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SL-97

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RECLASSIFIED TO CFRD

Joseph L. Watts 11/15/79
Dorothy M. Elin 11/15/79

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SANDIA LABORATORY

Branch of

LOS ALAMOS SCIENTIFIC LABORATORY

UNIVERSITY OF CALIFORNIA

~~CLASSIFICATION CANCELLED~~
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MONTHLY PROGRESS REPORT
of
SANDIA LABORATORY

Sept 18, 1949, to Nov 1, 1949

Report No. SL-97

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AT 5

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OFFICE OF THE DIRECTOR (SL DIR)

This is the final report from the Office of the Director of Sandia Laboratory under the contract with the University of California. On November 1, 1949, the Sandia Corporation takes over operation and management of Sandia Laboratory, which was formerly operated as a branch of the Los Alamos Scientific Laboratory by contract between the University of California and the U.S. Atomic Energy Commission.

The progress report of each department of Sandia Laboratory following this report covers the progress made since September 18, 1949, to October 31, 1949, inclusive. However, to consolidate into a single report the major accomplishments that Sandia Laboratory has achieved for the AEC, the report from the office of the Director will cover those accomplishments to date and a general outline of the programs under way or planned for the future. It is hoped that this summary report may prove of some use to the new contractor in maintaining program continuity and in addition be of value as a consolidated record of work to date.

Sandia Laboratory, since being expanded from a division to a branch of the Los Alamos Scientific Laboratory in March 1948, has grown materially not only in technical activities but also in personnel and facilities. In 1948 most facilities at Sandia Laboratory were of a temporary, wartime construction, hence a major building program for permanent facilities was undertaken. At this time 35 per cent of the facilities are completed; the remaining 65 per cent are under construction or ready for contract. In the expansion, Sandia Laboratory was also given more responsibility in the weapon development program than was formerly carried by Z-Division.

At the request of Dr. Norris E. Bradbury Sandia Laboratory was so organized that it might in time, if advisable, become independent of Los Alamos Scientific Laboratory. Because the resulting organization was formalized with this

eventuality as a possibility, the transfer of managerial responsibility to Sandia Corporation should be accomplished without affecting the technical or productive programs of Sandia Laboratory.

SANDIA LABORATORY ORGANIZATION AND FACILITIES

Report No. SMD-993 outlines the organization chart of Sandia Laboratory as of October 31, 1949. This includes all personnel assigned to the divisions of the various departments. The functions and responsibilities of each department, as of October 31, 1949, are outlined in Report No. SL-80R2, "Functions and Responsibilities of Sandia Laboratory."

As stated previously, the growth of Sandia Laboratory necessitated increased facilities. The original temporary facilities were inadequate to accommodate the personnel and equipment required to conduct the technical and production programs, which have increased several-fold during the past two years. Table I presents the growth of Laboratory facilities, both permanent and temporary, and the increase in employees from January 1, 1948, to October 31, 1949. The gradual transition from temporary structures to permanent buildings will be noted from the table. As presented, this table includes currently occupied space, buildings now under construction, and those approved for construction but not yet started, both at Sandia Base and Salton Sea Test Base.

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TABLE I

	Tech Area No. 1			Tech Area No. 2			Salton Sea Test Base		
	Permanent Buildings (sq ft)	Temporary Buildings (sq ft)	Employees	Permanent Buildings (sq ft)	Temporary Buildings (sq ft)	Employees	Permanent Buildings (sq ft)	Temporary Buildings (sq ft)	Employees
Jan 1, 1948	22,210	90,945	410	0	3,600*	Included In Area No. 1	2,200	39,000	23
July 1, 1948	22,210	130,945	762	0	7,200*		2,200	39,000	28
Jan 1, 1949	22,210	210,885	1,350	20,500	0	12	2,200	39,000	42
July 1, 1949	68,410	214,885	1,541	20,500	0	18	60,250	17,000	50
Oct 31, 1949	150,710	214,885	1,719	20,500	0	23	60,250	17,000	60
Under construction	333,045**								
Ready for contract	165,000								
Proposed buildings	30,750								
Planned total	679,505	60,000***	2,233	20,500	0	24	60,250	0	70

* – Space used in AFSWP Ordnance Area
** – Includes West Laboratory
*** – Butler building to be used for storage of material and documents

NOTE : Employees include all Laboratory, AEC, and Military personnel in the areas.

Square footage is gross, includes all corridors, warehouses, space, public utilities, and heating and air-conditioning areas.

The plan map of the Tech Area at Sandia Laboratory indicates all existing temporary and permanent structures and new construction completed, under way, or contemplated. Letters have been submitted to the Atomic Energy Commission requesting authorization to proceed with these three additional structures:

Applied Physics Laboratory
(Electromechanical and Climatic Test Laboratory)

This replaces temporary structure T-828. Request for this structure was submitted by letter SL DIR (2168), dated 27 October, 1949, to G. P. Kraker.

Second-Story Addition to Administration Building, P-800

This additional space is required by the new contractor for executive offices and requested by letter SL DIR (2169), dated 27 October, 1949, to G. P. Kraker.

Nuclear Operations Building

This building is requested to consolidate all Tech Area nuclear- and radiation-hazards work within a single structure under proper health and safety control. This request was submitted by letter SL DIR (705), dated 27 October, 1949, to G. P. Kraker.

It is hoped that the above additional structures will be authorized so that the permanent facilities at Sandia Laboratory might be completed.

The growth of Sandia Laboratory in research, development, and production is further reflected in the budget figures for the three fiscal years set forth:

		Salaries	R,D, and Prod.	Total
a)	FY 1948	$1,205,000	$17,133,300	$18,338,300
a)	FY 1949	4,456,075	36,076,230	40,532,305
	FY 1950	7,912,812	53,479,200[b]	61,392,012

a) Actual figures from the Atomic Energy Commission and the University of California

b) Includes portion of Project Royal production to corrected as soon as the Atomic Energy Commission formulates Royal planning

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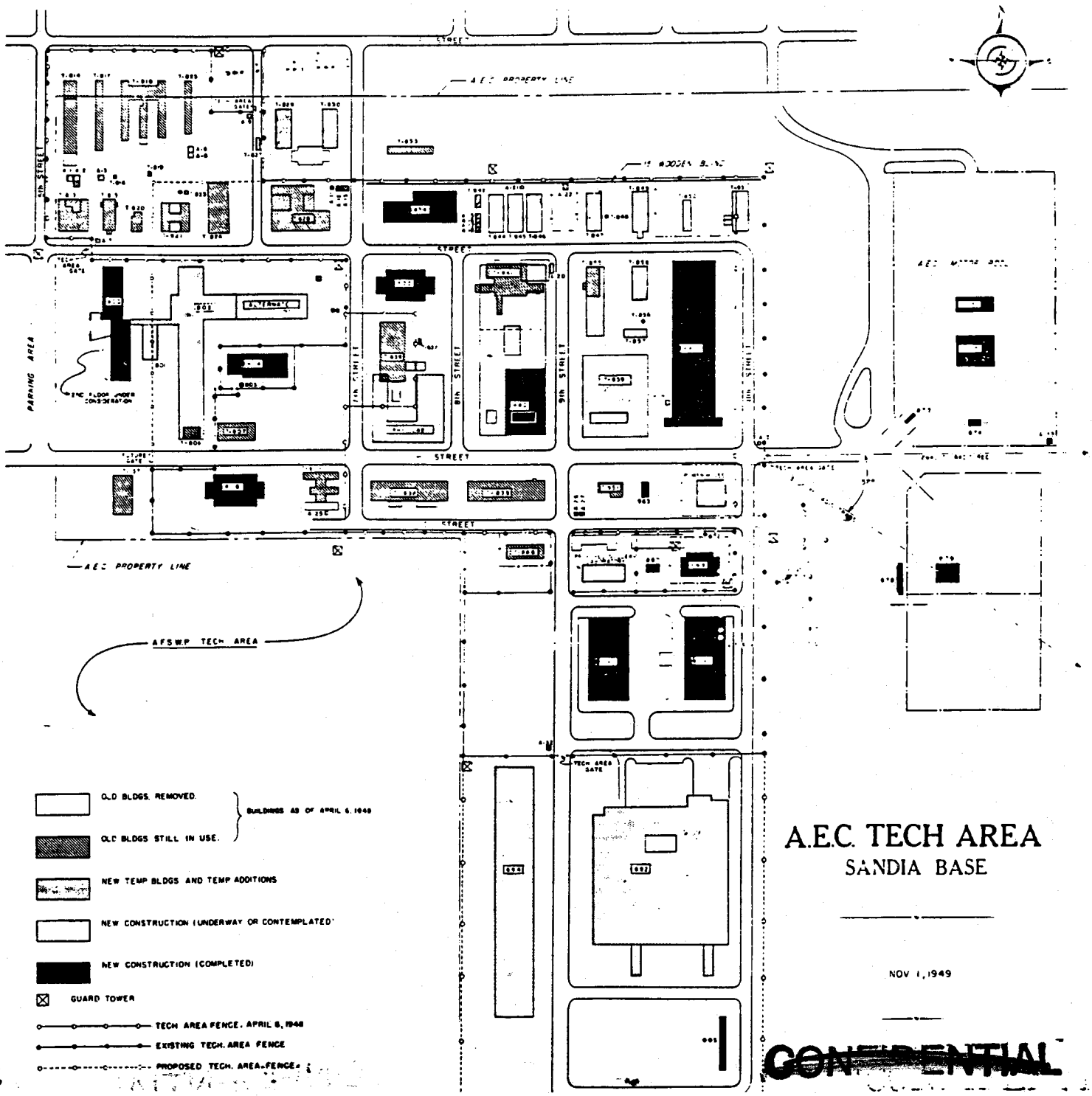

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SANDIA LABORATORY - LOS ALAMOS LABORATORY INTER-RELATIONSHIP

Close technical liaison has existed between the Los Alamos Scientific Laboratory and Sandia Laboratory so that the technical programs on which both laboratories were working would be properly correlated. The change in stature of the Sandia organization from that of a division of the Los Alamos Scientific Laboratory to that of a branch laboratory has been characterized by a reduction, almost to the point of elimination, in technical direction from Los Alamos on ordnance matters. Los Alamos still retains veto power over Sandia weapon programs, but experience has demonstrated that there is seldom anything but complete concurrence on the part of Los Alamos, on the work done by Sandia Laboratory. Additional planning is under way to transfer more responsibilities to Sandia Laboratory as set forth in the "Scope of the Inter-Related Work of the Sandia Laboratory and the Los Alamos Scientific Laboratory", DIR-381, signed by N. E. Bradbury, dated August 29, 1949.

Continued close technical co-ordination will, however, always be required between the Los Alamos Scientific Laboratory and Sandia Laboratory, and plans for technical policy and adhoc committees have been mutually agreed upon. Two such committees have already been established, namely, the TX-5 Committee and the Guided Missile Committee. In addition, members of the technical staff of Sandia Laboratory are members of the Los Alamos Scientific Laboratory Technical Council. Continued collaboration between Los Alamos and Sandia Laboratories should be maintained at technical and philosophical levels to continue well-planned co-ordinated programs.

SANDIA LABORATORY ACCOMPLISHMENTS

The accomplishments of Sandia Laboratory to October 31, 1949, concerning research, development, and engineering programs are detailed in Report No. SL-96, Vol I. The high lights of these major accomplishments to date are:

(1). Mk III Weapon. -- All Mk III Mod 0 weapons have been converted to Mk III Mod 1 and 2 weapons; all production activities on the Mk III Mod 1 and Mk III Mod 2 weapons have been completed.

(2). Mk IV Weapon. -- Engineering tests and final production drawings have been completed and production initiated on the Mk IV Mod 0 weapon. Production was introduced into war reserve stockpile about ten months ahead of the date originally planned, bringing to a close an unusually intensive development program. To date, war reserve directives for this weapon have been compiled with, to date and all plans for continuing this directive on schedule in the future have been formulated.

(3). Test Equipment. -- All test equipment for the Mk III and Mk IV weapons was re-engineered to meet the changing military requirements. Production of this equipment is under way, and as of October 31, 1949, all AFSWP requirements for test equipment have been compiled with as scheduled and issued through the Atomic Energy Commission to the Military for use.

(4). Dual Facilities. -- Sandia Laboratory has cooperated with and assisted the Atomic Energy Commission in locating and establishing dual production facilities for the weapon components and has assisted in the training of personnel for Projects Royal and Sugar. Dual manufacturing sources have been obtained for most of the basic components in accordance with the directive from Carroll Wilson, General Manager, Atomic Energy Commission.

(5). Water Supply Sites. -- Final functional plans for storage sites and plant structures were formulated by Sandia Laboratory. Two sites have been activated. The activation included production of special test equipment and those facilities required to perform the continuing activities, such as surveillance, retroactive changes, etc, at the sites.

(6). Manuals. -- All operational field manuals for existing weapons and test equipment have been completed and forwarded to AFSWP.

weight aluminum case were placed to prove the structure and ballistic performance. Drop tests are under way. Within the next three months a final recommendation should be submitted for lightweight structures to replace existing steel cases.

PROGRAM FOR FISCAL YEAR 1950

A detailed report of the research, development, and engineering program for fiscal year 1950 is presented in Report No. SL-96, Vol II, or by letter SL DIR (692) forwarded on October 24, 1949. It is believed that this report is self-explanatory and covers basically all programs being conducted by Sandia Laboratory. Another program, however, which Sandia Laboratory may be requested to undertake in fiscal year 1950 is the retirement of the Mk III Mods 1 and 2 weapons from war reserve stockpile. A proposed program for the retirement of this weapon has been submitted to General McCormack by letter SL DIR (655), dated October 3, 1949. Final approval to proceed with this program is awaited inasmuch as personnel planning will be required to conduct the program expeditiously and economically.

PROPOSED PROGRAM FOR FISCAL YEAR 1951

The details of the proposed program for fiscal year 1951, upon which the budget for Sandia Laboratory has been planned, is detailed in Report No. SL-96, Vol III. It is believed that this report is self-explanatory and covers all phases of activity over which Sandia Laboratory has the primary development responsibility. Each developmental phase has been closely co-ordinated with the Los Alamos Scientific Laboratory program.

AFSWP LIAISON AND CO-ORDINATION

Close liaison between AFSWP Sandia and Sandia Laboratory has existed during the past two years. A basic training course was established at Sandia Laboratory for training AFSWP instructors on new improvements and developments so that they, in turn, could prepare their standard operating procedures for the training of Military personnel.

All AFSWP delivery requirements for weapon components and test equipment have been complied with in accordance with the Sandia Laboratory schedule of shipment.

A cordial and friendly relationship has been established between AFSWP and Sandia Laboratory that has materially benefited both organizations by the interchange of technical and logistic information.

To improve and maintain firm relations between AFSWP and Sandia Laboratory, local technical boards with equal representation from both AFSWP and Sandia Laboratory have been established. The boards are:

Sandia Research and Development Board
Sandia Road Material Board
Sandia Technical Facilities Board
Sandia Manual Board

A copy of the charter of each board and the membership therein as of November 1, 1949, is forwarded with this report.

SUMMARY

The technical progress and accomplishments of Sandia Laboratory have been mainly due to the unselfish attitude, technical competence, and the splendid co-operation given by all department managers and personnel of Sandia Laboratory during these past two years. Their individual

competence in their respective fields and their wisdom and deep-seated interest in the development and productive activities for the promotion of national security, rather than in personal benefit, have resulted in increased technical reputation and the successful accomplishment of the programs that were assigned to the Labtory. The co-operative spirit that has existed at all times between the Military organizations, more particularly AFSWP Sandia, and the Atomic Energy Commission with Sandia Laboratory and between the Los Alamos Scientific Laboratory and Sandia Laboratory, is proof that civilian organizations can effectively operate in a co-ordinated effort with the Military Establishment toward a common goal.

DISTRIBUTION LIST OF REPORTS

	Progress Report SL-97	Organi-zation Chart SMD-993	Functions and Respon-sibilities SL-80R2	Major Accomp. FY 1949 SL-96 Vol I
N. E. Bradbury	1-4/61A	1-4/66A	1-4/61A	1-4/50A
R. C. Smith	5-7/61A	5-7/66A	5-7/61A	5-7/50A
P. J. Larsen	8/61A	8/66A	8/66A	19/50A
R. W. Henderson	9/61A	9/66A	9/61A	20/50A
R. A. Bice	10/61A	10/66A	10/61A	21/50A
R. P. Petersen	11/61A	11/66A	11/61A	22/50A
G. A. Fowler	12/61A	12/66A	12/61A	23/50A
F. H. Longyear	13/61A	13/66A	13/61A	24/50A
L. J. Paddison	14/61A	14/66A	14/61A	25/50A
L. S. Yost	15/61A	15/66A	15/61A	26/50A
C. W. Campbell	16/61A	16/66A	16/61A	
S. Harris	17/61A	17/66A	17/61A	27/50A
D. B. Miller	18/61A	18/66A	18/61A	
A. B. Machen	19/61A	19/66A	19/61A	29/50A
G. P. Kraker	20/61A	20/66A	20/61A	30/50A
H. E. Sunde	21/61A	21/66A	21/61A	31/50A
G. C. Buonagurio	22/61A	22/66A	22/61A	32/50A
E. W. Baldwin	23/61A	23/66A	23/61A	33/50A
L. J. Heilman	24/61A	24/66A	24/61A	
L. J. Biskner	25/61A	45/66A	25/61A	28/50A
Gen. James McCormack through N. E. Bradbury and C. Tyler	32-37/61A	35-40/66A	31-36/61A	8-13/50A
C. L. Tyler through N. E. Bradbury	38/61A	41/66A	37/61A	14/50A
G. A. Landry	26-28/61A	26-28/66A	26-30/61A	15-17/50A
R. E. Poole	29/61A	42/66A	38/61A	18/50A
M. J. Kelly through G. A. Landry	30/61A	43/66A	39/61A	34/50A
D. A. Quarles through G. A. Landry	31/61A	44/66A	40/61A	35/50A
Document Room	39-61/61A	46-65/66A	41-61/61A	36-50/50A
R. Pogue		29/66A		
S. Langenstein		30-34/66A		
W. F. Schaffer		25/66A		

PROJECT ROYAL LIAISON (SL DIR (R))

(A). To inform Project Royal of matters concerning production items, SL DIR(R) has utilized the existing Laboratory organization to channel technical information to Project Royal on an automatic distribution. This office has also suggested certain organizational changes within Sandia Laboratory to facilitate the operation of the engineering department concerned and to reduce the delay in sending the information to Royal. As a result an automatic distribution has been effected by which drawings and drawing releases will be sent to Royal. With the assistance of SLPE a similar arrangement is being established regarding specifications and acceptance procedures, starting with those for the Mk IV.

By the end of October one phase of work on NSA-9192 has completed, the Royal production tooling program was concluded so far as Sandia Laboratory is concerned, and the records and the accounting of all material were completed. All original production tool drawings are being transferred to Project Royal, which will be responsible for maintaining up-to-date drawings and keeping other installations properly informed of all changes.

(B). The New York AEC Office has extended the present contract, NSA-9192, to include the design of certain portable inspection tools required by SLS. Work on these tools will probably be started soon Two designers from the Effic' t

(C). An interproject committee on tooling and interchangeability has been established and two meetings held. Members and their alternates have been selected from Sandia Laboratory, Project Tee, and Project Royal. It was clearly affirmed at the first meeting that the committee would act as a unified, unbiased group co-ordinating appropriate activities between the three installations and remain a flexible unit for assimilating and acting upon these activities for the improvement of the end product. This meeting set forth policies regarding the master gauge structure and the various methods by which such policies could be controlled. Details of the action taken are covered by "Minutes of Meeting Held at Project Royal, September 21, 1949."

At the second meeting held at Project Tee, detailed in "Minutes of Meeting of the Gauging Committee, October 10, 1949", it was agreed that a uniform tool numbering system would be used by each installation. It was recommended that inspection tools be checked at each installation by means of height gauges, surface plates, etc, according to an established procedure. It was agreed that functional inspection would be done at Project Royal under the supervision and control of SLS The next meeting will be held at Sandia Laboratory on November 3-4 at which time action will be taken to put the approved systems into practice.

OFFICE OF PRODUCTION CO-ORDINATION (SL DIR(P))

(A). During the past month the Office of Production Co-Ordination, in conjunction with the SFOO Office of Production Co-Ordination, has been preparing the delivery schedules for the Mk IV Mod O during fiscal year 1950 for Sandia Laboratory, Los Alamos Scientific Laboratory, Project Tee, Project Royal, Project Sugar, and Project Pepper. The schedules should be delivered to the projects before November 1.

The schedules have been established to (1) give a complete accounting of those items to be shipped by projects to the ultimate users (War Reserve, AFSWP, and Sandia Laboratory), and (2) outline in detail all officially sanctioned interproject movements of items that precede shipment to the ultimate user.

SL DIR(P) and AEC SFOO Office of Production Co-Ordination are working out time tables and channels whereby Sandia Laboratory may process AFSWP requisitions for production material. All project requisitions for Mk IV Mod O production material from Sandia Laboratory will be channeled through the AEC office at Sandia Laboratory to SL DIR(P) for co-ordination.

SCOPE OF THE INTER-RELATED WORK
OF THE SANDIA LABORATORY AND THE LOS ALAMOS
SCIENTIFIC LABORATORY

The division of primary developmental responsibility between these two laboratories should arise from the basic premise that the Sandia Laboratory has the responsibility for all research and development and engineering of ordnance components of atomic weapons except for those parts thereof which have to do with the technique of producing supercritical assembly of active material. Research and development pertaining to these latter techniques is a Los Alamos responsibility. Borderline responsibilities are delineated in the following pages.

The components of atomic weapons are defined broadly as follows:

I.	Nuclear Components	) Primary Los Alamos Responsibility
II.	Explosive Components	)
III.	Firing Components	) Primary Sandia Responsibility
IV.	Power Supply Components	)
V.	Fuzing Components	)
VI.	Case and Ballistic Components	)

As indicated, the nuclear, explosive, and firing components are primary Los Alamos Responsibilities, while the fuzing, case, and ballistic components are primary Sandia responsibilities.

The functions which are involved for these various components include:

Research and Development
Engineering and Specifications

Production or Procurement
Acceptance and Preparation for Storage
Surveillance

Except where otherwize agreed upon, the responsibility for the engineering development, the preparation of production specifications, the procurement, acceptance, preparation for storage, and surveillance should follow the primary developmental responsibility.

In many cases where the Los Alamos Scientific Laboratory has the primary responsibility; certain of the functions involved have been, or are planned to be, delegated to the Sandia Laboratory. A detailed description of the status of the various components and functions follow:

b(3) DOE

I. NUCLEAR COMPONENTS

1. Research & Devel.	LA	LA	LA
2. Eng. & Specs.	LA	LA	LA
3. Prod. or Proc.	AEC(LA)$^{\Delta}$	AEC(LA)$^{\Delta}$	AEC(S)$^{\Delta}$
4. Accept. & Prep. Stor.	LA*	S^{+}	S^{+}
5. Surveillance	LA*	LA*	LA*

$^{\Delta}$ Production carried out by AEC or other government agency but co-ordinated as indicated.

* Probably to be transferred to Sandia about 1 January 1950 together with transfer of Group W-1-2 to Sandia administration.

\+ Transfer to Sandia now in progress and should be complete by 1 September 1949.

II. EXPLOSIVE COMPONENTS

	(A) HE	(B) HE Case	(C) Dets	(D) Det Connectors
1. Research & Devel.	LA	S-LA^{+}	LA	LA$^{\beta}$
2. Eng. & Specs.	LA	S-LA^{+}	S-LA$^{\beta}$	S-LA$^{\beta}$
3. Prod. or Proc.	AEC(LA)$^{\Delta}$	AEC(S)$^{\Delta}$	LA-AEC(LA)$^{\Delta}$	S
4. Accept. & Prep. Stor.	LA*-S	S	LA^{o}	S
5. Surveillance	LA -S	S	LA^{o}	S

+ HE case designed and engineered by Sandia to meet Los Alamos HE specifications.

β Engineering and research co-ordinated between S and LA, but LA holding primary responsibility for performance.

Δ Production carried out by AEC or other government agency but technical supervision by Los Alamos or Sandia as indicated.

* Acceptance of castings from fabricator is a Los Alamos Scientific Laboratory responsibility. Consideration of advisability of ultimate transfer of this function to Sandia to occur about 1 January 1950. Assembly of casting is a Sandia responsibility.

o Advisability of transfer of acceptance and nondestructive surveillance responsibility to Sandia to be studied 1 January 1950.

Destructive surveillance by LA; other surveillance as jointly agreed upon by S and LA.

III. FIRING COMPONENTS

	(A) Cables	(B) X-Unit
1. Research & Devel.	LA-S[x]	LA-S[x]
2. Eng. & Specs.	S*	S*
3. Prod. or Proc.	S	S
4. Accept. & Prep. Stor.	S	S
5. Surveillance	S	S

x Joint participation. Los Alamos, however, has basic responsibility.

* Engineering design of X-unit and cables to be subject to acceptability of bench performance as determined by Los Alamos Scientific Laboratory. Inflight performance acceptability determined by Sandia.

IV. POWER SUPPLY COMPONENTS FOR BOTH FIRING & FUZING

1. Research & Devel.	S*
2. Eng. & Specs.	S
3. Prod. or Proc.	S
4. Accept. & Prep. Stor.	S
5. Surveillance	S

* With collaboration of Los Alamos Scientific Laboratory on philosophy, firing component needs, and over-all performance specification.

V. FUZING COMPONENTS

	(A) Fuzes	(B) Arming
1. Research & Devel.	S*	S*
2. Eng. & Specs.	S	S
3. Prod. or Proc.	S	S
4. Accept. & Prep. Stor.	S	S
5. Surveillance	S	S

* With collaboration of Los Alamos Scientific Laboratory on philosophy and over-all performance specifications.

VI. CASE AND BALLISTIC COMPONENTS

	(A) Case	(B) Inflight Insertion	(C) Ballistics	(D) Handling	(E) Assembly
1. Research & Devel.	S	S*	S	S	S
2. Eng. & Specs.	S	S*	S	S	S
3. Prod. or Proc.	AEC(S)Δ	S	S	S	S
4. Accept. & Prep. Stor.	S	S	S	S	S
5. Surveillance	S	S	S	S	S

* Subject to basic responsibility of Los Alamos Scientific Laboratory for nuclear components.

Δ Production by Atomic Energy Commission on other government agency but co-ordinated by Sandia.

ENIWETOK PROVING GROUND PROGRAMS

A Los Alamos responsibility under J-Division. Sandia, however, assists in weapon logistics, assembly, and handling, as well as co-ordination of the design and operation of firing facilities as mutually agreed upon by Sandia and Los Alamos.

In addition to the responsibilities indicated above, the Sandia Laboratory has the responsibility for:

(1). Military liaison, including such matters as training of military personnel in all non-nuclear components, technical facilities related to atomic weapons, their storage and use, and the engineering of atomic weapons for military vehicles. Los Alamos collaboration is involved where necessary and appropriate at technical or philosophical levels.

(2). Preparation of manuals for the Armed Forces except for nuclear manuals and with the collaboration of the Los Alamos Laboratory is those phases which pertain to the HE and the detenators.

(3). Design and preparation of the test equipment for non-nuclear components of atomic weapons with the collaboration of the Los Alamos Laboratory for those components having to do with the HE and detonators.

(4). The applied phenomenology of atomic weapons as opposed to the properties of atomic weapons when detonated in essentially homogeneous or similarly simple media.

ENGINEERING DEPARTMENT (SLE)

(A). Administration. -- Department personnel numbers 170, with four additional employees expected to report before November 15. If ELSIE and SLAM become full-time projects, personnel over and above the present ceiling will be required.

(B). Facilities. -- Operations are handicapped because the personnel and facilities of SLE are housed in many buildins. New projects and the increased needs of national defense, which call for increased efficiency and progress, make it all the more desirable that the new Technical Building be completed soon.

(C). Mk III Mod 0. -- This weapon has been completed.

Test Equipment. -- Drawings for the CT Mk III Mod 1 and the DRT Mk II Mod 2 were filed for historical purposes. Final reports on the ATE Mk I Mod 2, the PTT Mk I Mod 1, and the RJBT Mk IV Mod 1 are being published.

(D). Mk III Mod 1. -- The design has been completed, but certain details of handling and test equipment are still being processed.

Handling Equipment. -- The design release for the half-ton utility tripod has been issued. Work continues on the baro-switch adjusting tool on a low-priority basis. The operational manual and report on the wishbone trailer are being published.

The status of the 31 handling equipment is:

Total Pieces	Final Release	Conditional Release
71	57	14

Remarks: Items listed under "Conditional Release" have been approved functionally, but the final drawings have not been filed.

Test Equipment. -- The initial design of the IFM-T-4 (which may replace the FTB Mk IV Mod 0 for in-flight monitoring of the 31 and subsequent weapons) has been completed and two prototypes ordered.

Modifications to the FCT Mk I Mod 0 to permit its use with the IFM-T-4 have been forwarded to SLPE.

An engineering report on the CT Mk IV Mod 0 was issued.

Status of the 31 test equipment is:

Total Pieces	Final Release	Conditional Release
15	7	8

Remarks: Items listed as "Conditional Release" have been approved functionally, but the final production drawings from the vendors have not been filed.

(E). Mk IV Mod 0.

Weapon Design. -- The design has been completed; however, certain modifications that do not require a model change have been requested and are in design.

The refinement of the 40 baro system continues to hold the highest priority. Six baro switch designs are being developed and tested. It has been decided that current BS-5 baro switches will not be compensated for temperature. Three contour points are being investigated as possible pressure points for a manifold system. Reports on baro-switch settings and on analysis of baro-switch drop data were issued to the R&D Board.

Handling Equipment. -- Static tests at Wright-Patterson Air Force Base indicate that much excess material can be removed from the in-flight insertion equipment. The sphere access door actuating arm has been deleted from the original design. A final design release for all forgings has been issued to facilitate early procurement. Only conditional design releases for the material have been issued for the rest of the equipment. Most drawings have been completed and checked.

A prototype of the ground insertion equipment was demonstrated to the Military as a possible substitute for the skyhook. However, this equipment will not be required if seven sets of in-flight insertion equipment can be obtained soon.

Work has not proceeded as rapidly as anticipated on the universal cartridge dolly because it has been necessary to fabricate tie-downs and obtain an evaluation from the Military. All drawings are completed and are being checked. A design release should be issued by December 1, 1949.

A final design release has been issued for the offset hook adapter.

Results of additional railroad shipping tests indicate that the newly designed Mk IV tie-downs will have to be revised. Preliminary estimates of the maximum shock loadings, as measured in a railroad car when coupled to a train, show that the bomb is subject to stresses in excess of its design factors, the tie-downs, the crate shock supports, and the crate shoring may require additional reinforcement, and that even the flooring of the box car itself may be damaged. Inasmuch as recent reports from SLS indicate that no difficulty is being experienced with the present cable tie-downs once the loading personnel have been properly instructed, it is thought that the entire question of tie-downs might profitably be reopened.

Preliminary drawings on a collapsible dummy plug have been completed. A prototype has been fabricated and is being checked.

Status of 40 handling equipment is:

Total Pieces	Final Release	Conditional Release	In Design
54	39	5	10

Remarks: Items listed under "Conditional Release" have been released for procurement. Of the ten items "In Design" five are needed for operation in the field, but none is essential to proper operation.

Test Equipment. -- A method of testing antennas at Project Sugar has been completed, and the final report is being written. A final design release was issued for the dipole tripod; a conditional design release was issued for the current failure alarm of the CP Mk II Mod 0.

The preliminary design of a pressure leakage tester has been completed, but fabrication of a prototype will be delayed until material is received.

A timer for the new clock bank, CTC-T-10, is being developed.

An additional meeting has been held to consider the simplified FTB, which will be known as the IFM. Because this equipment is unclassified, it will remain as permanent equipment in the strike aircraft. The philosophy involved in its use and in the post-loading check with associated equipment will be established by a joint Laboratory-Military committee after trial loadings are conducted at Kirtland Air Force Base.

Status of 40 test equipment is:

Total Pieces	Final Release	Conditional Release	In Design
15	7	7	1

Remarks: Items listed under "Conditional Release" have been approved functionally, but drawings of the final design have not filed. The item "In Design" is the CT Mk I Mod 0, which is not required for operation in the field but may supersede the present equipment.

(F). Mk IV Mod 1.

Weapon Design. -- Complete target specifications for the lightweight case are being compiled now that design is well along. Seven Northrop cases have been received, and the eighth will be delivered to Wright-Patterson Air Force Base for the static tests scheduled to start on November 13. An engineer from ACF is at the Laboratory to co-ordinate the design of the ACF case with a 3/16-inch skin.

The first of the lightweight ballistic drops is scheduled for October 20.

As a result of the meeting with Motorola representatives SLE has been advised that Abee has been rescheduled on the basis that units from production tools will be available in April 1950. While this date does not fit directly into the present 41 schedule, it is hoped that it may be brought into the time scale by extra effort on the part of SLE-3. The timer has been removed from the Abee package and will be developed as a component of the junction box to retain maximum flexibility of the circuits.

Little progress has been made on the development of the over-all 41 fuzing system because of the need for continued emphasis on the modification of the 40 fuzing system.

Status of the 41 design is such that all schedules are being pointed toward production in July 1950. The longest time scales are probably those of the test equipment and ballistic design of the Abee.

Handling Equipment. -- Work on the elastic spoke tire project for the wishbone trailer has been discontinued because of the high cost of completing the development and the uncertainty of obtaining a satisfactory design.

A prototype of the proposed 41 shock mounts for the wishbone trailer is being fabricated in SLF. First checks of the 41 case on the wishbone trailer will be run without shock mounts.

Some questions have been raised by the local AFSWP organization concerning certain advantages and disadvantages of the two types of loading being investigated, namely, remote in-flight insertion by means of a mechanical actuater and the in-flight insertion performed by an operator in the bomb bay and employing apparatus similar to the in-flight insertion gear designed for the 40. The next meeting of the R&D Board will consider the questions raised by AFSWP. Several representatives of the TX-5 Steering Committee will be present at this meeting.

A model of a firing set is being built by SLF along the lines suggested by recent work in the Special Assignments Group. A power supply utilizing dry-disk rectifiers, as suggested by SLE-1, is also in the design stage.

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Ballistic work on the TX-5 is practically at a standstill until results of the 41 program are received.

Liaison and co-ordination is being maintained with Los Alamos and to a lesser degree with EG&G. It is thought that a TX-5 representative at Los Alamos would facilitate the transfer of information, particularly with the change in relationship when the new contractor assumes control of Sandia Laboratory.

Design may be considered as about 10 per cent complete, unless a major change occurs in the basic concept of this weapon.

Handling Equipment and Test Equipment. -- Work on these programs will, of necessity, await the firming up of details of the weapon design.

(H). ELSIE. -- Members of SLE continue to serve in a consulting capacity on this program.

(I). Weapon Studies.

SLAM (Submarine-Laid Atomic Mine). -- This project is behandled by the department office. Information is being collected for the feasibility report which will be published, as scheduled, in November 1949.

(J). General. -- SLE-1 reports that approximately 15 per cent of its man-hours are spent on design services for other departments. In addition, the full time of two men is being required on the Drawing Standards Committee and the Planning and Scheduling Committee.

Information brought back by SLE-3 representatives from Operation Drizzle indicates a variable relative humidity in the storage sites that was, at times, as high as 100 per cent. The need for corrective action is indicated.

A contract has been awarded to the Revolvator Company for 58 hand-operated hydraulic-lift trucks to be used at land-based assembly areas; 20 are to be delivered in early November and the rest in January 1950.

(K). Status of Other Projects. -- The following is the status of other projects that are part of the SLE-5 work load. An additional 25 per cent of the man hours were spent on general problems that are not covered in this report.

Aircraft Liaison

Weapon	Jobs	Jobs Completed	Jobs in Process	Remarks
30	19	19	0	-----
31	16	14	2	Jobs in process are minor.
40	14	7	7	Major items are in-flight insertion and IFM wiring.
41	4	0	4	The revisions required by lightweight case are the major problems
Misc.	11	6	5	-----

Aircraft Modifications

Weapon	Plane Models	Information Furnished	Models Checked	In Process	Remarks
31	4	4	4	0	Except IFM
40	8	8	4	4	Planes not available.
41	8	0	0	8	Information nearly complete, will be supplied when it is 100 per cent complete.

Shipboard Assembly Areas - Liaison

Weapon	Jobs	Jobs Completed	Remarks
30	3	3	-----
31	3	3	-----
40	3	0	Information not available
41	3	0	Information not available

Land-Based Assembly Areas

Weapon	Jobs	Final Release	Conditional Release	In Design	Remarks
30	10	10	0	0	-----
31	10	10	0	0	-----
40	12	9	0	3	Scheduled for completion by January 1, 1950.
41	12	9	0	3	Scheduled for completion by January 1, 1950

Packaging

Weapon	Jobs	Final Release	Conditional Release	In Design	Remarks
30	6	6	0	0	------
31	5	5	0	0	------
40	14	11	0	3	------
41	15	11	0	4	------

General

Jobs	Final Release	Conditional Release	In Design	Remarks
18	11	0	7	These jobs are applicable to the 31, 40, and 41.

APPLIED PHYSICS DEPARTMENT (SLA)

(A). Modifications to Building T-828 are progressing satisfactorily. The new Hieatt chamber has been installed and is undergoing the acceptance test while the new hot chamber is being completed. Modifications to the West Laboratory are not progressing as rapidly as expected, but the first building is still scheduled for completion on November 1. Expansion of the Applied Physics Department in recent months will produce crowded conditions at the West Laboratory since the office space was allotted on the basis of not more than 128 people in the entire department. At present SLA has 128 employees and ten outstanding commitments against a personnel ceiling of 166. A recent SLA personnel survey, which has been submitted to SL DIR, indicates the need for additional personnel, particularly thse with PhD degrees.

(B). The Laboratory has received no official directive authorizing a scale-model blast-damage program to be coordinated with the 1951 tests. A preliminary estimate of space, personnel, and funds required has been submitted to SL DIR for information to the AEC in Washington.

(C). The aspects of weapon applications for Project SLAM are being prepared and will be combined with the SLE report for submittal to the AEC in Washington.

(D). Scaling laws for wooden structures are being studied, and a small model is being built for laboratory tests of behavior under dynamic and static loads. The problems of imposing loads on structures by means of rockets are being discussed with rocket development groups. Instrumentation studies are progressing, and tests of various instruments are under way. Designs have been completed for the first beam-testing fixture. The facilities for dynamic and static loading of scale models are being designed.

(E). The investigation of a sample of 98 Road baro switches showed that the lack of temperature compensation is not critical enough to warrant classifying stockpile baro switches into groups according to temperature coefficients. In connection with this, preliminary studies of pressure altitude distribution indicate that adequate predictability is possible from climatological data.

(F). Temperature tests of the Abee local oscillator indicated a frequency drift so a compensation system was devised. Limited tests to date show promise of a solution. A recently designed modulator is being tested to determine frequency shift, cavity requirements, pulling figure, and the effect of cold starts. Life tests of ten OA5 tubes for use as pulse modulators showed poor results because they were working above rated capacity. A laboratory model of the Abee range unit has been designed and tests started. A new range gate generator has been built. The tests will begin next week.

Top priority has been assigned to several phases of the Abee antenna program. Work is being done on various types of antennas, wave guide, choke connector, etc. When the A frequency model of Albert was studied and limited tests performed, several circuit changes were suggested.

The 217-mc telemetering system is approximately 75 per cent complete. Antenna designs are being tested for use on the 30 and 31 bombs with the existing telemetering systems.

In co-operation with the Navy chaff tests were run on Abee at Point Mugu. Chaff of very high density was scattered below Jenny from four PV-2 aircraft while the chaff cloud was measured by ground radar. Many data were collected and the analysis begun.

Flight tests are being made for Abee, Archie, Albert, and propagation studies. A helicopter has been assigned for use in the Archie flight tests, and excellent results are being obtained on "drop out" characteristics.

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[redacted]

A program has been started to develop an RC time-delay circuit having a spread from 10 to 50 seconds in 10-second intervals. It will be used with either the baro switch system or the radiograph timer. A breadboard model is being tested.

(G). The new Hieatt cold chamber has been completed. The acceptance tests started during the week of October 17, 1949. The Hieatt heat and humidity chamber has been installed, but no piping or wiring has been done to date.

Much work was done on the testing of various types of baro switches for temperature compensation characteristics, repeatability, etc. Radiography of many of these switches revealed several mechanical conditions resulting from poor quality control at the production source.

Tests were conducted to determine the amount of shock and vibration encountered during railroad shipment, and a report will be written.

SLA-3 has been occupied mainly with the testing of various items for other divisions of the Laboratory. During the month SLA-3 handled 102 projects of which 10 are completed and 35 are finished except for the reports.

(H). Study of the IBM data reduction method shows that, although the reduction will be slower, the accuracy of the results will be increased. An investigation of telemetered roll, pitch, and yaw data indicates that the accuracy of the present telemetering system is questionable. SLA and SLT are considering improvements to the system.

a small H_2O_2 power-supply unit is being studied. The Aeorjet Corporation has stated that the specifications for a solid-fuel driven generator can not be met, but proposals are still expected from the Victory Engineering Company and the Allegheny Ballistics Laboratory. An impulse generator has been designed and is being fabricated. Equipment for testing the impulse generator has also been designed and is being fabricated.

The radiograph timer program has been accelerated to produce a prototype model using inputs from standard instruments now used in operational aircraft. The bridge-type computer is being packaged for flight tests, and servo systems for inputs as well as a system for setting the clock mechanisms are being designed. The computer developed for AMC by Raytheon should be delivered to Wright-Patterson Air Force Base next month. Lastest information indicates that the Navy Mk V bomb director containing a time-of-fall computer will be delivered about April 1950. Several clock mechanisms, including electric timers and RC time delay circuits, are being developed. Initial tests will be made with 500-pound GP bombs to determine the accuracy of the system.

A development contract has been initiated with North American Aviation Company for the development of an accelerometer. It will be used as a vertical velocity meter to give an accurate input to the time-of-fall computer. An integrating accelerometer system has also been designed and is being fabricated.

Five improved baro switches are being fabricated. These will include a remote system that will set all switches at identical altitudes. A new baro switch design, using the basic element of a glide-bomb attachment from the Norden bombsight, is also being fabricated.

(J). The assignment of additional personnel has accelerated the instrumentation program for the 1951 tests. Preliminary proposals have been sent to Los Alamos for the instrument shelters, etc. Several types of commercially available end instruments are being bench-tested. During the next few weeks some instruments will be subjected to explosive shock waves at Los Alamos.

The automatic range tracking unit at Station R-2 has been rack-mounted and put into operation. Although the unit is operating efficiently, the final tests and modifications will probably not be completed during this next period because of the complexity of the project.

The Communications Section moved the radio receiving equipment from Building T-820 to a remote communications office in Building 824. The transmitters are still located in Building T-820, and their remote control circuits have been installed. The teletype machine used for communications between Sandia Laboratory and Salton Sea Test Base has been installed in the remote communications office.

The design and development of the automatic recording of radar slant-range data and its subsequent transmission by teletype has been curtailed pending specific or standardized recommendations by the Committee for Automatic Data Recording.

The new modified Askania flash-lighting system has been extensively tested and operated without a miss for 1200 flashes. This unit will be field-tested soon under actual drop conditions.

(C). Optional Measurements Division -- The impact camera manufactured by the Development Fabrication Department will not be used during the current drop schedule. It is felt that the camera should be thoroughly checked by both the Precision Shop and the Field Test Department before it is delivered to Salton Sea and placed in operation. The decision not to use this camera during the current drop schedule will enable the Precision Shop to accomplish refinements such as polishing the shutter disks.

The auto-focusing mechanisms have been installed on the tracking telescopes. The focusing and calibrating of the two telescopes, with tests to determine temperature corrections, required two weeks' work. The preliminary tests indicate that the modifications have enabled the instruments to measure attitude at all points of the trajectory.

The Development Fabrication Department has begun fabrication of the 12-inch f/10 Newtonian system, and it should be completed in October. SLF should complete the Cassegrain system in early November and may deliver the refractor later in the month. The Mk 21 3-inch naval gun carriage is being considered as a possible mount for these systems. One of these mounts will be obtained for testing.

The final focusing and adjustment of the radar phototheodolite is proceeding satisfactorily. It may be possible to use it during the next drop schedule.

The K-24 bases constructed at Sandia Laboratory were installed at Stations A-1 and A-3 on the new range at Salton Sea Test Base. Lights and mirror were added for two cameras at each station. These installations operated satisfactorily under simulated drop conditions. Personnel of the Field Photo Section mounted and levelled Askania pedestals at all four Askania stations on the new test range.

The photoelectric trigger units for the Askania phototheodolites have been turned over to the Optical Design Section for installation. In addition, a set of diaphragm stops was made and installed in the tube of the radar-screen camera to decrease reflections in the tube.

A single-pen Sanborn recorder has been modified to record both the incoming and return pulses of Askania phototheodolites.

The approximate computations made by the Optical Design Section of the solar systems and the elevation and azimuth systems for the optical instruments at each station proved so helpful that the Test Data Division was requested to make precise computations of this material.

Visual-aid material, which will be used at the forthcoming Telemetering Forum, has been prepared and includes both black and white photographs and 2 x 2-inch color slides.

(D). Telemetering Division. -- A relay net substitute for the baro net in F&F units has been designed for use during the Mk IV Mod 0 program. A request for telemetering the individual operation of twelve baro switches during the October schedule had led to the development of a 35-rps subcommutator that will give time-distance resolutions of ±30 feet. The discriminators in these test units will have a series of three low-pass filters, which were designed by the Development Section of the Telemetering Division, to eliminate the high-frequency hash that is in the discriminator output.

A minor modification in the 7-kc discriminator-output circuit that will be used during the Mk IV Mod 1 program will increase the frequency response of that channel to accommodate 5-rps subcommutation. This will increase the number of available channels in a single telemetering package from 43 to 62.

General circuits have been developed and tested for telemetering the time difference between the firing of the two gaps in an X-unit. Further work awaits the delivery of an X-unit and control panel so that tests may be performed under simulated operating conditions.

of the camera will vary for different azimuth and elevation angles. Determination of the exact position of the camera with respect to the antenna axes has been requested; a table of the co-ordinates of the nodal point of the camera will be computed when this information is received.

A study concerning methods of automatic data reductions and recording is being made to simplify reduction procedures. It is considered feasible to design an apparatus to be attached to all types of instrumentation that will store data in coded digital form rather than the present photographs or curves.

An RQT has been submitted for two machines made by the Telecomputing Corporation. One machine, the Telecomputing Askania Reader, is a device that reads Askania film by measuring the film automatically by means of moving systems of cross hairs to points on the film, and then punches the data in an IBM card, thus saving hand measurement and recording. The second machine is a device that establishes points on a graph from data on IBM cards. This equipment will print as many as 70 points per minute on a sheet of graph paper.

The local IBM representative has reported that the IBM Card-Programmed Electronic Calculator, which has been ordered for the Test Data Division, is scheduled for delivery during February 1950. Procedures are being considered for the use of this equipment. A training program has been set up to train two or three persons in the operation of the IBM key punch machine.

(G). Test Instruments Division. -- The Giannini gyro assemblies that will be used in the Mk IV Mod 0 test units have been modified by the Test Instruments Division with 2 K resistors in the input line to make them coincide with the latest telemetering circuit.

The Reeves gyro has been received and will be thoroughly tested for performance during the next thirty days. A more unitized structure of the whole assembly has been obtained by changing the mounting arrangement of the gyro assemblies to frame-embracing supports both fore and aft of the cases. A gyro stand has been procured which permits an attitude change of 360 degrees of roll, pitch, and yaw. A suitable mounting platform for the Reeves gyro is being fabricated.

The Electronics Section spent most of its time trouble-shooting circuits in the control room, installing antennas at the remote receiver and transmitter stations, and checking wiring in the camera buildings.

The equipment for the Maintenance Shop at Salton Sea Test Base has arrived with the exception of the 10-inch lathe. The shop is now equipped with a precision milling machine, a Do-All saw, a drill press, a sander, a tool and bit grinder, a Rotex punch, a sheet metal break, a set of sheet metal rolls, and a general purpose grinder. Personnel from the Development Fabrication Department directed the installation of the tools and instructed operators in their use.

Personnel of the Optical Measurements Division set up camera equipment such as Askanias, Mitchell cameras, and K-24 impact equipment. Many man-hours were required to fabricate mounting plates, collimate lenses, and make final adjustments on the equipment. Test film from all cameras was developed to check the operation of each piece of equipment.

(I). Staff Engineers. -- All range buildings at Salton Sea Test Base have been completed and are occupied by the Field Test Department. The installation of test equipment has been completed to the extent of meeting the minimum requirements for instrumentation during the October schedule of operations. The Diesel power units for operating the tracking telescope at remote sites have been delivered to Salton Sea Test Base and will be installed by personnel of the Field Test Department. Final inspection of the installations will be made by an engineer of the vendor.

As a result of conferences concerning the types of electrical outlet to be installed in Building A-19 it was decided that the types of outlet designated on the plans should be changed to comply with the standards established by the Electrical Requirements Committee.

The construction of the Remote Radio Receiver and Transmitter Buildings at Sandia Laboratory is behind schedule. These buildings should be ready for occupancy by the Communications Section in approximately 60 days. The materials required for the temporary remote control lines have been ordered. These temporary lines will be used until the permanent underground system is installed.

Building 835 has been occupied by the Test Facilities Division and sections of the Telemetering and Test Instruments Divisions. Two rooms of this building have been assigned to the Road Department until its building is completed.

Auxiliary instrument panels have been installed in all test aircraft that will be used during the October drop schedule so that various types of information, such as the attitude of the plane, may be obtained at the time of release. The panels include an air speed indicator, an altimeter, an artificial horizon, an clock, a free-air temperature gauge, a flux gate compass, a turn and bank indicator, an argon indicator light, and a B-2-type accelerometer.

The micrometeorological telemeter operated satisfactorily during the first series of tests; however, before this system may be used satisfactorily, further work will be required to calibrate the temperature and humidity instruments.

The determination of gravity at Salton Sea and vicinity has been completed, and a report will be issued soon.

(J). Property and Procurement. -- The property room at Salton Sea Test Base has been moved to the Instrument Laboratory. All unserviceable hand tools have been turned into salvage; replacements will be sent from Sandia Laboratory. The delicate precision tools have been cleaned, oiled, and stored in locked storage cabinets.

Cost accounting figures for B and BC property have been compiled for the last quarter.

MILITARY LIAISON DEPARTMENT (SLM)

(A). SLM conducted a presentation of proposals for ground insertion equipment, as requested by SLE so that from the three pieces of insertion equipment the one most suitable for military requirements could be selected. In order that the selection might be made efficiently two separate meetings were held. The first was attended by representatives of SLR, SLPE, SLE, and SL TAD to determine what course of action would be most profitable so far as engineering and procurement were concerned. The decisions reached in the Laboratory session were presented to a group of military personnel who determined the final requirements of AFSWP. Among the three proposals was one of using the in-flight insertion equipment; AFSWP decided that this equipment should also serve universally as ground insertion equipment. This was the plan upon which the Laboratory had agreed.

(B). SLM co-ordinated Laboratory participation in Operation Leaguer, a joint AFSWP-Air Force maneuver involving the use of the 40 weapon. Rear support was based at Baker; the forward inspection took place at Eielson Air Force Base near Fairbanks, Alaska. The operation is detailed in Report No. SLMS-154.

(C). In line with the policy of SLM of providing AFSWP with a complete indoctrination of the facilities and services available in this department, a conducted tour was scheduled for 38 men of the 560th Aviation Squadron. The demand for this service by other Special Weapons Units indicates that all units may eventually request such a tour.

(D). The facilities of SLM were placed at the disposal of personnel engaged in preparing illustrations for the revised version of the 1E20 detonator manual.

(E). At the Air Proving Ground at Eglin Air Force Base SLM co-ordinated Mk IV HE and joint AFSWP tests which included:

(1). Modification of facilities at Eglin Air Force Base. For this purpose $7000 was transferred from the AEC to the Air Proving Ground.

(2). Scheduling of test operations and instrumentation to meet the requirements of Los Alamos and Sandia Scientific Laboratories.

(3). Movement of equipment and personnel to Eglin Air Force Base.

(4). Liaison with all military agencies.

(5). Joint participation with AFSWP on an inert Mk IV simulated drop and humidity tests.

DEVELOPMENT FABRICATION DEPARTMENT (SLF)

(A). The October drop-test schedule included five F&F and nine ballistic units, and the work required of this department has been completed with the exception of possible fin modifications on seven of the ballistic units. The need for the modifications will be determined by the results obtained from the first two drops. The drops originally scheduled to start on October 10 were delayed and are now scheduled for October 20.

A work order has been received from the Road Department for 60 concrete-filled training spheres required by January 1, 1950. It is assumed that this is the first of the 150 spheres mentioned in last month's report. All preparations have been completed, and ten spheres have been poured to date. The job can be completed at the rate of 3 to 5 spheres per day provided that Road is able to furnish sufficient spheres. This job will not be permitted to interfere with drop-test programs or other work in the shop.

The third in-flight insertion assembly was completed and delivered on schedule; those parts fabricated for an additional seven assemblies were shipped to Royal where the assemblies will be completed. The experimental model of the new cartridge dolly was returned by SLE, after tests, for minor modifications and adjustments.

Several inquiries and requests have been received from technical departments concerning the possibility of obtaining magnesium castings from the SLF foundry. The techniques of making magnesium castings have been studied and the necessary materials ordered so that castings will soon be available from the foundry.

At the request of the technical departments, a study has been made of the fabrication processes of laminated glass; the basic materials have been ordered for simple lay-ups. It is hoped that arrangements can be made with an aircraft company to have two men from SLF work in a plastic fabricating shop in order to master the details of this type of construction.

The Precision Shop completed 28 job orders, including a dynamic wind-tunnel model and its associated mechanisms, a motor-driven vibrator, Abee antenna parts (experimental wave-guide items), a calibrated drum, a potential tester, and two gyro contactors.

The Inspection Section completed 33 inspection orders covering 442 pieces of equipment. Tool inspection has been started; a check of 20 thread gauges purchased from a lesser known gauge company resulted not only in the rejection of a number of gauges but raised the question as to the advisability of purchasing gauges from any but the better known manufacturers. During the inspection of tools in stock it was found that all cut taps failed to meet commercial tolerances. These are being replaced with commercial ground taps. In the future, ground taps will be specified in all requisitions.

The Electronic Fabricating Division completed 12 major and 170 minor semiproduction units as well as 5 major and 1 minor experimental electronic unit. Four technicians were assigned to Salton Sea Test Base for the past month; it is anticipated that two or three men will be required at that base for some time. The Standards and Instrument Repair Group completed 12 major and 21 minor jobs of electronic repair, calibration, and modification.

The Electronic Division has been given the assignment of installing and operating an experimental transformer fabrication shop to be located at the West Laboratory. Plans for this shop were initiated by SLA, and the equipment and material ordered by SLA will form the basis of this shop. Other departments are being solicited for information concerning their anticipated requirements for transformers. The shop will be set up adjacent to the machine shop at the West Laboratory, and the two will be operated in close co-ordination to make maximum use of the available facilities in the Machine Shop and the Sheet Metal Shop.

(B). Two new planners have been added to the staff of the Production Control Division, and the better organized Planning Section is making possible more efficient operation of the entire shop. In addition, since the exact status of each job is known, concentrated effort can be exerted where it is most needed.

(C). Building A-23a has been submitted for acceptance several times, but in each instance the inspectors have rejected it. The building is scheduled to be submitted again for inspection during the last week of October.

(D). Overtime within the department is still being held to a minimum, and with the exception of those technicians assigned to Salton Sea Test Base less than 200 hours of overtime has been worked in the past 30 days. The minimum of overtime work has resulted in improved efficiency. This, in addition to better planning and control, has enabled the department to reduce the backlog in all sections except in the Sheet Metal Shop and the Electronic Fabrication Shop. Scheduled completion dates are being more consistently met, and emergency work is being handled, in most cases, without resorting to overtime.

The leader of the Production Control Division and the Department Manager went to Project Royal to inspect the facilities and determine what type of work could be best subcontracted to that installation to relieve temporary congestion in the various SLF shops. At present Project Royal seems better equipped to handle machine shop work than electronic or sheet metal jobs. The amount of work that can be placed with Royal from the SLF shops will be limited by the delay involved as well as the lack of complete drawings and information.

SURVEILLANCE DEPARTMENT (SLS)

(A). Administration. -- A personnel report was made at the request of the Director to justify all present and future personnel requirements through fiscal year 1950. This report outlined the organization of the Surveillance Department by individual job classifications, and shows the personnel currently employed as 139, job offers accepted, 12, job offers not accepted, 5, PA-2's, 9, and future requirements, 56. These 56 employees are necessary to staff the chemical and metallurgical laboratories and the remote sites.

As of October 15, 1949, personnel numbered 149 with 16 offers of employment outstanding.

Building T-846 has been promised to SLS by November 1, 1949, to house the destructive surveillance laboratory, the chemical laboratory, and the metallurgical laboratory.

(B). Site Operations. -- The study of the optimum temperature for extending the shelf life of dry cell batteries stored at remote sites has been under investigation for several weeks. It has been concluded that temperatures lower than 40°F do extend shelf life. However, the cost of battery replacement compared with the cost of installing additional refrigeration equipment and maintenance clearly indicates that the most economical storage temperature remains at 40°F. Consequently specifications for outfitting storage sites with equipment that will hold the temperature at 40°F has been submitted to the Engineering Department.

Because the latest shipment of Road materiel occupied most of the available storage space at Site Baker, subsequent storage may be placed in aboveground igloos now under construction inasmuch as final plans have not been approved for the disposition of underground igloos 1, 2, and 3.

The Remote Surveillance Division has been occupied principally with the preparation of the following procedures:

(1). A work order procedure to authorize changes in stockpile.

(2). A supply procedure by which base spares and general expendable material at the sites may be continually replenished. This will include a monthly inventory to be taken at each site that, when compared with the maximum and minimum requirements, will form the basis for requisitioning sufficient stock to raise the stockpile to the maximum level. The trend of expenditures for base spares will be reported to SLX-5, which will readjust the authorizations for requisitioning base spares in line with the requirements.

All rework for Operation Leaguer was accomplished at the site. This was the second operation where rework was completed at the site. The operation was notable in that it uncovered the least number of discrepancies of any maneuver to date.

Two employees of the Remote Sites Division are at Site Charlie on semipermanent status preparing the nuclear section of the plant for use. One R Kit and considerable miscellaneous equipment have been sent to Charlie in preparation for the surveillance of nuclear components.

The 102 baro switches that were withdrawn from stockpile for determination of the temperature coefficient, as requested by the Research and Development Board, were reassociated with their respective units on October 14, 1949.

(C). Surveillance Program. -- A report is being prepared that will detail the surveillance operation program for the 31, 32, and 40 weapons. This report will be confined to the weapon only; subsequent surveillance reports will describe the kits and handling equipment. Included in this report will be the purpose, scope of activity, and the plan of operation of this program. Block diagrams will outline the flow of materiel and information during a complete surveillance inspection. According to this plan all weapons at each site will be surveyed within two years. Information

obtained will furnish material to the Analysis Section for the preparation of (1) a quantitative analysis, and (2) a qualitative analysis that will be subdivided into a chronological analysis, chronological records, trend curves, and life expectancy curves. Emanating from these studies, recommendations to insure increased serviceability of all components at all times will be forwarded to the Engineering Design, Quality Control, and production groups.

The status of the comprehensive and complex test equipment program necessary for the success of this plan is as follows:

(1). Development Projects.

(a). A prototype model of the differential relay tester has been completed and checked. The prototype and schematic drawings have been turned over to the Test Equipment Section for final drawings and production scheduling.

(b). A voltage divider for the pulse transformer tester is ready for production.

(c). A prototype unit of a new cable harness adapter has been developed and approved. Project Royal will manufacture the units.

(d). An experimental model of the choke checker is under construction, and drawings are being made. Work is delayed on this unit pending delivery of an engineering model of the DuMont Model 250A oscilloscope that may be used in conjunction with this tester.

(e). Development of a differential voltmeter to be used with the PRVM is 60 per cent complete. This voltmeter will measure differential choke peak voltages on either the Mk III or the Mk IV X-units.

(f). The development of the noise generator is delayed because commercial test equipment is lacking.

(g). A circuit has been devised to cycle baro switches, thereby eliminating the possibility of human error during quantity testing. The circuit is composed of two photoelectric cells, light sources, a manometer, a baro tester, and heavy duty relays.

(2). Current Projects.

(a). Junction box checkers for the 31 and 40 weapons are still in the design stage, and drawings are being made. Originally a checker was to have been designed that would test both the 31 and 40 weapons, but after due consideration it was deemed advisable to design a checker for each weapon.

(b). The sigma relay checker is being redesigned and a prototype built.

(c). The pulse transformer checker is awaiting approval of the final design and the development of a prototype. Considerable difficulty was experienced in the breadboard stage of design because the pulse transformer could not be disassembled from the X-unit under test conditions. Inductance of the leads confused the data, so the unit had to be redesigned.

(d). Production problems necessitated several modifications to the C&S assembly checker, battery box checker, clock box checker, and the X-unit wiring checker. These units are being produced by Bendix Pacific Division.

(e). Water Supply Groups U, V, and K were brought up to date because various items have been changed by procurement problems.

An investigation has been completed to determine the necessary portable tools required by the Surveillance Department to initiate a gauging program at the remote sites. These tools, when properly used, will insure the proper location of mating holes, concentricity of circular assemblies, fin alignment, and will chart the contour of the weapon. Equipment is being constructed with which the moment of inertia and center of gravity can be determined. The information obtained on contour, moment of inertia, and center of gravity will be carefully recorded during drops to obtain vital ballistic data.

The importance of expanding the Chemical Section into a service organization for the Laboratory becomes apparent as more and more work requests are received. The following are some typical projects undertaken by the Chemical Section.

(1). A test of moisture absorption and its effect upon the hardness of plastic parts of a Mk III firing switch subjected to a 270-hour temperature and humidity cycle was

requested by the Destructive Surveillance Division. Negligible moisture absorption and little effect on the hardness of plastic parts were observed.

(2). The identification and analysis of Blankrola requested by the Safety Division indicated that the material is 97 per cent solvent naphtha and 3 per cent rosin oil.

(3). The identification of material in the cracks of the floor of the HE rooms in Area 2 was also requested by the Safety Division and is in process.

(4). The analysis of the first set of plating-bath samples from SLF will be a regular control function performed once a month or oftener as required.

(5). The analysis of steel samples from SLF has been completed except for the determination of carbon content. The equipment needed for this determination is not yet available.

(6). The determination of the water solubility of adhesives in the cork lining of spheres was requested by the Surveillance Methods Division. No water-soluble adhesives were found.

(7). Tests of a new coal tar derivative, L-K-R, for possible use on concrete structures, packing cases, and components show that the material has amazing resistance to moisture, corrosion, and other types of deterioration.

(8). The procurement of equipment and materials necessary for tropicalization investigations, such as the length of active life of fungicides under storage conditions, effectiveness of currently used fungistatic agents, etc.

A proposed organization and cost estimate for equipment required for a chemical-metallurgical laboratory will be submitted to the Office of the Director for approval. This proposal is based on the following assumptions: (1) that the Surveillance Department is to become responsible for organizing and operating the metallurgical laboratory; (2) that the metallurgical laboratory along with the chemical laboratory, is to be a service organization for the Surveillance Department and eventually for the entire Laboratory responsible for determining the identity and quality of stock and the metallurgical surveillance of all metallic parts and components;

and (3) that the metallurgical laboratory could function most efficiently as an adjunct to the chemical laboratory.

The environmental test program was again curtailed during the past month because of the demands on SLA equipment and the installation of new equipment. Therefore, work was directed to the design and construction of test equipment for the life-test program of the Post-Mortem Section. The following equipment was designed and constructed by the Post-Mortem Section:

(1). X-Unit Tester. -- The X-unit tester in the M-26 gap tester was redesigned, rewired, and reconstructed to facilitate control of the PRVM and X-unit channel operation by normal manual means or in conjunction with a control cycling device such as is now used when X-unit components are life-tested. An independent external voltage input has been provided on the firing switch solenoid to furnish separate control of switch rotor speeds regardless of the magnitude of choke voltage. In the absence of an external solenoid voltage, a safety device is used to prevent the development of high voltage across the low-voltage switches and relays of the X-unit tester when the X-unit tester fires.

(2). Induced High-Potential Tester. -- This unit was designed and constructed, with its associated control and connection cables, for use with the M-26 gap tester when testing X-unit components under induced high potential. By the use of this unit it is possible to use either the internal X-unit channel in the M-26 gap tester or the external individual X-unit components may be connected into the circuit and given induced high-potential tests. A capacity high-voltage divider network has been incorporated into this unit to facilitate the use of the PRVM when using induced high voltage during a test. The standard PRVM has no provision for measuring the induced high voltage.

(3). Switch Cycling Selector Relay Network. -- This device was designed and constructed, with its associated control and connection cables, for use with the M-26 gap tester. This device facilitates the life cycling of X-unit components under test by increasing the duty cycle of the X-unit tester and making it possible to conduct tests on two firing switches simultaneously.

ROAD DEPARTMENT (SLR)

(A). The reorganization of SLR-1 has been completed. Although most required personnel have been obtained, the new employees must be trained considerably to make this a smooth-working organization. There is still evidence of some lack of appreciation for accounting methods, but this as well as other minor deviations from established procedures is being overcome through attentive administrative control.

(B). When SLR-2 checked specifications against product, it uncovered several deviations. As a result, inspections will be more rigid. Several shortages of necessary components have been disclosed; once this shortage is relieved it may be necessary to work overtime to maintain the production schedule.

(C). During the past month SLR-3 transported 4,155 tons of material, handled 20 plane loads of material, loaded and unloaded 33 box cars, and wrote 405 Receiving Reports.

(D). SLR-4 has met all its schedules in addition to disassembling major units that will be filled with concrete.

A critical analysis of the quality of packaging now being done has disclosed several discrepancies in packing sheets. SLPE has been requested to review the entire SOP for packing sheets.

(E). SLR-5 has limited storage space in its new location in Building T-835 so the incoming material will be handled in small quantities.

Seventy-five per cent of the 595 man-hours expended during the month were put on production, ten per cent on receiving inspection, and fifteen per cent on moving.

Special handling equipment has been analyzed with a view to reducing quantities on order. A breakdown by items of equipment assigned to each department has been made, and each department has been requested to review the breakdown and revise it downward, if possible.

(J). SLR-10 was transferred as a whole to SLPE on October 17. This division is to build an organization to perform source inspection. It is believed that because procurement through district contract offices has been changed to direct procurement under the new contractor, AEC men in both the New York office and the Los Angeles office might be available. These man have been contacted and the possibilities of employment discussed.

PRODUCTION ENGINEERING (SLPE)

(A). Administration. -- Mr. L. J. Biskner has assumed the duties of department manager. Departmental personnel number 85; 14 requests are outstanding. The rapid growth of the department is occasioned by the absorption of two divisions: SLR-10, Product Inspection, became SLPE-6 Product Inspection, and SLD-2, Manual Preparation, became SLPE-7, Manual Preparation, as of October 17.

The space problem is somewhat relieved by the move into the north and central wings of Building T-809 on October 17. The space in Building T-845 is not yet available. Building T-807 has been occupied, however.

Personnel is being screened for the Office of Production Control Co-ordinator. This office will probably be set up by November 1. Office space has been allocated in the north wing of Building T-809.

(B). SLPE-1. -- The new Production Drawing Release and Change Order form went into effect on September 26, replacing the Engineering Change Order and Production Drawing Release forms.

(C). SLPE-2. -- It is still impossible to perform sufficient liaison with the Engineering Department on new developments that are in the early design and experimental stages. However, adequate liaison was possible on some items, such as the alarm system, the battery load checker, the baro switch, the in-flight monitor, the in-flight insertion equipment, and the lightweight trap door. It is hoped that closer liaison will be possible as personnel increases.

Mk IV Cable Harness. -- The development of an improved 1E20 connector continues. A meeting was held at Los Alamos with representatives of GMX-7 to co-ordinate the work being done at both Laboratories on this problem.

Plastic clamps with spring clips will be issued soon to replace the present splints on the Mk IV cable harness.

Vendors of Mk IV cable harnesses have been instructed to use care in the selection of parts in order to avoid a tolerance build-up which would result in a poor connection with the shield braid. The revised Mod 5 1E20 connector incorporating soldered braid should be in production by November 14.

GMX-7, Los Alamos, has forwarded information on a new spring material for the DCO Mk I Mod 2 male connector that requires no plating. Raytheon will be asked to test this material.

PRVM. -- Tests of sample capacitors from the Condensor Product Company for use on the PRVM indicate that they are superior to those supplied with the units.

Agastat Delay Relays. -- The agastat delay relays using Silastic diaphragms have been received and tested for repeatability characteristics. The Silastic diaphragms performed satisfactorily under test and are non-nutrients for fungus. Final approval for replacement will not be given until the temperature and humidity tests are completed.

Battery Load Checker. -- A prototype of the redesigned battery load checker is being fabricated. The new design will be more convenient to operate and will obviate the use of the cable.

M-26 Gaps. -- The use of Bendix domes is being considered to increase the life of the Raytheon M-26-3 gaps. A report by EG&G on Raytheon gaps using these domes has been received.

Archie. -- Coded information for AR-10A plug-in lines of the Archie has been furnished to the manufacturer so that serial numbers, etc, might be stenciled at the manufacturer's plant.

Dipole Tripod. -- Design release has been given on the dipole tripod for use in Kit 40A.

In-Flight Insertion Fixtures. -- Conditional Production Releases have been issued for 50 sets of in-flight insertion equipment that Royal will attempt to produce by January 1.

Seven prototypes are now being built there. Final Production Releases have been issued on the lighweight trap door. Production Releases on the rest of the components will be processed as rapidly as drawing releases are received from the Engineering Department.

Project Tee. -- As a result of a stop order issued by the Road Department, discrepancies in some major mechanical components were discussed at a meeting of representatives from Project Tee, SLPE-2, and Road. All drawings being used at Tee for manufacturing purposes have been reviewed, and general agreement was reached with representatives from Tee on various minor changes, consisting principally of revision of tolerances. To bring the drawings into line with good manufacturing practice and into agreement with parts that have been received and accepted, these changes have been incorporated in Production Engineering Change Requests. The drawings will be corrected soon.

Containers. -- Because of sealing difficulties in the containers for the cartridges, X-units, and load rings, the production of all items has been canceled. The sealing arrangement should be redesigned and production resumed by October 21. The present containers are usable if sealed with strippable film.

Wishbone Trailer. -- A wishbone trailer with a modified drawbar has been approved by AFSWP and a Production Release for it issued.

Unit Tie-Downs. -- Prototypes of unit tie-downs designed by SLE and SLPE were tested on railroad freight cars. The SLE prototype failed, so SLE is fabricating a new prototype. The SLPE prototype withstood the test satisfactorily; minor improvements are being made by SLF.

Desiccant Reactivation Bay. -- A reactivation bay in SLR-4, as proposed by SLPE, has been approved by the Director. The Special Projects Section is co-operating with SLR in the procurement of equipment.

Noninflatable Gasket. -- Arrangements have been made with SLR to supply SLE-3 with four production units on which gasket tests will be run. Thirty-one noninflatable gaskets fabricated at Project Tee were turned over to SLE-3 for evaluation.

Sticking Trap Door Charges. -- As a possible remedy for the problem of sticking trap door charges, 150 linear feet of 36-inch polyethylene-coated paper manufactured according to the specifications of SLE were received for evaluation.

MU Box. -- The metal MU box design, as requested by SLS-1, has been completed. Shop drawings for a prototype box are being completed in SLPE-3.

Specifications for Items Formerly Procured by Project Tee. -- Certain items formerly procured on a catalog basis shall be ordered by their test properties as defined by a commercial laboratory. The Special Projects Section has supplied SLCL with test quantities of cork, sponge rubber, blotter paper, and felt, as well as the definitive ASTM tests to be performed thereon. As soon as the test results are received, specifications will be prepared so that these items might be procured on Government bid.

(D). SLPE-3. -- The parts list file of the 40 master file is 30 per cent completed. This parts list will consist of two cross-indexed Kardex units. Block file No. 1 is nearly completed. It will contain a complete set of prints for each block.

The designs of the following equipment have been completed: the mouse trap polar cap and lightweight polar cap with dummy plug, the modified drawbar for the wishbone trailer, the prototype of the battery load tester, and load test meter, SKPE 3-1261.

The following equipment is being redesigned: the resistor hook-up for the hi pot tester and the split band checking fixture, 5Y-15129 E1.

The design of the following equipment has been started: the MU box and the handling sling for the split band.

(E). SLPE-4. -- The Sugar operation and environmental testing of operational test equipment have been the major activities of SLPE-4. The following specifications and procedures have been processed: the Sugar acceptance procedure for the mounting flange assembly; the production specification for the Mk IV junction box relay net; the revision of the production specification for the Y-6000 C-4

desiccator; the prototypes of the cable checkers for 40 gadget cables (before-and-after assembly), and the acceptance procedure for the baro switch and its test equipment.

Environmental tests have been made on the following items: PRVM, JBT Mk II Mod 0, HPT resistor, and the JBT Mk I Mod 0 carrying case.

A checker for the FTB Mk IV Mod 0 has been designed, and a prototype is being constructed. A sealing method for the 40 gadget has been established and sent to SLPE-2 for evaluation.

(F). SLPE-5. -- A report on the MBCA Cataloging plan was submitted to the Director. After the plan was approved, work was started to establish an administrative group, working committees with AFSWP, and procedures for co-ordinating and establishing federal stock numbers under the MBCA.

CONTRACTS LIAISON DEPARTMENT (SLCL)

(A). The following items handled by the Component Section were outstanding:

Baro Switches. -- Delivery of these items was expedited to satisfy September Road requirements that were increased after this order was placed.

X-Units. -- All orders were rechecked to verify that all items were on order. Discrepancies have been called to the attention of the Road Department for correction. Change orders are being written.

1E20 Connectors. -- Production Engineering wished to halt production on this item because of a build-up of tolerances when the items are manufactured according to the drawings. After a meeting with representatives of Sandia and Los Alamos Laboratories it was decided that careful inspection of these items at the factory would be sufficient without changing the design of the connector. A redesigned connector will soon be released by Sandia and Los Alamos Laboratories.

Junction Boxes. -- All old orders on the junction boxes have been completed. Operadio should meet the delivery schedules on the new order.

Clocks. -- An order is being placed for 102 clocks and all component parts necessary to complete part of the entire production order.

AFSWP requirements for all orders have been increased; change orders requesting prices on these additions are being processed.

The Test Equipment Section handled the following items during the report period:

The responsibility for Archies was transferred from the Component Section to the Test Equipment Section, and efforts are being made to locate and buy additional Archies to meet production requirements.

Meetings were held to improve the Abee production schedules. Representatives of the Engineering and Contracts Liaison Departments met with the representatives of Motorola in Chicago on September 29 to discuss the specifications and delivery schedules agreed upon by Motorola. A special meeting was called at Sandia Laboratory on October 6 to discuss ways of improving the production schedule on this unit. Now the production prototype package should be completed about January 1, 1950. Thus production should be able to start by July 1, 1950.

The PRVM is still undergoing tests and has not yet been accepted. The JBT cases are satisfactory and are being produced.

Friez baro switches were released for production tooling.

(B). The following items were handled by the Mechanical Division, SLCL-2:

The manufacture of desiccators was delayed during the past month as a result of design changes necessitated by the failure of desiccators to meet specifications. All changes have been incorporated, and production is again under way. The manufacturer should be able to meet the production schedule by the end of next month.

The cartridge container, the cartridge load ring, and the X-unit container failed to meet specification as a result of a poor gasket seal. This condition was remedied by redesign, and production was again started. The contractor should be able to meet Laboratory requirements within 60 days.

Production of lightweight drop tanks, which are being manufactured by Northrop Aircraft, Inc, is progressing as rapidly as possible. Tank No. 8 scheduled for drop tests at Wright-Patterson Air Force Base has been promised for delivery at Sandia Laboratory about November 4, which will allow suf-

At the request of the Military and with the approval of the Manual Board SLPE-7 is to undertake preparation of a separate series of maintenance manuals for the various items of test equipment.

(C). The division leader and one member of the Photographic and Reproduction Division (SLD-3), and the division leader of the Sound Reproduction Division (SLD-7) attended the West Coast meeting of the Society of Motion Picture Engineers, where much valuable and practical information was obtained regarding new techniques and practices in the field. A visit was also made to the AAF motion picture center at Lookout Mountain to obtain additional scenes of the Sandstone operation to add to the assembly films being prepared by SLD-3 and SLD-7.

Considerable work has been done on improving both the quality and speed of reproduction of still photographs for reports and manuals.

(D). The Art and Drafting Division (SLD-4) has completed the usual large volume of routine work for all departments of the Laboratory. A new silk-screen security poster has been designed and printed for use by SLD-8.

(E). The Library (SLD-5) has received the first of the bound volumes of periodicals from the University of New Mexico bindery, and it is anticipated that all binding will be completed by the end of the year.

The librarian has recently visited and examined the collections at the library of the Hoover Institute of War, Revolution, and Peace at Stanford University, the library of the University of California at Berkeley, the public libraries of San Francisco and Berkeley, and the library of the Radiation Laboratory at Berkeley.

(F). The Editorial Division (SLD-6) is completing the material for the SLSD course in Report Writing which it hopes to present for critique on or about November 10. Material for the Glossary of Sandia Laboratory Terms is ready for approval by the Classification Board prior to issuance as an official document.

(G). Although modification of Unit E at the West Lab, to be occupied by the Sound Reproduction Division (SLD-7) continues but slowly, installation of the sound recording equipment should begin within another 30 days. All the equipment has now been received.

(H). The Compilation of Sandia Laboratory Charter and Regulations, a compilation of all rules and regulations promulgated by the Security Liaison Committee, has been approved by the Committee and distributed throughout the Laboratory. The Committee has also approved a placard entitled "Commendation for Security," which is to be issued to all divisions having no security violations during each one-month period.

A review of classified blank forms was made to establish regulations governing violations regarding their use.

STAFF DEVELOPMENT DEPARTMENT (SLSD)

(A). Use of the old-style orientation kit for general orientation of new employees by the Administrative Training Division (SLSD-1) has been discontinued; the recently published Employees Handbook is being used in its stead. Copies of the Employees Handbook are also being distributed to all incumbent employees.

Approximately 170 persons attended general orientation during the past report period.

(B). The status of courses presented by the Technical Training Division (SLSD-2) is as follows:

SLSD-2-3 -- Warehousing. -- This course has now been presented to all interested personnel. Twenty-four persons attended during the last report period.

SLSD-2-4 -- Geometry. -- Two groups of 15 persons each have been scheduled for its course, and a third group will be scheduled to begin it on October 31.

SLSD-2-5 -- Trigonometry. -- Presentation of this course, for which course SLSD-2-4 is a prerequisite, is scheduled to begin for the first group on November 1.

SLSD-2-11 -- Inspection, Electrical Components and Test Equipment. -- A critique of this course was held before members of SLS, SLR, and AFSWP Tech Training. As soon as criticisms are evaluated and course material is revised, the course will be scheduled.

A series of lectures on instrumentation (meters) was presented by Mr. F. X. Lamb of the Western Instrument Co on October 4, 5, and 6 to more than 40 persons from SLF, SLS, SLE, SLA, SLM, SLD, SLR, SLPE, SLP, SLCL, and SLT. Mr. J. M. Whittenton of the General Electric Co presented a

lecture on the same subject on October 20. Arrangements are being made to present similar lectures by guest speakers from other organizations in the near future.

On October 18 Mr. C. C. Potter of SLP-1 presented a lecture on technical procurement to 25 persons.

A film on high-impact shock and shock tests was presented to a group of 14 persons in SLE, SLA, SLS, and SLPE.

(C). Revisions to the Office Procedures Manual have been distributed; 27 persons have attended the Office Practices Course during the report period.

ADMINISTRATION DEPARTMENT (SLX)

(A). Requisitions for employment have decreased considerably. Most nonprofessional positions have been filled, but approximately 25 vacancies still exist for professional personnel. During the month the Employment Office conducted 412 personal interviews; 82 persons were hired, and 19 employees terminated. The total strength as of October 14 was 1,716 employees.

(B). Manuals including the job descriptions of all graded positions in the repective departments have been prepared for each department. It is believed that these will prove valuable in maintaining an equitable salary structure and proper evaluation of employees within the departments. A representative of the Health Group is assisting the Wage Administration Office in making a review of radioactive and explosive hazards for all positions covered by the graded series.

(C). The Housing Office obtained 18 apartments, 8 houses, and 14 rooms in Albuquerque and vicinity for new employees. Seven employees were assisted in the purchase of homes, and 94 were advised of the general housing situation in this area.

The Federal Credit Union examiner made his first annual examination of the Credit Union and complimented the directors on the splendid growth shown during their first year of operation. At present, the Credit Union has 266 members and $10,800 in deposits.

(D). Mr. Oscar Smith, Chief, AEC Labor Relations, Washington, DC, met with the Industrial Relations Committee to discuss proposed AEC policies and procedures. As a result of these discussions a subcommittee was appointed to prepare recommendations that will be forwarded to Washington for consideration.

FISCAL ADMINISTRATION DEPARTMENT (SLY)

Mr. D. H. Freshman has reported as division leader of the newly formed Auditing Section (SLY-6). Mr. Freshman has had considerable background in internal and field audit work and is expected to take over supervision of this phase of work under the new contractor. Several discussions have been held with Mr. J. A. Dempsey of the Western Electric Co, and it is believed that with the acquisition of interim payroll and voucher checks there will be no difficulty in preparing payrolls for the new corporation, beginning November 1 at this location. Likewise, payment of invoices for procurement by the new contractor will begin November 1 from this location As soon as the check forms have been resolved, orders will be placed with vendors for continuous check forms to be used with the IBM machines.

Discussions have been held with representatives of Day and Zimmerman Engineers, and Lybrand, Ross Brothers, and Montgomery, Accountants, concerning changes in property accounting as proposed by the Controllers Office in Washington for use by all AEC Field Offices and fully integrated contractors. Preliminary work along these lines is progressing satisfactorily, and it is hoped that it will be completed in the near future.

SLY-1. -- Every effort has been made to bring budget figures up to date. The various report forms and teletypes are now routed through the Budget Office from AEC, thereby gaining as much as a month in the date of some obligational figures. The situation is still far from satisfactory, especially concerning figures from the New York Office. An effort has been made to get some figures beyond our present requisition estimates regarding Royal procurement -- so far without success, since the comptroller at Royal states that, lacking experience, they are not yet in a position to quote costs before production is completed.

A new requirement written into the appropriation act makes it mandatory that equipment purchases be segregated from other funds. The use of the equipment cost codes to obtain this segregation was attempted, but exceptions are so numerous in the present coding system that it is useless for our purpose. It was attempted to place our own interpretation on what is equipment, but since the classification of so many items depends on final use rather than on the nature of the item, this method is not entirely satisfactory, and a means of coding requisitions at the source is now being considered.

Mr. Simpson, formerly an accountant for the Rio Grande Broadcasting Company, reported this month; he is to act as assistant to the division leader.

SLY-2. -- The Cost Accounting Division has eliminated the backlog of postings noted in our last report and postings are now on a current basis.

Reconciliation of the Shipments in Transit Report from Los Angeles is still in process; completion of this audit will probably require another five or six weeks.

The special reports of stock issues should be brought up to date during this next month. Requests for detailed information on certain items in the reports have been received, indicating that at least some divisions in the Laboratory are making use of this report.

SLY-3. -- All phases of property accounting are now on a current basis except for a small backlog of posting caused by the moving of the division from the old office in Building 830 to the new location in Building 860.

The Road Stock Records Section is posting and pricing receiving reports within 24 hours of receipt. Posting of issues is slightly behind schedule owing to zero balances. Lists of such items have been forwarded to the Road Department for correction.

The postings in General Stock Account (14200), Metal Stocks (14206), Miscellaneous (14212), and Maintenance (14215) are current. The physical inventory of General Stocks is approximately 90 per cent complete. It is contemplated that this inventory will be completed and all adjustments prepared and posted by November 1, 1949.

The records of the Salvage Section reflect receipt of $5,110,385.03 worth of excess and salvage material from August 1 to date. Of this amount a total of $1,580,312.25 has been disposed of. Excess lists have been prepared for an additional $2,558,665.90, leaving $971,496.88 to be disposed of. It is believed this will be accomplished by November 1. Smelting of classified scrap aluminum began during the week of October 9; to date approximately 23,020 pounds of reclaimed aluminum have been turned over to the smelter contractor. The contract is approximately 50 per cent complete and should be completed by November 1, at which time the project of cutting up classified scrap iron and other metals will begin.

During the past month the Property Appraisal Report for Day and Zimmerman, Engineers, was completed. This report includes the re-evaluation and matching of components to the original items. Also the report on costs of installation, which was given to the Maintenance Division, has been completed with the exception of approximately 16 items, for which no paper work has been returned to this section.

The reclassification of equipment to expense has been completed, and all reports have been posted to the Capital Assets Records.

The Property Appraisal Report reflects that equipment in use and in the different stocks at this Laboratory is valued at $8,202,300 and equipment reclassified to expense at $169,289. The total of the report is $8,371,589, reflecting a discrepancy of $1,001,827 in accordance with the Cost Report of June 30, 1949, which gives the total value of equipment as $9,373,416. However, this discrepancy can be accounted for in the re-evaluation of the estimated prices in the original inventory.

At present this section is making a study of depreciation of equipment at this Laboratory as requested by Day and Zimmerman, Engineers. Revisions are also being made on all department shortage lists since the Property Appraisal Report has been completed.

The Voucher Control and File Sections have processed a total of 8057 property vouchers during the month.

USB's	Univ. of Calif.	638
LSB's	AEC, Los Angeles	22
NSB's	AEC, New York	8
ASB's	AEC, Los Alamos (OSFDO)	40
YSB's	Univ. of Calif., Los Alamos	3
ZSB's	Local Purchases, Univ. of Calif.	86
IB's	Requests for Information, AEC & Univ. of Calif.	27
	TOTAL	824

From September 10, 1949 through October 14, 1949, the dollar value of requisitions prepared by the Procurement Division was as follows:

USB	$210,708.44
LSB	51,888.58
NSB	76,061.46
ASB	30,216.40
YSB	285.00
ZSB	4,781.40

Nine change orders and nine cancellations were prepared to amend requisitions placed with AEC purchasing offices, resulting in reductions of $26,607.40; 37 change orders and 37 cancellations were forwarded to the University of California purchasing offices, resulting in reductions of $1,845.43.

(B). The Shipping and Receiving Division received 6,603 items, weighing 1,143,074 pounds; and shipped 128,037 pounds of material from the laboratory, of which 37,504 pounds of salvage material was shipped to the AEC salvage depot in Santa Fe. The division prepared 1,475 Receiving Reports, received 62 and forwarded 154 teletypes.

(C). The physical inventory of General Stores is nearing completion.

The Reorder Section has written 95 RQT's for 167 stock ite and typed and sent to SLY-3 374 pages of inventory adjustment reports. Five carloads of standard gray safe files, storage cabinets, and metal furniture have been received. Approximately one-third of this furniture has been issued, and the remainder stored in Building T-944.

BUILDING AND MAINTENANCE DEPARTMENT (SLZ)

(A). The Machine Shop (A-232) has not yet been occupied; the ceiling in one room and the floors did not pass inspection. These deficiencies should be corrected by October 26, however.

The engineering towers are in use, but a power substation is still to be installed when it is received by the contractor.

Work on the new Road warehouse is somewhat behind schedule, and the completion date has now been set at February 5, 1950.

Structural steel is practically all erected for Building A-17, and completion of this facility is expected by May 17, 1950.

Progress is slow on the gas cylinder and paint storage buildings. Completion had been scheduled for October 16, and no new date has been determined.

Progress on the AEC Recreation Center has been delayed, but all steel is erected and the completion date remains at February 24, 1950.

The Stage IV Housing is progressing on schedule. Plumbing, heating, and electrical work is being roughed in at present. Completion is scheduled for March 1950.

The contractor has poured foundations for the second phase of the new machine shop, and completion is still scheduled for April 1950. The completion date for the "C" section has been set for October 1950.

Work has been slow on the housing area landscaping contract. Some lawns are now seeded, and approximately one third of the sprinkler systems are installed. The completion date is October 1950.