	29,348	0	0	29,348	100
Chemistry	5	678,906	152,506	22	526,400	78
Metallurgy & Materials	5	173,125	10,851	6	162,274	94
TOTAL	14	\$1,075,529	\$224,057	21	\$851,472	79

CONSOLIDATED BUDGET OF THE 14 PROJECTS
INCLUDED IN THE PHYSICAL RESEARCH PROGRAM

RESEARCH INSTITUTES

As of June 30, 1967
(Dollars in Thousands)

<u>Items of Expense</u>	<u>Total Amount</u>	<u>%</u>	<u>High Energy Physics</u>		<u>Low Energy Physics</u>		<u>Math.</u>		<u>Chemistry</u>		<u>Met. & Mat'ls</u>	
			<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>	<u>\$</u>	<u>%</u>
<u>Breakdown of Fixed-Price Projects</u>												
Salaries and Wages	\$ 230	46.8	\$ 0		\$ 78	58.6	\$ 13	44.9	\$ 95	39.3	\$ 44	50.0
Equipment	61	12.4	0		3	2.3	0	0	58	24.0	0	0
Materials and Supplies	55	11.2	0		16	12.0	2	6.8	31	12.8	6	6.9
Travel	7	1.4	0		2	1.5	1	3.4	3	1.2	1	1.1
Communications	1	.2	0		1	.8	0	0	0	0	0	0
Publication Costs	6	1.2	0		2	1.5	0	0	3	1.2	1	1.1
Indirect Expenses	132	26.8	0		31	23.3	13	44.9	52	21.5	36	40.9
TOTAL	\$ 492	100.0	\$ 0		\$ 133	100.0	\$ 29	100.0	\$ 242	100.0	\$ 88	100.0
Contributed by Institutes..	135	27.4	0		40	30.0	0	0	84	34.7	11	12.5
Supported by AEC	357	72.6	0		93	70.0	29	100.0	158	65.3	77	87.5
Including Unexpended												
Balance of	0		0		0		0		0		0	
=====												
<u>Breakdown of Cost-Type Projects</u>												
Salaries and Wages	\$ 269	46.1	\$ 24	68.6	\$ 7	26.9	\$ 0		\$ 199	45.6	\$ 39	45.9
Equipment	0		0		0		0		0		0	
Materials and Supplies	107	18.4	0	0	2	7.7	0		73	16.7	32	37.6
Travel	23	4.0	6	17.1	10	38.5	0		6	1.4	1	1.2
Communications	2	.3	0	0	1	3.8	0		1	.2	0	0
Publication Costs	1	.1	0	0	0	0	0		1	.2	0	0
Indirect Expenses	181	31.1	5	14.3	6	23.1	0		157	35.9	13	15.3
TOTAL	\$ 583	100.0	\$ 35	100.0	\$ 26	100.0	\$ 0		\$ 437	100.0	\$ 85	100.0
Contributed by Institutes..	89	15.3	0	0	20	77.0	0		69	15.8	0	0
Supported by AEC	494	84.7	35	100.0	6	23.0	0		368	84.2	85	100.0
Including Unexpended												
Balance of	0		0		0		0		0		0	

RESEARCH INSTITUTIONS

NUMBER OF SCIENTIFIC EMPLOYEES, GRADUATE STUDENTS AND PUBLICATIONS
UNDER THE PHYSICAL RESEARCH PROGRAM

<u>Activity</u>	<u>Scientific Employees</u>		<u>Graduate Students</u>	<u>Publications</u>
	<u>Number</u>	<u>Man-Years</u>		
High Energy Physics	2	1	0	0
Low Energy Physics	10	4	0	5
Mathematics & Computer	3	1	0	0
Chemistry	25	18	3	9
Metallurgy and Materials	<u>24</u>	<u>3</u>	<u>0</u>	<u>2</u>
TOTAL	64	27	3	16

OPERATIONS OFFICES ADMINISTERING
THE BUSINESS ASPECTS OF THE PROJECTS

<u>Operations Offices</u>	<u>High Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Division Total</u>
Chicago	1	0	1	1	3	6
New York	0	1	0	3	2	6
San Francisco	0	0	0	1	0	1
Washington	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
TOTAL	1	2	1	5	5	14

TYPE OF CONTRACT

<u>Type</u>	<u>High Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Division Total</u>
Cost	1	1	0	3	2	7
Lump-Sum	<u>0</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>7</u>
TOTAL	1	2	1	5	5	14

RESEARCH INSTITUTIONS

PROJECTS BY AEC DOLLAR LEVEL

<u>Dollar Level</u>	<u>High Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Division Total</u>
0	0	0	0	0	0	0
1 - 9,999	0	0	0	0	1	1
10,000 - 19,999	0	0	0	0	0	0
20,000 - 29,999	0	1	1	1	0	3
30,000 - 39,999	1	0	0	1	2	4
40,000 - 49,999	0	0	0	0	1	1
50,000 - 59,999	0	0	0	0	1	1
60,000 - 69,999	0	0	0	0	0	0
70,000 - 79,999	0	0	0	0	0	0
80,000 - 89,999	0	0	0	1	0	1
90,000 - 99,999	0	0	0	0	0	0
100,000 - 249,999	0	1	0	1	0	2
250,000 - 499,999	0	0	0	1	0	1
500,000 +	0	0	0	0	0	0
TOTAL	1	2	1	5	5	14

PERCENTAGE OF AEC CONTRIBUTION TO THE TOTAL COST OF THE RESEARCH

<u>Percentage</u>	<u>High Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Division Total</u>
0 - 9	0	0	0	0	0	0
10 - 19	0	0	0	0	0	0
20 - 29	0	1	0	0	0	1
30 - 39	0	0	0	1	0	1
40 - 49	0	0	0	0	0	0
50 - 59	0	0	0	0	0	0
60 - 69	0	0	0	0	0	0
70 - 79	0	1	0	0	1	2
80 - 89	0	0	0	2	0	2
90 - 99	0	0	0	0	0	0
100	1	0	1	2	4	8
TOTAL	1	2	1	5	5	14

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>High Energy Physics</u>	<u>Low Energy Physics</u>	<u>Math</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Division Total</u>
California	0	0	0	1	0	1
Stanford Research Institute ...	0	0	0	1	0	1
Connecticut	0	0	0	1	0	1
New England Institute for Medical Research	0	0	0	1	0	1
District of Columbia	0	1	0	0	0	1
National Academy of Sciences ..	0	1	0	0	0	1
Illinois	1	0	0	1	0	2
Associated Midwest Universities	1	0	0	0	0	1
IIT Research Institute	0	0	0	1	0	1
Missouri	0	0	1	0	0	1
Midwest Research Institute	0	0	1	0	0	1
Ohio	0	0	0	0	3	3
Battelle Memorial Institute ...	0	0	0	0	3	3
Pennsylvania	0	1	0	2	2	5
Franklin Institute	0	1	0	1	1	3
Mellon Institute	0	0	0	1	1	2
TOTAL	1	2	1	5	5	14

INDUSTRIAL LABORATORIES

Breakdown of the number of projects, total cost and the Contractor and AEC
contribution in the Program by Activity
As of June 30, 1967

Activity	Number of Projects	Total Cost	Contractor Contribution	Percent of Total	AEC Contribution	Percent of Total
Low Energy Physics	2	\$ 403,215	\$ 139,800	35	\$ 263,415	65
Chemistry	3	297,500	0	0	297,500	100
Metallurgy & Materials	3	571,760	21,680	4	550,080	96
Controlled Thermonuclear	2	340,047	190,198	56	149,849	44
TOTAL	10	\$1,612,522	\$ 351,678	22	\$1,260,844	78

CONSOLIDATED BUDGET OF THE 10 PROJECTS
INCLUDED IN THE PHYSICAL RESEARCH PROGRAM
 As of June 30, 1967
 (Dollars in Thousands)

INDUSTRIAL LABORATORIES

<u>Items of Expense</u>	<u>Total</u>		<u>Low Energy</u>		<u>Chemistry</u>		<u>Metallurgy & Materials</u>		<u>Controlled Thermo-nuclear</u>	
	<u>Amount</u>	<u>%</u>	<u>Physics</u>	<u>%</u>	<u>Chemistry</u>	<u>%</u>	<u>Metallurgy & Materials</u>	<u>%</u>	<u>Thermo-nuclear</u>	<u>%</u>
<u>Breakdown of Fixed-Price Projects</u>										
Salaries and Wages	\$ 142	28.8	\$ 43	16.1	\$ 0		\$ 14	32.5	\$ 85	46.2
Equipment	54	10.9	54	20.2	0		0	0	0	0
Materials and Supplies	133	26.9	111	41.5	0		2	4.7	20	10.9
Travel	2	.4	2	.8	0		0	0	0	0
Communications	0	0	0	0	0		0	0	0	0
Publication Costs	0	0	0	0	0		0	0	0	0
Indirect Expenses	163	33.0	57	21.4	0		27	62.8	79	42.9
TOTAL	\$ 494	100.0	\$ 267	100.0	\$ 0		\$ 43	100.0	\$ 184	100.0
Contributed by Laboratories ...	245	49.6	140	52.4	0		21	48.8	84	45.7
Supported by AEC	249	50.4	127	47.6	0		22	51.2	100	54.3
Including Unexpended										
Balance of	0		0		0		0		0	
=====										
<u>Breakdown of Cost-Type Projects</u>										
Salaries and Wages	\$ 407	36.4	\$ 41	30.2	\$ 120	40.3	\$ 211	40.0	\$ 35	22.5
Equipment	31	2.8	0	0	4	1.3	27	5.1	0	0
Materials and Supplies	188	16.8	43	31.6	38	12.8	33	6.3	74	47.4
Travel	5	.5	0	0	1	.3	4	.8	0	0
Communications	3	.2	0	0	2	.7	1	0	0	0
Publication Costs	5	.5	0	0	1	.3	4	.8	0	0
Indirect Expenses	479	42.8	52	38.2	132	44.3	248	47.0	47	30.1
TOTAL	\$1,118	100.0	\$ 136	100.0	\$ 298	100.0	\$ 528	100.0	\$ 156	100.0
Contributed by Laboratories ...	106	9.5	0	0	0	0	0	0	106	67.9
Supported by AEC	1,012	90.5	136	100.0	298	100.0	528	100.0	50	32.1
Including Unexpended										
Balance of	1		0		0		0		1	

INDUSTRIAL LABORATORIES

NUMBER OF SCIENTIFIC EMPLOYEES, GRADUATE STUDENTS AND PUBLICATIONS
UNDER THE PHYSICAL RESEARCH PROGRAM

<u>Activity</u>	<u>Scientific Employees</u>		<u>Graduate Students</u>	<u>Publications</u>
	<u>Number</u>	<u>Man-Years</u>		
Low Energy Physics	12	5	2	10
Chemistry	7	6	0	7
Metallurgy & Materials	18	14	0	27
Controlled Thermonuclear	<u>6</u>	<u>5</u>	<u>0</u>	<u>12</u>
TOTAL	43	30	2	56

OPERATIONS OFFICES ADMINISTERING
THE BUSINESS ASPECTS OF THE PROJECTS

<u>Operations Offices</u>	<u>Low Energy Physics</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
New York	0	1	1	2	4
Oak Ridge	1	0	0	0	1
San Francisco	<u>1</u>	<u>2</u>	<u>2</u>	<u>0</u>	<u>5</u>
TOTAL	2	3	3	2	10

TYPE OF CONTRACT

<u>Type</u>	<u>Low Energy Physics</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
Cost	1	3	2	1	7
Lump-Sum	<u>1</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>3</u>
TOTAL	2	3	3	2	10

INDUSTRIAL LABORATORIES

PROJECTS BY AEC DOLLAR LEVEL

<u>Dollar Level</u>	<u>Low Energy Physics</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
0	0	0	0	0	0
1 - 9,999	0	0	0	0	0
10,000 - 19,999	0	0	0	0	0
20,000 - 29,999	0	0	0	0	0
30,000 - 39,999	0	0	0	0	0
40,000 - 49,999	0	0	1	0	1
50,000 - 59,999	0	0	0	0	0
60,000 - 69,999	0	0	0	0	0
70,000 - 79,999	0	0	0	0	0
80,000 - 89,999	0	2	0	0	2
90,000 - 99,999	0	0	0	0	0
100,000 - 249,999	2	1	2	2	7
250,000 - 499,999	0	0	0	0	0
500,000 +	0	0	0	0	0
TOTAL	2	3	3	2	10

PERCENTAGE OF AEC CONTRIBUTION TO THE TOTAL COST OF THE RESEARCH

<u>Percentage</u>	<u>Low Energy Physics</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
0 - 9	0	0	0	0	0
10 - 19	0	0	0	0	0
20 - 29	0	0	0	0	0
30 - 39	0	0	0	1	1
40 - 49	1	0	0	0	1
50 - 59	0	0	1	1	2
60 - 69	0	0	0	0	0
70 - 79	0	0	0	0	0
80 - 89	0	0	0	0	0
90 - 99	0	0	0	0	0
100	1	3	2	0	6
TOTAL	2	3	3	2	10

NUMBER OF PROJECTS BY STATES AND CONTRACTORS

<u>State and Contractor</u>	<u>Low Energy Physics</u>	<u>Chemistry</u>	<u>Metallurgy & Materials</u>	<u>Controlled Thermonuclear</u>	<u>Division Total</u>
<u>California</u>	1	2	2	0	5
Atomics International	0	2	2	0	4
General Dynamics Corporation ...	1	0	0	0	1
<u>Connecticut</u>	0	0	0	1	1
United Aircraft Corporation	0	0	0	1	1
<u>Massachusetts</u>	0	1	1	0	2
Avco-Everett Research Lab.	0	1	0	0	1
Little, Arthur D., Incorporated.	0	0	1	0	1
<u>Pennsylvania</u>	0	0	0	1	1
Westinghouse Electric Corp.	0	0	0	1	1
<u>Texas</u>	1	0	0	0	1
Texas Nuclear Corporation	1	0	0	0	1
<u>TOTAL</u>	2	3	3	2	10