

Purchase Request, 117L

WDTCOP

WDTR

4 Sep 56  
Lt Col Riepe/eh/1344

1. It is requested that a purchase request be prepared for the procurement of the work described in the attached Exhibit A, "Statement of Work, 117L".
2. This procurement is submitted in accordance with Headquarters, Air Research and Development Command SDD 117L, 17 August 1956, "ARDC Systems Development Directive Advanced Reconnaissance System".
3. This system is being funded under line item 621-117L. FY 57 funds available for the initiation of this program are \$3,000,000.
4. The maintenance of special security instructions on information relating to development progress, system status, and planned operational capabilities is directed by the ARDC. A Master Security Classification Guide for WS 117L (DD Form 254) is attached. A roster will be maintained by the Assistant for WS 117L of individuals whose position requires overall knowledge of the sensitive aspects of the 117L development program. "Need-to-know" of any individual requesting information on WS 117L will be determined by referral to this roster.
5. Special instructions to the buyer:
  - a. It is requested that the contractor submit a tabular budgetary planning schedule as part of his proposal. The schedule is to reflect, on a quarterly basis through the end of the contract, detailed estimates, by subsystem and subcontract, the funds required by program, (i.e., 600, 100, etc.) and series, (i.e., 620, 150, etc.)
  - b. It is requested that the proposal show definitive milestones, to be accomplished during the first year of this program. These milestones shall be broken down by subsystem and program and include such items as: scheduled starting and completion dates, development hardware schedules, the dates on which government furnished equipment must be provided, the dates by which industrial facilities are required, the dates on which the contract items will be delivered to the government, the dates on which decisions on courses of action must be made, and other significant phasing and timing points.

DOWNGRADED AT 12 YEAR  
INTERVALS; NO AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

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[REDACTED] [REDACTED]  
WDTR, COMMENT No. 1 cont'd, Subject: Purchase Request, 117L

6. The present contract between the U. S. Air Force and the Lockheed Aircraft Corporation (AF 33(616)-3105) expires 30 September 1956. It is requested that the new contract be initiated to be effective as of 1 October 1956.

**SIGNED**

2. Incls:

1. Master Security Classification  
Guide (Uncl.) 3 cys. (Omitted) . . .

2. Statement of Work 117L (SECRET)  
5 cys.

FREDERIC C. E. ODER  
Lt Colonel, USAF  
Assistant for WS 117L  
Technical Operations

## STATEMENT OF WORK - 117L

**ITEM I:** The Lockheed Aircraft Corporation, Missile Systems Division shall plan and conduct a program of research and development designed to accomplish the objectives outlined in Western Development Division Development Plan, WS 117L, dated 2 April 1956. This program shall include all phases of effort, such as study, review, evaluation, design, (i.e. breadboard, experimental and production prototype models) laboratory test, flight test and design refinement. These phases of effort shall include work on all subsystems and programs described in Tab 1, "General Design Specification" of the WS 117L Development Plan referenced above. The results of this work shall be incorporated in reports to be submitted as required in Item VIII.

The SM 65 less nose cone, certain standard stock items to be determined at a later date, government test facilities and services, and the nuclear auxiliary power subsystem will be considered government furnished equipment.

**ITEM II:** The work described in Item I will result in criteria which will define those elements of the weapon system described in Development Plan WS 117L and which, when combined with the criteria developed by subcontractors, will provide complete definition of the weapon system. Criteria will be adequate to provide for detail design of all elements of the programs described in Tab 1, "General Design Specifications, Part I B.3, programs I through VIII; and all subsystems described in Tab 1, Part II, Description, Paragraph A through K, except that excluded in Item I.

The criteria established are to include specifications which provide descriptions and performance and physical standards for each article of each element. These specifications are to be revised at four-month intervals throughout the life of the contract. Each issue of each specification is to be submitted for verification of its compatibility with the weapon system. Specifications are to be in accordance with MIL-S-8048, 28 November 1952, "Requirement for Preparation of Pilotless Aircraft Weapon System Specification", and MIL-S-8169, 5 March 1953, "Requirements for the Preparation of Guided Missile Model Specifications". The final issue of each specification is to incorporate the provisions of MIL-W-7622, 1 August 1952, "General Specification for Pilotless Aircraft Systems", and MIL-N-8555, 31 December 1952, "General Specification for Design and Construction of Guided Missiles", except for deviations as may be established by the procuring contracting officer. Data submitted shall consist of one (1) reproducible copy and five (5) blue-line print copies.

**ITEM III:** Perform detail design and carry out detail design revisions using the criteria produced under Item II to result in drawings and other manufacturing information.

a. The drawings and manufacturing information are to be produced for the fabrication of the articles which are to serve as experimental equipment to be used for the conduct of the test program of Item V.

[REDACTED] [REDACTED]

b. Contractor shall furnish engineering data in accordance with (MOPT Exhibit) covering all articles designated in Item 1.

**ITEM IV:** Define completely the requirements, including performance standards, modification and physical installations details of the booster system for the air vehicle designed under Item III. The definition is to be adequate to assure complete compatibility of the SM 65 less nose cone as a booster subsystem and the air vehicle designed under Item 3 above. Design compromises which require modification of the government furnished booster shall be subject to the approval of the Air Force.

The contractor shall furnish data which is the initial definition of the interface function of the 117L system (s) and the WS 107A-1 booster. Space availability including envelope dimensions, structural attachment provisions, wt., center of gravity location, external power availability and limitations and other design information necessary to insure compatibility of WS 117L to the SM 65 will be provided.

Contractor shall furnish revised issues of data defining the requirements as necessary. Data shall consist of one (1) reproducible direct-reading Vandyke in accordance with current issue of Spec. MIL-D5480, and five (5) blue-line print copies.

Contractor shall furnish a final issue of data defining the requirements for each program as related to the weapon systems as finally established under Item III.

**ITEM V:** Fabricate and test experimental articles of the system and subsystems in accordance with the plan established under Item I, and the criteria and design specifications established under Items II, III and IV. Provide factory support work and operational and maintenance supply services. Provide instrumentation and data recording equipment and ground equipment articles except for that supplied as government furnished property. Operate and maintain instrumentation and data recording equipment and articles of ground equipment. Perform data reduction and analysis. Provide engineering service at the test site and engineering liaison as necessary.

**ITEM VI:** The contractor will notify the procuring contracting officer of his intention to initiate any study or engineering development by sub-contract, or the procurement of any major item of equipment costing over \$25,000. This notice will be accompanied by a proposed specification and/or work statement, together with a list of proposed sub-contractors. Unless advised to the contrary by the procuring contracting officer in thirty (30) days, the contractor may proceed to obtain bids. Final selection of the sub-contractor will be approved by the Western Development Division and the procuring contracting officer. Placement of a sub-contract shall be governed by the provisions of ASPR 7-203.8

[REDACTED]

Requirements for standard item of Air Force equipment will be G.F.P.. The contractor shall make these requirements known to the procuring contracting officer with model specifications, modification specifications and number required.

**ITEM VII: Program Management** - The success of this program demands a maximum joint effort by industry, science and the military - and in particular a broad industrial base will be required. It is necessary that an unusually competent military technical group retain management responsibility and provide overall management for the program. The Western Development Division, Air Research and Development Command, Ballistic Missiles Office has been designated to provide necessary management control. This team will provide the technical group which will, with the assistance of service and consultants from the Air Research and Development Command center, and others as required, be responsible for over-all technical direction of the Lockheed Aircraft Corporation as the Prime System Contractor WS 117L.

**ITEM VIII:** The reports required of the contractor will be of three categories: Monthly, Semi-annual and Special. Specific report format, where required, will be followed by the contractor according to samples which appear in this exhibit. Frequency of each report, and total number of copies required are summarized below:

<u>Report</u>	<u>Para</u>	<u>Frequency</u>	<u>No. Copies</u>
<b>I. MONTHLY REPORTS</b>			
Technical Program Report	I A	Monthly	<u>50</u>
Management Information Report	I B	Monthly	<u>10</u>
<b>II. SEMI-ANNUAL REPORTS</b>			
Technical Program Report	II A	Semi-annually	<u>50</u>
Management Information Report	II B	Semi-annually	<u>10</u>
<b>III. SPECIAL REPORTS</b>			
Facility Master Plan Report	III A	One time + as required	<u>25</u>
Data and Support Requirements Report	III B	One time + as required	<u>15</u>
Initial Funding Report	III C	One time + as required	<u>10</u>
Initial Bibliography	III D	One time + as required	<u>AS STATED</u>
Final Report	III E	One time	<u>AS DETERMINED</u>
Film Report	III F	As required	<u>AS STATED</u>
Detail Weight + Balance Report	III G	As required	<u>10</u>

<u>Report</u>	<u>Para.</u>	<u>Frequency</u>	<u>No. Copies</u>
<b>III. SPECIAL REPORTS (continued)</b>			
Coordination Letter Reports	III H	As required	<u>AS STATED</u>
Red Flag Report	III I	As required	<u>AS STATED</u>
Other Reports	III J	As required	<u>AS DETERMINED</u>
Exchange of Reports	III K	As required	<u>AS STATED</u>

All reports listed above, except Red Flag Reports and Film Reports will be addressed to:

Commander  
Western Development Division  
ATTN: WDSIT  
P.O. Box 262  
Inglewood, California

Red Flag Reports, as described in Section III-I, will be addressed to:

Commander  
Western Development Division  
Inglewood, California

Film Reports, as described in Section III F, will be addressed to:

Commander  
Western Development Division  
ATTN: Platorial Services Office  
P.O. Box 262  
Inglewood, California

All reports will have attached as an addendum a distribution list of that report.

In the event that certain reports should be hand-carried to this headquarters, these reports should be delivered to WDSIT for distribution.

**I. MONTHLY REPORTS**

**A. TECHNICAL PROGRAM REPORT**

1. As of Date: Unless otherwise specified, close of last working day of each month.
2. Date Report Due: On or before the 15th of the following month. Report to be mailed.
3. No. of Copies 50

4. Sections of Report:

a. Summary Progress Information

- (1) Description of Contents: The purpose of this section is to provide the program management with technical progress information.
- (a) The report should be a brief, written report of significant program progress during the preceding thirty (30) days. The scope of this report includes the contractor and his sub-contractors associated with the program.
  - (b) Particular attention should be given to reporting progress on major development milestones.
  - (c) "Red Flag" information, described in paragraph II-I should be confirmed and detailed if applicable to the technical areas; if applicable to the management information areas it should be included in that report.
  - (d) Any known areas of potential technical difficulty should be reported, explained, and the course of action to be taken indicated or requested.
  - (e) A separate section will be devoted to the subject of ground support equipment. Progress, problem areas, technical difficulties, requests for assistance and hardware deliveries will be covered as a minimum.
  - (f) Progress on the reliability program specified in paragraph II.A. will be reported.
  - (g) In order that the contents of this section may be easily and logically separated, the technical progress information will be divided into sub-sections, and each sub-section will correspond to a sub-system of WS 117L. These sub-systems are as follows:

1. Spaceframe
2. Propulsion
3. Auxiliary Power
4. Guidance
5. Control
6. Visual Reconnaissance
7. Ferret Reconnaissance
8. Infrared Reconnaissance
9. Ground-Space Communications
10. Data Processing and Intelligence Dissemination

- [REDACTED]
- (2) Format: No formal format has been established, but standardization from one report to the next is desired.

Weight and Balance Status

- (1) As of Date: Unless otherwise specified, close of last working day of each month.
- (2) Description of Contents: The purpose of this section is to provide the program management with continuing weight and balance information for all airborne components developed by the contractors under terms of the contract as well as provide interchange of information among associate contractors for design purposes.
- (a) The report will be prepared in accordance with Mil-Std-176 which is a part of Mil-A-3947, except that the submittal will be on a monthly instead of bimonthly basis.
- (b) If there is no change from the previous report, a statement to that effect will be submitted under Weight and Balance Status in the Monthly Technical Report.
- (3) Format: Explanation of weight and balance information will be contained in the Weight and Balance Section of the Monthly Technical Report. Items will be identified according to missile series.
- (4) Distribution: In addition to normal distribution of the Monthly Technical Report, copies of the forms required by Mil-A-3947 together with any explanation required will be sent to associate contractors as directed by the contracting officer.

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c. Facility Progress Information

- (1) Description of Contents: The purpose of this section is to provide the program management with progress, and in particular, lack of progress information concerning all facility areas and items listed in the Facility Master Plan (refer to Paragraph III.A, "Facility Master Plan Report").
- (a) The report will be a brief, narrative summary to indicate and explain all facility areas and items which have fallen behind the program schedule. These items should be related to the facility milestones of the Facility Master Plan, as explained in paragraph III.A.4.b. The report will include a statement that all other facility areas and items are on schedule, if applicable.
- (b) This section will set forth any potential delay areas, any assistance that might be rendered by the WDD, and any recommended corrective action proposed by the contractor in order to meet program schedules.
- (c) The report will indicate whenever total facility expenditures to date, or those contemplated within 90 days, will exceed programmed commitment sums. This date is informative only and not in lieu of formal action under the contract to acquire additional funds.
- (2) Format: No special format required. Standardisation from one report to the next is desired.

d. Electrical Power Requirement Section

- (1) Description of Contents: The contractor shall submit as part of the monthly program report complete information on electrical power required for all airborne items. Power required for instrumentation for test flights (as distinguished from power required by the basic equipment) shall be separately identified and totaled. If there is no change in the situation reported in the previous month, a statement to this effect may be submitted in lieu of a new action. The information to be reported shall include such items listed below as are appropriate as well as additional requirements that must be met by the power source:
- (a) Nominal quantities of a.c. and d.c. power.

- (b) Required voltage and frequency.
- (c) Required voltage and frequency regulation.
- (d) Load power factor.
- (e) Permissible ripple and harmonic content.
- (f) Anticipated transient peak loads.
- (g) Duration of transient loads.

**B. MANAGEMENT INFORMATION REPORT**

1. As of Date: Close of last working day of each month unless otherwise specified.
2. Date Report Due: (in or before the 15th of the following month. Report should be mailed.
3. No. of Copies: (0)
4. Sections of Report:

**a. Funding Status Information**

- (1) Description of Contents: Effective with the month this Reports Clause is received, submit a monthly Funding Status Section in tabular form to reflect the current month's invoicing commitments, and the cumulative total of invoices and uninvoiced commitments at the end of the month covered by the report. These reports will include a graphic illustration of the total accumulative costs with the cost as the ordinate and time as the abscissa. A dotted line shall represent the anticipated expenditures terminating in a point which represents total contract costs. A solid line shall be drawn connecting points established as actual expenditure as of the end of the month covered by the reporting period.
- (2) Format: The format for the report will be identical to that outlined for any one month in Sample I, and will include headings as illustrated.

**b. Manpower Information**

- (1) Description of Contents: This monthly status report will contain the following information:
  - (a) Number of working days during this reporting period.
  - (b) Scheduled hours per work day (i.e., 8 - 8 1/2 - 9).  
Per work week (i.e., 40-45-47.5).

[REDACTED] [REDACTED]

(c) Total personnel engaged in work by contract within the following categories (this is a total figure and will include personnel reported in paragraphs (k) and (n) below):

1. Key Scientific and Engineering personnel will be listed by name and category. Those persons who are engaged in Scientific or Technical duties which require formal education or its equivalent such as Aeronautical Engineers, Electronic Engineers, Chemists, etc., will be listed by total only.
2. Engineering Support, e.g., technical stenographers, draftsmen, etc., (total only);
3. Management and Administrative: (total only).
4. Shops and Production: (total only).
5. Other (total only). This includes any personnel not included in the above 4 categories who are directly chargeable to the project.

(d) Total personnel employed on the project by shift:

1. First Shift.
2. Second Shift.
3. Third Shift.

(e) Project overtime - total man hours per month broken down by:

1. Scientific and Engineering.
2. Engineering Support
3. Management and Administrative.
4. Shops and Production.
5. Other.

(f) Labor Shortage Areas (such as engineers, draftsmen, riveters, etc.) and what action is being taken to alleviate shortage areas.

[REDACTED]

(g) Multi-shift Information:

1. If a multi-shift operation is not in effect, do you contemplate establishing such a shift?
2. Why is such a multi-shift not now in effect?
3. Would a multi-shift operation expedite the progress of your contract?
4. If you establish or expand a multi-shift operation, do you foresee major manpower procurement problems?
5. If so, in what areas.

(h) Overtime Information:

1. Is overtime required because of a manpower shortage?
2. In what skills or professions?

(i) Other Personnel Problem Areas. This should include a recapitulation of possible Red Flag items such as strikes, and other problem areas of less immediate urgency.

(j) How many sub-contractors do you have engaged in this program? (Under sub-contractors do not include vendors).

1. What is the estimated number of sub-contractor personnel engaged in this program?

(k) Number of personnel located at the Air Force Missile Test Center engaged in work on the project:

1. Total engineering (professional).
2. Engineering support.
3. Total administration and other.

(m) Identify, in total only, the number of personnel from your sub-contractor organizations at AFMTC (if any).

[REDACTED]

- [REDACTED] [REDACTED]
- (n) If you have personnel assigned to other Air Force facilities, such as Edwards Air Force Base and Holloman Air Force Base, list the information in paragraph (k) and (m) for that facility.
  - (2) Format: Although no specific report form is used, the report should follow the same sequence as the requested information above.

c. Material Information.

(1) Description of Contents:

- (a) List any shortage of material requirements which will adversely affect the progress of this project, and for each shortage give the following information:

1. Whether GFAE, GFP, GFP.
2. Quantity of items required to prevent program delay.
3. Delivery date required to prevent program delay.
4. Source of supply.
5. Requisition number or purchase order on which requested.
6. Resume of action taken to expedite delivery.
7. Recommended WDD action or assistance desired.

- (b) Transportation problems where commercial transportation sources will not provide timely delivery.

1. Description of cargo including weight and dimensions.
2. Points of origin and destination.
3. Movement schedule required.
4. Resume of action taken.
5. Recommended WDD action or assistance desired.

[REDACTED] [REDACTED]

(c) Communications bottlenecks contributing to program delay.

(2) Format: No specific format has been established. Standardization from one report to the next is desired. If no shortages in material or no transportation problems exist, a negative report should be made.

d. Security Information

(1) Description of Contents:

(a) List specific security problems, present or anticipated in the following areas:

1. Personnel clearances.
2. Facility clearances.
3. Classification
4. Visitor control
5. Miscellaneous security problems.

(b) Statement of action that has been taken to solve the specific security problems, including coordination with and assistance requested from Air Force plant representatives.

(c) Recommendations for appropriate solution to the problem.

(2) Format: No specific format has been established. Standardization from one report to the next is desired.

e. Budget Program

(1) As of Date: This section of the report will only be included in the monthly reports for March, June, September and December. The report will be as of the last working day for the particular month of the report and will include data for the entire period since the previous report.

(2) Description of Contents: Submit a tabular budgetary planning schedule to reflect estimates in detail on a quarterly basis through the end of the contract. The summary shall include estimates for the complete system and shall also set forth data for each significant item of the system by subsystem and by sub-contractor.

[REDACTED] [REDACTED]

(3) Format: Schedules will be submitted similar to the format set forth in Sample III.

II. SEMI-ANNUAL REPORTS

A. TECHNICAL PROGRAM REPORT

1. As of Date: As of close of last working day of June and December of each calendar year.
2. Date Report Due: Thirty days following the end of the period reported upon. Report to be mailed.
3. No. of Copies: 50
4. Description of Contents: The purpose of this report is to provide the program management with formal planning and progress information concerning the contractor's task.

a. Technical Planning Information

- (1) This section of the Semi-annual Program Report will describe the complete program as currently planned. It should follow an outline based upon the work statement contained herein, and will be expanded to include all tasks and sub-tasks required to accomplish the development and test program. Scheduled starting and completion dates, development hardware schedules, the dates on which Government furnished equipment must be provided, the dates by which industrial facilities are required, the dates on which contract end items will be delivered to the Government, the dates on which decisions on courses of action must be made, and all other significant phasing and timing points, should be included in the report.
- (2) In addition to the planned technical approach to accomplishment of tasks and sub-tasks, the contractor's approach (both actual and planned) to achieving reliability of those elements for which he is responsible should be stated. If not previously stated, or if a change has occurred, the report should include a discussion of the reliability philosophy used in planning the contractor's over-all program, a discussion of concepts for establishing design and test criteria, a discussion of the controls devised to assure the systematic gathering and recording of reliability data and test results, and a discussion of controls or organizations for assuring the findings of reliability groups are fed back into the development program in a



[REDACTED] [REDACTED]

timely and effective manner. It is assumed, that once reported, reliability data in the semi-annual report will consist of changes to the contractor's approach. Progress will be reported in the monthly Technical Report.

b. Technical Progress Information

- (1) This section of the Semi-annual Program Report should indicate by reference to the work statement and the tasks and sub-tasks as presented in the general planning information section of this report, the scope of work performed to date, results attained, significance of results, shortcomings, and deficiencies. This section should also include summary information pertaining to coordination and/or visits with associated prime contractors in connection with matters significant to the contract or the over-all weapon system.
- (2) Particular attention should be given to reporting progress on major development milestones, such as the "freezing" of engineering designs, completion of mock-ups, solution of major technical problems, delivery of sub-assemblies as well as complete assemblies, results of captive and environmental tests, development of new fabrication techniques, advancement in the "state-of-the-art", and any other similar milestones of progress.

c. Graphic and Tabular Presentations. Graphic presentations are encouraged for use in the Semi-annual Program Report. However, each graph should be supplemented by a tabulation of data presented graphically. Graphic presentations will be used by top management at WDD for reviewing contractor's planning and progress information. The supplemental tabular data is needed to translate the data onto control charts maintained at WDD. All presentations should be clearly labeled and explained. Charts should be designed and drawn using accepted standard techniques for graphic and tabular presentations.

5. Format: No special format required except as discussed above. However, standardization from one report to the next is desired.

[REDACTED]

[REDACTED]

**B. MANAGEMENT INFORMATION REPORT**

1. As of Date: Information will be reported as of 30 June and 31 December of each year or at any other time a significant change in the projection occurs.
2. Date Report Due: On or before the 15th of the following month. Reports to be mailed.
3. No. of Copies: 10
4. Sections of Report:

a. Revised Fund Projection Information

- (1) Description of Contents: Submit a revised fund projection of commitments and invoices, showing the projection on a monthly basis for the next twelve months and on a quarterly basis from that point to the end of the contract. Any noticeable changes in the projection will be fully explained by narrative statement.
- (2) Format: The information will be presented in format similar to that illustrated in Sample IV.

b. Manpower Information

- (1) Description of Contents: (Total Manpower Projection)
  - (a) What is personnel build-up or decrease by month for the next twelve (12) months by categories of personnel:
    1. Scientific and Engineering.
    2. Engineering Support.
    3. Management and Administrative.
    4. Shops and Production.
    5. Other.
  - (b) Explain trend and report reason for any significant personnel decrease.

[REDACTED] [REDACTED]

(2) Description of Contents: (Test Base Manpower Projection)

(a) A separate manpower forecast is required of contractor personnel to be located at Air Force bases listed in paragraphs (b), (c) and (d) below. The personnel reported in this section will be included in forecast in paragraph (1) above. The projection will cover a three year period from date of report or until testing at the Air Force Station is completed, whichever is shorter. The projections will be on a quarterly basis for the years reported, as of the end of March, June, September and December, broken down into the following categories:

1. Permanent Party:

a. Scientific and Technical.

b. Engineering Support.

c. Other.

2. Visitors: Total estimated during quarterly periods reported.

(b) At Air Force Missile Test Center:

1. At Patrick Air Force Base.

2. At Cape Canaveral.

3. At Down Range Stations.

(c) At Air Force Flight Test Center:

1. At Edwards Air Force Base.

2. At WRETS.

(d) At Holloman Air Development Center

III. SPECIAL REPORTS

A. FACILITY MASTER PLAN REPORT

1. As of Date: Encompasses length of contract.
2. Date Report Due: As soon as practical, but not later than 90 days after receipt of contract or authority to proceed. To be mailed or hand-carried.
3. No. of Copies. 25
4. Description of Contents: The purpose of this report is to provide the program management with complete requirements for new construction in support of the task outlined in the contract. All facilities should be included, whether contractor-furnished or proposed to be Government-furnished. The plan should clearly reflect the distinction between these two sources.
  - a. The Facilities Master Plan will provide detailed data for each major facility component, such as a test stand, a laboratory, a pilot line manufacturing facility, a fabrication department, land, etc.
  - b. The date its use is required will be stated for each major identifiable facility item. Intermediate progress "Milestone" dates, such as land actions, design, construction time, etc., will be indicated. The following ten milestones are used by WDD, and provided for your consideration:
    - (1) Requirement justification.
    - (2) Method of acquisition and/or selection of contractor.
    - (3) Preparation of criteria and/or formal application.
    - (4) Letter facility contract.
    - (5) Selection of A and E.
    - (6) Preliminary drawings.
    - (7) Final drawings.
    - (8) Construction contract awarded.

[REDACTED] [REDACTED]

(9) Beneficial occupancy date and/or construction or procurement complete.

(10) Activation complete.

c. Long lead time items will be identified and dates by which long lead time orders must be released will also be stated.

d. Each applicable milestone date, noted in (b) above, should indicate an estimated total commitment dollar value to that point.

e. Whenever changes appear necessary to the Master Plan because of new concepts, changed technical direction, new statements of work, etc., the contractor will submit his recommendations. After negotiation and approval of each set of modifications, the Master Plan will be redated to permit identification of each revised form of the document as the approved "Facilities Master Plan of (date)."

f. Approval of the Facilities Master Plan as such constitutes acceptability of the document for planning purposes only, and does not provide any commitment that the Government will furnish any of the projected facilities. Approval for acquisition of facilities will be sought in accordance with established contract procedures.

5. Format: No special format is required. The addition of fully explained graphic and tabular presentations is encouraged. They should follow accepted presentation techniques.

**B. DATA AND SUPPORT REQUIREMENTS REPORT**

1. As of Date: Encompasses length of contract.

2. Date Report Due: As soon as practical or on dates set by WDD with the contractor. Revisions are required as soon as changes in needs are identified. Revisions should be made by page where practical. Reports to be mailed.

3. No. of Copies. 15

4. Description of Contents: The purpose of this report is to provide the program management with over-all contractor requirements at Air Force bases, such as the AF Missile Test Center. When

[REDACTED]

it has been determined that the contractor will require the assistance and support of an Air Force base, such as Air Force Missile Test Center, WDD will provide standard blank forms for the data and support requirements. The contractor will develop the report of his detailed requirements in sufficient detail to allow the test base to plan the required support. Data presented, periodic revisions, and all other conditions set forth above for the Facilities Master Plan apply to this section. Direct contact with the WDD office at the appropriate test base is encouraged for establishing detailed requirements.

5. Format: To be provided by WDD. The addition of fully explained graphic and tabular presentations is encouraged. These should follow accepted presentation techniques.

C. INITIAL FUNDING REPORT

1. As of Date: Information will be reported as of the 30th of month this Reports Clause is received.
2. Date Report Due: On or before 15th of the following month. Report to be mailed.
3. No. of Copies: 10
4. Sections of Report:

a. Funding Status Information

- (1) Description of Contents: Submit information in tabular form. This section will portray actual amounts invoiced during each month and cumulative amounts as of the end of each month since the inception of the contract through last month prior to receipt of this Reports Clause; un-invoiced commitments at the end of each month since inception of the contract through last month prior to receipt of this Reports Clause, total invoices and commitments for each month, and cumulative invoiced and un-invoiced commitments at the end of each month since inception of the contract through the last month prior to receipt of the Reports Clause (Sample I). Miscellaneous contract information including award dates and amounts of funds on contract will be included (Sample I).
- (2) Format: The report should be submitted in a format similar to that of Sample I, using recognized principles of tabular presentation.

[REDACTED]

WDR 56-128

b. Fund Projection Information

- (1) Description of Contents: Submit information in tabular form for period from month of receipt of this Reports Clause through the end of the contract. This section will project commitments and invoices on a monthly basis for the ensuing twelve (12) months period and on a quarterly basis from the end of the twelve (12) months period through the end of the contract.
- (2) Format: The information should be submitted in a format similar to that of Sample II, using recognized principles of tabular presentation.

D. INITIAL BIBLIOGRAPHY

1. As of date: As of the last working day of the month this Reports Exhibit is received. Report to be mailed.
2. Date Report Due: Within 60 days of date this Reports Exhibit is received.
3. No. of Copies: 4 copies + 1 reproducible.
4. Description of Contents: The initial bibliography will consist of all Research and Development reports contributing to the technical progress of the program.
5. Format: The format of the Initial Bibliography will be as follows:
  - a. The first page shall contain the following information in the upper right-hand corner:
    - (1) Copy number.
    - (2) Report number.
    - (3) Date.
  - b. In the center of page:
    - (1) Project.
    - (2) Title.
    - (3) Contract number.

[REDACTED]

c. Subsequent pages of the bibliography will present the following information in the order named:

- (1) Item number.
- (2) Report number.
- (3) Title.
- (4) Author.
- (5) Date.
- (6) Classification of report.

d. Additional information required by the contractor is at his option.

6. Subsequent Revisions: The initial bibliography shall be kept up to date by periodic revision pages submitted in four (4) copies + one (1) reproducible every three (3) months during the life of the contract.

7. At the conclusion of the Initial Bibliography or revision lists the contractor should list and explain any problems that have been encountered in the procurement and/or dissemination of technical information and reports.

E. FINAL REPORT To be required only at completion of entire program. Information to be required in this report will be set forth at a later date by the Contracting Officer. Report will be mailed.

F. FILM REPORTS

1. As of Date: Film Reports will be required as of close of working hours, the last working day of the final month in the quarterly period. (See para. 5. below)

2. Date Report Due: Film Reports will be due within thirty (30) days following the end of the period reported upon. Reports will be mailed.

3. No. of Copies: See paragraph 6. below.



[REDACTED]

4. Description of Contents:

a. The following documentary motion picture film coverage is required in connection with the contract for the purpose of depicting engineering progress and to fulfill historical and other documentary requirements:

(1) A quarterly film report, with sound, approximately fifteen (15) minutes duration, to review the salient accomplishments and failures experienced during the three-month period covered. These reports will be organized to objectively portray an integrated and chronological account of progress in chapter form to insure that the ultimate combination of all quarterly reports will constitute a related account of the entire project history and progress.

(2) Shipments of production footage will be required at regular intervals. This footage will be either silent "newsreel" type accompanied by written captions or edited sound-on film, two to ten minutes duration, or otherwise directed by WDD Pictorial Services Office. This coverage will include special happenings such as mock-ups, test flights, critical problem areas, development engineering inspections, and other events which depict significant progress or failures. To allow latitude the contractor is encouraged to submit suggestions on topics which might be covered.

(a) Contractors will be required to forward an estimate as to the cost involved in this type of coverage, based on previous WDD requirements, or similar production in the past.

(b) Cost should represent an average per foot production output cost figure to include 16 mm Kodachrome, 35 mm color, 16 and 35 mm B and W, silent and narration over sound production. This type of coverage would not include sync sound production footage.

(c) These cost estimates will be used as a basis for estimating future WDD film budgetary requirements, as well as to determine the quantity of this type of production to be requested.

[REDACTED]

[REDACTED]

(3) Special Purpose Films, of varying priorities to meet anticipated program requirements of many types and covering the range of security classifications. These films will be requested from contractors as the need arises. The subject matter covered will in every case be contained within the area of contractor responsibility to the over-all project. In most of these special cases, script approval by WDD will be required before additional production work is requested.

- b. Content repetition will be avoided in all film reports and motion pictures forwarded unless specifically desired by WDD, or unless repeated scenes are useful in stressing visual emphasis of a particular subject.
  - c. The contractor will use 16 mm commercial Kodachrome, emulsion 5268, or its equivalent, or as otherwise directed by WDD, within the photographic capabilities of the contractors. The original film will not be projected; however, limited editing may be accomplished wherein NG shots may be eliminated.
  - d. Each film report will be appropriately identified as directed by the contracting officer.
  - e. The contractor will produce film reports as required in accordance with the instructions contained herein and such further direction as may be given from time to time by the contracting officer.
5. General: Certain deviations from these requirements may be authorized in individual cases as a result of agreement between responsible contractor, WDD and AMC representatives.

6. Delivery Requirements:

<u>No. Copies Required</u>	<u>Remarks</u>
1	One timed, color-corrected optical master made from the original film as specified in paragraph III.F.4.c., when original footage cannot be made readily available to WDD.
2	Two composite prints of the completed quarterly film report.



No. Copies  
Required

Remarks

Original Film

This film will be dispatched as soon as the contractor is satisfied that the duplicated material required is acceptable. The Commander, WDD, will in turn forward the film to the Air Force Depository. When required by WDD, original film will be forwarded as exposed. Optical masters of this footage can be sent to originating contractor by WDD as required.

2

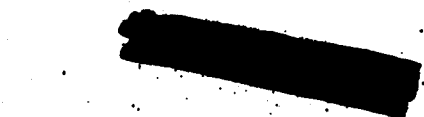
Two copies of the final shooting script

NOTE: The Contractor may make for his own use

- (a) Two (2) times, color-corrected optical masters made from the original film as specified in paragraph III.F.4.c.,
- (b) One (1) work print made from the optical master on standard duplicating stock, or
- (c) One (1) composite print of the completed quarterly film report.

G. DETAIL WEIGHT AND BALANCE REPORT

1. As of Date: See below.
2. Date Report Due: No specific calendar dates, but essentially in accordance with the following (to be mailed):
  - a. Estimated: To be submitted as soon as practical after award of contract.
  - b. Calculated: To be submitted when design is approximately 50% released, or approximately midway between the stages of design represented by the estimated weight and balance report and the first actual weight and balance report.
  - c. Actual: Submittal within thirty (30) days after actual weighing of the first flying article.
3. No. of Copies: 10



WDTR 56-128

[REDACTED]

4. Description of Contents: The purpose of this report is to provide the program management with complete weight and balance information for all airborne components developed by the contractor under terms of the contract. The estimated weight report will substantiate the specification weight, while the calculated and actual weight reports will provide means for analysis of the component evolution into finished hardware.

5. Format: In accordance with MIL-W-3947 and MIL-Std-176.

6. Distribution: Copies of this report will normally not be made available to associate contractors as the monthly weight status reports are considered sufficient for interchange of information.

H. COORDINATION LETTER REPORT Visits and coordination with Air Force field installations (AIDC Centers) or other Government agencies in connection with matters pertaining to this contract (or visits by Air Force or other Government personnel with contractor personnel) shall be reported by letter immediately after such visits and coordination. As a minimum, this report shall include information as to purpose, subject discussed and decisions reached. A similar report shall be submitted by the contractor initiating coordination and visits with other Weapon Systems contractors when matters of major significance are discussed. Reports should be mailed within one (1) week following the date of the meeting.

I. RED FLAG REPORT

1. In addition to the regular monthly, semi-annual, etc., reports required, a special reporting system will be used to report those incidents which have the potential of delaying the program and, therefore, should be brought to the attention of management immediately. Examples of such items are:

a. Strikes.

b. Shortages of materiel and equipment in critical areas.

c. Transportation tie-ups

d. Shortage of funds.

e. Key schedule dates missed (or a miss is anticipated).

f. Sub-contractor difficulties or slippage which could delay your program (including any of the above).

- [REDACTED]
2. Special reports on these items will be sent by TWX when they occur. Such TWX's should be given priority over any other company transmission that you may have. Reports will be addressed to Commander, Western Development Division. All such reports will be prefaced with the following:

"PRIORITY. RED FLAG ITEM."

When U. S. Government networks are available, these messages will be sent Operational Immediate (O).

3. Items reported as "Red Flag" items will also be reported when regular reports are submitted. The regular report will contain further explanation of "Red Flag" item together with action you have taken.
  4. It must be stressed that "Red Flag" reporting procedures are for urgent matters which, unless solved immediately, will be capable of causing program delay. This method of reporting should be carefully considered before use, since those problems must be of sufficient import to necessitate the alerting of the very top level of management.
- J. OTHER REPORTS The contractor shall furnish copies of engineering data or other information developed and used by the contractor during the performance of this contract as may be requested by the contracting officer.

K. EXCHANGE OF REPORTS

1. To Associate Contractors: Any report on WDD projects or publication either required by this contract or prepared in the performance of this contract or contractor's initiative, which contractor desires to furnish to associate WDD contractors or to sub-contractors engaged in WDD project activity, may be so furnished without prior approval, provided that the contractor has ascertained that the recipient is cleared to receive the degree of security information involved and that a "need-to-know" actually exists, i.e., that such information should, in the considered opinion of the contractor, prove useful to the recipient's progress in his portion of the WDD programs. Should there be doubt as to the propriety of providing such information, the contractor will solicit the aid of the Technical Information Officer, WDD, who will furnish guidance as required.

[REDACTED]

2. To other than Associate Contractors. No distribution other than that described in paragraph 1. above shall be made, except after approval is obtained as follows: If contractor desires to distribute reports or publications either required by or prepared in the performance of this contract to addresses not specified or authorized above, he will:

a. Submit two (2) copies of the report or publication, together with the list of desired distributors, to:

Commander  
Western Development Division  
ATTN: WDSIT  
P.O. Box 262  
Inglewood, California

b. Distribution will be made by WDD.

SAMPLE I

FUND STATUS REPORT  
Contract AF 04(645)-X

Date of Contract Award \_\_\_\_\_ Funds on Original Contract \_\_\_\_\_  
 " " S/A No. 1 \_\_\_\_\_ " " S/A No. 1 \_\_\_\_\_  
 " " S/A No. 2 \_\_\_\_\_ " " S/A No. 2 \_\_\_\_\_  
 Total Funds on Contract \_\_\_\_\_

	Uninvoiced Commitment at End of Month*	Amt. Invoiced**	Total Committed and Invoiced *
As of July 31,	250,000		
Month of Contract Award) July Total		100,000	350,000
Cumulative		100,000	350,000
As of August 31	500,000		
August Total		300,000	550,000
Cumulative thru 31 Aug		400,000	900,000
As of September 31	900,000		
September Total		800,000	1,200,000
Cumulative thru 30 Sept		1,200,000	2,100,000
As of October 31	1,500,000		
October Total		1,800,000	2,400,000
Cumulative thru 31 Oct		3,000,000	4,500,000
As of November 30	1,000,000		
November Total		2,000,000	1,500,000
Cumulative thru 30 Nov		5,000,000	6,000,000
As of 31 December	3,000,000		
December Total		4,000,000	6,000,000
Cumulative thru 31 Dec		9,000,000	12,000,000

\* Committed - Amounts of Commitments (sub-contracts, purchase orders, etc.)  
made but not invoiced.

\*\* Invoiced - Amounts of all invoices tendered the Government for payment.

FUND PROJECTION REPORT  
PERIOD COVERED BY REPORT — MARCH 1956 - DECEMBER 1957\*

	Projected Uninvoiced Commitments at End of Month	Projected Invoicing	Projected Total Uninvoiced Commitments and Invoicing
March 31, '56	7,000,000		
March '56 Total		6,000,000	7,000,000
Cumulative thru 31 Mar		22,000,000	29,000,000
April 30, '56	6,000,000		
April '56 Total		5,000,000	4,000,000
Cumulative thru 30 Apr		27,000,000	33,000,000
May 31, '56	5,000,000		
May '56 Total		6,000,000	5,000,000
Cumulative thru 31 May		33,000,000	38,000,000
June 30, '56	5,000,000		
June '56 Total		4,000,000	2,000,000
Cumulative thru 30 June		37,000,000	40,000,000
July 31, '56	5,000,000		
July '56 Total		4,000,000	6,000,000
Cumulative thru 31 July		41,000,000	46,000,000
August 31, '56	4,000,000		
August '56 Total		5,000,000	4,000,000
Cumulative thru 31 Aug		46,000,000	50,000,000
September 30, '56	2,000,000		
September '56 Total		2,000,000	- 0 -
Cumulative thru 30 Sept		48,000,000	50,000,000
October 31, '56	3,000,000		
October '56 Total		4,000,000	5,000,000
Cumulative thru 31 Oct		52,000,000	55,000,000
November 30, '56	5,000,000		
November '56 Total		5,000,000	7,000,000
Cumulative thru 30 Nov		57,000,000	62,000,000
December 31, '56	6,000,000		
December '56 Total		5,000,000	6,000,000
Cumulative thru 31 Dec		62,000,000	68,000,000
January 31, '57	5,000,000		
January '57 Total		4,000,000	3,000,000
Cumulative thru 31 Jan		66,000,000	71,000,000
February 28, '57	3,000,000		
February '57 Total		5,000,000	3,000,000
Cumulative thru 28 Feb		71,000,000	74,000,000
March 31, '57	4,000,000		
March '57 Total		6,000,000	7,000,000
Cumulative thru 31 Mar		77,000,000	81,000,000
June 30, '57	4,000,000		
4th Quarter FY'57 Total		5,000,000	5,000,000
Cumulative thru 30 June		82,000,000	86,000,000
September 30, '57	2,000,000		
1st Quarter FY'58 Total		3,000,000	1,000,000
Cumulative thru 30 Sept		85,000,000	87,000,000
December 31, '57	1,000,000		
2nd Quarter FY'58 Total		3,000,000	2,000,000
Cumulative thru 31 Dec		88,000,000	89,000,000

\* Period of report should be from month the revised Reports Clause is received through the end of the contract.



SAMPLE II (continued)

Page 2

Total Fund Requirement	-	Research + Development	_____
" " "		Guided Missiles (components)	_____
" " "		Spare + Spare Parts	_____
" " "		Ground Support + Checkout Equip.	_____

SAMPLE III

BUDGETARY PLANNING SCHEDULES ESTIMATE

Task 0	1956				1957	1958
	1	2	3	4		
	999.9	999.1	754.3	222.4	1	2 3 4

Sub-system 2 Task 2.1	901.0	000.0	000.0	000.0	000.0	
" " 2.2	1.2	3.4	43.1	.1		
" " 2.3	4.3	2.3	44.0	34.2		
" " 2.4	44.5	4.3	44.4	44.4		
" " 2.5	55.5	5.5	55.5	55.5		
" " 2.6	23.3	3.3	2.2	2.2		
" " 2.7	34.3	3.3	6.7	2.2		
" " 2.8				2.2		
Sub-system 3 Task 3.1	55.3	22.2	222.0	44.3		
" " 3.2	7.6	4.0		44.2		
" " 3.3			55.0	44.2		
" " 3.4	5.4	.3	44.3	3.4		
" " 3.5	4.3	1.2	3.4	5.4		
" " 3.6	2.3	3.4	3.4	6.7		
Sub-system 4 Task 4.1	2.2	2.2	2.2	2.2		
" " 4.2	33.3	33.3	33.3	33.3		
" " 4.3	44.4	44.4	44.4	44.4		
" " 4.4	1.1	1.1	1.1	1.1		
" " 4.5	2.2	2.2	2.2	2.2		
" " 4.6	2.2	2.2	2.2	2.2		
" " 4.7	3.3	3.3	3.3	3.3		
Sub-system 5 Task 5.1	2.2	2.2	2.2	2.2		
" " 5.2	1.1	3.3	3.3	3.3		
" " 5.3	681.2	7778.4	33.4	3.3		
" " 5.4	99.9	99.0	4.5	45.9		
" " 5.5	1.9	33.5	46.9	5.6		
Sub-system 6	649.8	455.7	43.2	557.9		
Sub-system 7	9.8	54.9	3.2	9.1		
Grand Total	9349.9	93499.6	197.2	63476.8		

Project Identical Data.

Project Identical Data.

SAMPLE IV

REVISED FUND PROJECTION REPORT  
 PERIOD COVERED BY REPORT, — JUNE 1956 - DECEMBER 1957\*

	Projected Uninvoiced Commitments at End of Month	Projected Invoicing	Projected Total Uninvoiced Commitments and Invoicing
June 30, '56	3,000,000		
Cumulative thru 30 June		37,000,000	40,000,000
July 31, '56	5,000,000		
July '56 Total		4,000,000	6,000,000
Cumulative thru 31 July		41,000,000	46,000,000
August 31, '56	3,000,000		
August '56 Total		5,000,000	3,000,000
Cumulative thru 31 Aug		46,000,000	49,000,000
September 30, '56	3,000,000		
September '56 Total		5,000,000	5,000,000
Cumulative thru 30 Sept		51,000,000	54,000,000
October 31, '56	2,000,000		
October '56 Total		4,000,000	3,000,000
Cumulative thru 31 Oct		55,000,000	57,000,000
November 30, '56	6,000,000		
November '56 Total		2,000,000	6,000,000
Cumulative thru 30 Nov		57,000,000	63,000,000
December 31, '56	5,000,000		
December '56 Total		5,000,000	4,000,000
Cumulative thru 31 Dec		62,000,000	67,000,000
January 31, '57	5,000,000		
January '57 Total		5,000,000	5,000,000
Cumulative thru 31 Jan		67,000,000	72,000,000
February 28, '57	5,000,000		
February '57 Total		5,000,000	5,000,000
Cumulative thru 28 Feb		72,000,000	77,000,000
March 31, '57	4,000,000		
March '57 Total		5,000,000	4,000,000
Cumulative thru 31 Mar		77,000,000	81,000,000
April 30, '57	4,000,000		
April '57 Total		4,000,000	4,000,000
Cumulative thru 30 Apr		81,000,000	85,000,000
May 31, '57	3,000,000		
May '57 Total		5,000,000	4,000,000
Cumulative thru 31 May		86,000,000	89,000,000
June 30, '57	2,000,000		
June '57 Total		4,000,000	3,000,000
Cumulative thru 30 June		90,000,000	92,000,000
September 30, '57	- 0 -		
1st Quarter FY'58 Total		2,000,000	- 0 -
Cumulative thru 30 Sept 57		92,000,000	92,000,000
December 31, '57	- 0 -		
2nd Quarter FY'58 Total		2,000,000	2,000,000
Cumulative thru 31 Dec 57		94,000,000	94,000,000

- Total Fund Requirement - Research and Development \_\_\_\_\_
- Guided Missile Components \_\_\_\_\_
  - Spares and Spare Parts \_\_\_\_\_
  - Ground Support and Checkout Equipment \_\_\_\_\_

\* Period of report should be from applicable date (either 30 or 31 December) to end of contract.

SEP 4 1956

MEMORANDUM FOR RECORD

SUBJECT: Discussion with Lt. Col. George P. Jones, AFRC

1. On 31 August 1956, the undersigned, together with Major Zelenka discussed the participation of the Geophysics Research Directorate and the Electronics Research Directorate, AFRC, in the WS 117L Program. Col. Jones verbally requested that AFRC be given complete responsibility for what is essentially the environmental subsystem of WS 117L.
2. At some length I pointed out to Col. Jones the deficiencies in the current DD 613's presently tentatively approved by WDD from AFRC which concern the tasks in the "environmental subsystem." I pointed out to him that the information we needed for this management decision was:
  - a. From a technical point of view what was to be done, why it was needed by the System development effort, how would it be done, what resources would this require in terms of money and people, and what schedule for accomplishing the work could be proposed.
  - b. As a corollary to the technical proposals, I pointed out to him that we needed what was essentially the same as a management proposal from a contractor. We wanted to know what concentration of effort AFRC was willing to give to WS 117L problems; how the people would be organized, and what other responsibilities would they be given, if any. I pointed out to Col. Jones that these were the things which we asked of contractors as a regular thing. Further, a strong consideration in this regard was a fact that with a contractor such as LAC we could get a singleness of purpose toward the end of completing the system, and that within the subsystems we would expect the same singleness of purpose. We would not be too impressed by a management proposal which was for business as usual by the center with no particular organization to accomplish the task at hand.
3. We discussed also with Col. Jones, a type of liaison which would be necessary between AFRC, LAC and WDD in the event that his request was granted, and we made it quite clear that it would have to be of a continuing and complete nature, and could not be accomplished solely by written reports submitted to the Project Office.
4. I pointed out to Col. Jones that while we realized that AFRC had considerable professional competence in the geophysical and electromagnetic propagation areas which are of concern to this system, that this alone was not sufficient qualification for their being assigned the complete subsystem job that he has asked for. We at WDD had to be sure that not only could they do the job professionally but that they were willing to give it a singleness of purpose which would insure its timely completion. I pointed out to him that while we had no desire to build up the contractor's capabilities in competition to things already available from the Air Force, that if this were necessary to insure a timely completion of the system that we would have no

DOWNGRADED AT 3 YEAR INTERVALS  
DECLASSIFIED AFTER 12 YEARS  
DOD DIR 5200.10

[REDACTED]

Memo for Record

Subject: Discussion with Lt. Col. George P. Jones, AFRCO

hesitation in so doing provided AFRCO could not offer us adequate assurance that they could do the job as well.

6. We also discussed the AFRCO comments on the Lockheed Aircraft Corporation work statement.

**SIGNED**

FREDERIC C. E. ODER  
Lt. Colonel, USAF  
Assistant for WS 117L  
Technical Operations

[REDACTED]

Aug 30 1956

WDTR

SUBJECT: WS 117L Work Under Contract No. AF 18(600)-1190

TO: Ramo-Wooldridge Corporation  
Attn: Dr. Ramo

1. In defining the procedures under which the Ramo-Wooldridge Corporation will carry on work relative to WS 117L under Contract AF (600)-1190, it has been determined that each problem assigned should be appropriately authorized in writing by Western Development Division. This is not to imply that the initiative for originating work must always come from WDD, but that approval should be obtained before any appreciable expenditures are made on any task.

2. Since work in progress and completed to date has not been covered by specific task statements, it is the purpose of this letter to approve such work already conducted and authorize continuation of work currently underway; specifically as follows:

a. Prepare a skeleton research and development plan for WS 117L, including cost estimates.

b. Prepare an estimate of the maximum nose cone weight and moment that is compatible with the structural and control limitations of the SM 65 booster.

c. Determine necessary or desirable changes in the SM65 missile to make it compatible on an optimal basis with the nose cone vehicle to be designed by the Lockheed Aircraft Corporation.

d. Make design optimization studies to assist the Western Development Division in evaluating the nose cone vehicle design proposed by the Lockheed Aircraft Corporation.

DOWNGRADED AT 12 YEAR  
INTERVALS; NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

WDTR 56-133

CO [REDACTED]

WDTR, WDD (ARDC), Subject: WS 117L Work Under Contract AF 18(600)-1190

3. The following ceilings on MTS man months are placed on the above tasks:

- a. 9
- b. 36
- c. 20
- d. 20

*Charles H. Terhune, Jr.*  
CHARLES H. TERHUNE, JR.  
Colonel, USAF  
Deputy Commander  
Technical Operations

[REDACTED]

AUG 29 1956

MEMORANDUM FOR: Colonel Terhune

SUBJECT: Utilization of XSM 65A Missiles in WS 117L Development Program

1. It is understood that because of certain schedule adjustments, more XSM 65 series "A" missiles are scheduled for production than can be profitably utilized in the WS 107A-1 program. Consideration is being given to cutting back production by several airframes. Since the progress of WS 117L is paced, in the early phases, by availability of boosters, it is believed that some of these missiles should be produced and fired with WS 117L payloads.
2. WS 117L can have ready payloads sufficiently sophisticated to justify an XSM 65A launching on a one per quarter schedule throughout calendar 1958. Adapters can be designed and fabricated so that only minor modifications to the "standard" missile must be made by Convair. Lockheed can furnish checkout, and service the payloads (including probably one fixed instrument payload and three separable powered nose cones). It would be difficult for Lockheed to provide launch crews and probably impossible for them to provide independent launch facilities to meet a 1958 firing schedule. Convair would therefore be required, very probably, to launch the missiles from WS 107A facilities at Patrick. Lockheed would also require a modest assembly area at Patrick to check out the nose cone (about 2,000 sq ft.)
3. The use of Convair as outlined above would undoubtedly cause some interference with the WS 107A-1 program. It is the contention of this office that the interference would be small, and that it would give some return to the 107A program in additional experience gained. The advantage to the 117L program of a few firings in 1958 would be tremendous. Although it is not expected that orbital flights could be made with the series "A" booster, such flights would permit gathering of critical environmental information and the functional testing of the powered nose cone with respect to separation, engine start, flight control operation and perhaps permit initial guidance system testing. It would vastly increase the probability for success of orbital flights when the series "C" missiles become available; it would also make the accelerated one-a-month 1959 firing schedule shown in the development plan a much more practical type of operation.
4. Informal notification has been received that the 117L program has been assigned a 1-6 priority. While this is a comparatively high priority among Air Force programs, it is considerably lower than the 107A priority. Essentially a command decision is required. The damage to the 107A program must be compared with the advantage to the 117L program as conditioned by the relative priority of the two. If it is decided that the 107A program should support the 117L program to the extent outlined, an appropriate directive

[REDACTED]

DOWNGRADED AT 12 YEAR  
INTERVALS; NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

WDTR 56-129



[REDACTED] [REDACTED]  
WDTR, Memo. for Col Termure, Subject: Utilization of X-65 A Missiles in WS 117L Development Program

must be issued to Ramo-Woolridge and Convair to provide this support. If approval in principle is granted, the WS 117L office will take appropriate action through the WDD WS 107A-1 office.

5. If it is determined that vehicle support of the general nature outlined above would cause unacceptable interference with the SM 65 program, permission is requested to initiate exploratory conversations with the Ordnance Department of the Army to determine the possibility of obtaining comparable flight tests using "Redstone" missiles. The standard "Redstone" is the only other missile in the nation's program capable of carrying the Pioneer ARS nose cone. It is known that a program of "engineer-user" tests are scheduled at White Sands and the possibilities for solving missile, launch crew, and facilities problems via this route appear good. This approach is inferior to that using XEM 65A's in that it is a dead end development.

6. The third and least desirable alternative to obtain environmental and component data prior to actual orbital attempts is the scale model test vehicle program proposed by Lockheed.

7. An early decision will permit firming of facility plans. To date no request has been made for FY 1957 military construction funds. Facilities could easily become a limiting factor in the WS 117L program unless action is taken soon.

**SIGNED**

FREDERIC G. E. ODER  
Lt Colonel, USAF  
Assistant for WS 117L  
Technical Operations

[REDACTED]  
WDTR

R. C. Truax

E. H.  
[REDACTED]

WDTR 56-129

*adl*

WESTERN DEVELOPMENT DIVISION  
HEADQUARTERS  
AIR RESEARCH AND DEVELOPMENT COMMAND  
Post Office Box 262  
Inglewood, California

WDSSS

22 August 1956

SUBJECT: Announcement of Appointments

TO: See Distribution

1. Announcement is made of the following appointments within Deputy Commander, Technical Operations:

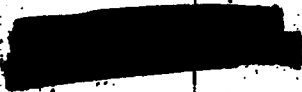
a. Lt Colonel Frederic C. E. Oder, 7684A, is appointed Assistant for Weapon System 117L vice Colonel Otto J. Glasser, 4368A.

b. Lt Colonel Leslie F. Summerfield, 7926A, is appointed Executive Officer.

BY ORDER OF THE COMMANDER:

DISTRIBUTION  
"A"

*William C. Bumm*  
WILLIAM C. BUMM  
Major, USAF  
Division Adjutant



NDTT

Pad Utilization

WDTN

WDTT

21 Aug 56  
Major Randall/tmg/567

1. Given below is information requested of Major Randall by Colonel Boatman concerning anticipated pad utilization of the ballistic missiles programs. This information was prepared by the Project Office, AFMTC, and submitted to the Director of Test Operations at Patrick for anticipated pad utilization of the ballistic missiles programs.

2. The information was prepared to determine the amount of inter pad interference as a result of pad time required, pad personnel, and blockhouse space available, and to determine the recycle and warning times necessary as a result of this inter pad interference.

3. As a reference for the estimated values given below, past experience of Red Stone Missile launches was used and extrapolated to the expected WDD Ballistic Program.

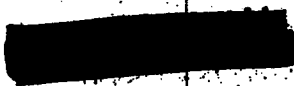
a. The total time one missile launching would require personnel to work on the pad was given as 36 days for WS-107A-1, WS-107A-2, and WS-117L. This time includes pre-launch pad preparation, static engine runs, systems checkout, captive flight test, launch countdown and post-launch pad maintenance. At an undetermined date later in the program, the captive flight test and/or static engine runs may be reduced in time or eliminated which could result in a savings of approximately 12 days.

b. The total time one missile launching would require personnel to work on the pad was given as 27 days for WS-315A. This time includes pre-launch pad preparation, static engine runs, systems checkout, captive flight test, launch countdown, and post-launch pad maintenance. At an undetermined date later in the program, the captive flight test and/or static engine runs may be reduced in time or eliminated which could result in a savings of approximately nine (9) days.

c. The average pad time required to launch one missile which had previously been scrubbed was given as 12 days for WS-107A-1, WS-107A-2, WS-117L, and WS-315A. This time is an average based upon the possibilities of having to replace a scrubbed missile with a stand-by missile, having to do extensive missile rework on the pad, having to rerun portions of the pre-launch preparation phase, or having to recycle to some previous time in the launch countdown. The time required could range from 40 days to four (4) hours.

d. The total pad time required for static or captive tests on one missile was given as 27 days for WS-107A-1, WS-107A-2, and WS-117L. This time is included in total pad time required to launch one missile and was estimated by assuming approximately 75% of launch preparation time would be required for static engine runs and captive testing.

DOWNGRADED AT 3 YEAR INTERVALS  
DECLASSIFIED AFTER 12 YEARS.  
DOD DIR 5200.10



WDTT

21 August 56

SUBJECT: Pad Utilization

e. The total pad time required for static or captive tests on one missile was given as 20 days for WS-315A. This time is included in total pad time required to launch one missile and was estimated by assuming approximately 75% of launch preparation time would be required for static engine runs and captive testing.

f. Defining support tests as those tests required in support of one specific missile, no pad time was given for support tests for WS-107A-1, WS-107A-2, WS-117L, and WS-315A. Those routine and continuous checks required for pad preparation and pad system tests will be performed on an additional shift basis.

g. The total number of people one blockhouse would hold was given as 50 people for WS-107A-1, WS-107A-2 and WS-117L. This total was estimated from the available floor space in the portion of the blockhouse constructed to withstand maximum overpressure.

h. The total number of people one blockhouse would hold was given as 25 people for WS-315A. This total was estimated from the available floor space in the portion of the blockhouse constructed to withstand maximum overpressure.

i. The average number of people working on a launch pad per day was given as 65 for WS-107A-1, WS-107A-2, and WS-117L. This number is an average based upon personnel required to perform the various systems tests and the numerous inputs of assembly personnel who will perform varied assembly and checkout operations during launch preparation.

j. The average number of people working on a launch pad per day was given as 55 for WS-315A. This number is an average based upon personnel required to perform various systems tests and the numerous inputs of assembly personnel who will perform varied assembly and checkout operations during launch preparation.

k. The peak number of people working on a launch pad was given as 120 for WS-107A-1, WS-107A-2, WS-117L. The peak strength is expected to be present whenever a captive firing test or launch countdown is being conducted.

l. The peak number of people working on a launch pad was given as 100 for WS-315A. The peak strength is expected to be present whenever a captive firing test or launch countdown is being conducted.

m. The shutdown or lead time necessary to bring a pad to a work stoppage status was given as 3½ hours for WS-107A-1, WS-107A-2, WS-117L, and WS-315A. This time is an average based on possible required defueling, completion of a specific launch preparation sequence, or securing the missile for a short duration hold. This time could vary from one hour to four days.

n. The total time required to clear the pad and get the people to safety was given as 30 minutes for WS-107A-1, WS-107A-2, WS-117L, and WS-315A. This time was based on an average number of people on the pad.

WDTT

SUBJECT: Pad Utilization

21 August 56

o. The average time required to pick up work at the point it had been previously stopped was given as one day for WS-107A-1, WS-107A-2, WS-117L, and WS-315A. This time is an average based upon possible required refueling, rerun of a specific launch preparation sequence, or rechecking of missile systems to assure readiness after a short duration hold. This time could vary from 10 days to one hour.

FREDERICK S. PORTER, JR.  
Lt. Colonel, USAF

By furns  
Col Hall, WDTT

RICHARD K. JACOBSON  
Lt Colonel, USAF  
Chief, Test Group

WDTT

hmg

Maj Randall

567

3

481

20 August 1956

MEMORANDUM FOR: Colonel Norton

SUBJECT: WS 117L Program

1. Reference your verbal request of 13 August 1956 concerning the planned procedures to finance WS 117L work by WS 107A, WS 315A contractors which is of sufficient magnitude to warrant incurred costs above the cost level of existing contracts.

2. Whenever an item requirement or a requirement for services should develop which could be satisfied by contractors engaged in the WS 107A, WS 315A programs, the WS 117L Project Office will coordinate this requirement with the appropriate weapons and BMO office to make the following determinations:

a. Probable availability of an existing contractor to satisfy the requirement.

b. The extent to which the added requirement would constitute an acceptable level of interference with other weapons programs, if any, or reasonable burden to the contractor.

c. Whether the requirement falls within the scope of an existing contract.

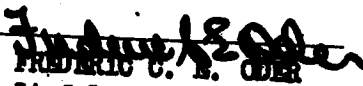
(1) Where it is determined that the performance on the requirement is within the scope of the contract but additional cost is involved, a CCN would be executed and WS 117L funds would be provided to cover the additional cost.

(2) Where it is determined that the performance on the requirement is not within the scope of existing contracts, the contract will be amended or a new contract would be negotiated and the costs involved will be satisfied by the use of available WS 117L funds.

(3) In the case of 2 c (1) and (2), above, the WS 117L Project Office will request the CCN or contract amendment, as appropriate, of the appropriate weapons office. They, in turn, will request BMO to take the necessary action.

MEMO FOR: Colonel Norton, Subject: WS 117L Program

3. This memorandum has been coordinated with the Assistants for WS 107A-1, WS 107A-2 and WS 315A.

  
FREDERICK C. E. ODEN  
Lt Colonel, USAF  
Assistant for WS 117L  
Technical Operations

Mr. Roc. W. D. B. T.  
3-1702

WESTERN DEVELOPMENT DIVISION  
HEADQUARTERS  
AIR RESEARCH AND DEVELOPMENT COMMAND  
Post Office Box 262  
Inglewood, California

PERSONNEL ACTIONS MEMORANDUM)  
NUMBER 21)

16 August 1956

1. VOC, iss 1 Aug 56, Asg COL DANIEL W WICKLAND, 2628A, this Div, this sta, Prim Dy as Special Asst to Com, Ofc of Com, WDD (8446), FA: 57000, are cfm ESPWO.
2. PAFSC 6525 of LT COL CHARLES E HUGHES, 9242A, this Div, this sta, is conv to 6636, UP AFM 36-1.
3. SMOP 2, PERAM 12, cs, this Div, pert to LT COL EMMETT J KELLY, AO319531, this Div, Dy Sta, Redstone Arsenal, Huntsville, Ala, as reads "FA: 57000." IATR "FA: 01000."
4. VOC, iss 9 Jul 56, rel LT COL CHARLES G MATHISON, 10218A, this Div, Dy Sta, Patrick AFB, Fla, fr Prim Dy as Actg Ch, WDD Fld Ofc (AFMTC) Tech Opns (8446), FA: 57000, and Asg new Prim Dy as Asst Ch, WDD Fld Ofc, (AFMTC), Tech Opns (8446), FA: 57000, are cfm ESPWO.
5. The FSSD of LT COL CHARLES G MATHISON, 10218A is chg fr 12 May 42 to 15 Oct 42.
6. VOC, iss 16 Jul 56, Asg LT COL HAROLD L McKEAN, 7947A, this Div, this sta, Prim Dy as Ch, IREM Opns Gp, Asst f/IREM Opns, Plans and Opns (0036F), FA: 57000, are cfm ESPWO.
7. AFSC 1221C of LT COL HAROLD L McKEAN, 7947A, this Div, this sta, is desig (2).
8. VOC, iss 13 Aug 56, rel LT COL FREDERIC C E ODER, 7684A, this Div, this sta, fr Prim Dy as Proj Liaison O. (AFDC), Ofc of Asst to Com WDD, (8446), FA: 01000, and Asg new Prim Dy as Asst f/WS-117L, Tech Opns (8416), FA: 57000, are cfm ESPWO.
9. VOC, iss 2 Jul 56, Asg LT COL WILBUR J SCHINDLER, 6883A, this Div, this sta, Prim Dy as Ch, Opns Trng Anal Fld Unit, Opns Anal Gp, Asst f/ICBM Opns, Plans and Opns (3265), FA: 57000, are cfm ESPWO.
10. VOC, iss 9 Aug 56, rel LT COL WILBUR J SCHINDLER, 6883A, this Div, this sta, fr Prim Dy as Ch, Opns Trng Anal Fld Unit, Opns Anal Gp, Asst f/ICBM Opns, Plans and Opns (3265), FA: 57000, and Asg new Prim Dy as Ch, ICBM Opns Gp, Asst f/ICBM Opns, Plans and Opns (0036F), FA: 57000, are cfm ESPWO.

*Multi-vial  
col glass  
see the  
change*



Para 1 thru 22, PERAM 21, WDD (ARDC) 16 Aug 56

- ✓ 11. VOC, iss 13 Aug 56, Asg LT COL LESLIE F SUMMERFIELD, 7926A, this Div, this sta, Prim Dy as Exec O, Dep Com Tech Opns, Tech Opns (8446), FA: 57000, are cfm ESPWO.
12. The FSSD of MAJ RALPH A BLANKENSHIP, AO 1575759, is chg fr 18 Sep 54 to 17 Mar 56.
13. VOC, iss 9 Aug 56, rel MAJ ROBERT I ELLIS, AO434390, C & E Staff O (Log) Logis Gp, Asst f/ICBM Opns, Plans and Opns (3016), FA: 57000, and Asg new Prim Dy as Opns Staff O (O&E), ICBM Opns Gp, Asst f/ICBM Opns, Plans and Opns (3016), FA: 57000, are cfm ESPWO.
14. VOC, iss 9 Aug 56, rel MAJ ROY L FERGUSON, JR, AO822032, this Div, this sta, fr Prim Dy as Ch, ICBM Opns Gp, Asst f/ICBM Opns, Plans and Opns (0071F), FA: 57000, and Asg new Prim Dy as Asst Dep Asst f/ Atlas Opns, Asst f/ICBM Opns, Plans and Opns (0076F), FA: 57000, are cfm ESPWO.
15. VOC, iss 1 Aug 56, Asg MAJ EDWARD L LITTLE, 7225A, this Div, this sta, Prim Dy as Ch, Engr Br, Engr Gp, Instal (5516), FA: 57000, are cfm ESPWO.
16. VOC, iss 9 Aug 56, rel MAJ ARNELL R SUIT, JR, AO861122, this Div, this sta, fr Prim Dy as Opns Staff O (O&E), ICBM Opns Gp, Asst f/ICBM Opns, Plans and Opns (3016), FA: 57000, and Asg new Prim Dy as Ch, IOC Trng Br, ICBM Opns Gp, Asst f/ICBM Opns, Plans and Opns (7516), FA: 57000, are cfm ESPWO.
17. VOC, iss 3 Aug 56, Asg MAJ TAYLOR B ZINN, AO407777, this Div, Dy sta Patrick AFB, Fla, Prim Dy as Ch WS-315A Proj Ofc, WDD Fld Ofc (AFMTC) Tech Opns (8446), FA: 57000, are cfm ESPWO.
18. PAFSC 6525 of CAPT FLOYD A JOHNSTON, 17822A, this Div, this sta, is conv to PAFSC 6624, UP AFM 36-1.
19. PAFSC 6525 of CAPT SUMNER W WHITE, 28291A, this Div, this sta, is conv to PAFSC 6524, UP AFM 36-1.
20. CAPT FREDERICK L WILSON, AO834079, this Div, this sta, is awd add AFSC 1224C and is desig (2). Old (2) add AFSC 1044C is w/d and w/b del.
21. CAPT FREDERICK L WILSON, AO834079, this Div, this sta, is awd add AFSC 7311.

Para 1 thru 22, PERAM 21, WDD (ARDC) 16 Aug 56

22. The functional cat of the FNO is changed fr PPA to PPB:

COL DANIEL W WICKLAND, 2628A  
LTCOL LESLIE F SUMMERFIELD, 7926A  
MAJ EDWARD L LITTLE, 7225A  
MAJ TAYLOR B ZINN, A0407777

BY ORDER OF THE COMMANDER:

OFFICIAL:



JACK E. TICE  
Capt, USAF  
Asst Div Adjutant

JACK E. TICE  
Capt, USAF  
Asst Div Adjutant

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60 -Pers Serv

WDTL

16 August 1956

MEMORANDUM FOR THE RECORD

SUBJECT: Space Institute

1. On 15 August 1956, this office was visited by Col Wolfe of Hq ARDC, Baltimore. Col Wolfe is a Reserve Officer on a two-week tour of active duty at Baltimore. He is a member of a small group which has been given the job of reviewing the problem of providing sufficient properly trained technical personnel to advance our knowledge in future technical problems. A Space Institute is the prime means being considered. It is understood that this group will write a report and submit it to Gen Power.
2. Col Wolfe was told that the Western Development Division could certainly confirm and support the need for more properly trained technical personnel. The pros and cons of establishing a Space Institute were discussed at some length in general terms with Col Wolfe by Maj Carter. This discussion was, of course, on an informal basis and the salient features of the discussion are covered in the following paragraphs.
3. It was pointed out that while the need for more technical personnel could be considered as established, the method by which you obtain these people could vary widely. Further, due to the size of the facilities which would undoubtedly be required and to the acceleration in the attainment of knowledge that was required, some form of Government support was undoubtedly needed. This could vary all the way from direct subsidization of our present educational institutions and of the students which attend them to assembling all the people and facilities necessary to do research and development on the problems associated with future guided missile and space flight in one central location and under one control. The close interrelationship between research and development and the problem of using the same facilities to do teaching, research and development were discussed. In addition, the impact of establishing a Space Center on our present technical manpower situation was mentioned. Incentives for both faculty and students were discussed. The obvious advantage of a Space Institute in accelerating research and in providing a direct feedback into other programs were discussed.
4. It was agreed that some concrete action was required in order to increase the supply of properly trained technical personnel. However, the method by which you assure future supply of

DOWNGRADED AT 3 YEAR INTERVALS,  
DECLASSIFIED AFTER 12 YEARS.  
DOD DIR 5200.10

[REDACTED]

Memo for Record from WDTL Subject: Space Institute 16 August 1956

these personnel must be handled very carefully and presented properly in order to gain the support needed. Col Wolfe stated that one of his objectives was to try to present a saleable approach to Gen Power.

5. The Holloway Plan of the United States Navy and data on the Russian Zimkovsky Institute of Aeronautics were mentioned to Col Wolfe as sources of background material.

**SIGNED**

DAVID L. CARTER  
Major, USAF  
Deputy Assistant  
Technical Groups

00-409

AUG 9 1749G 56 1956  
1700Z  
1956

PRIORITY

X AF X

COMDR WDD, INGLE, CALIF.

COMDR ARDC, BALTO

"AC—PARAPHRASING NOT REQUIRED EXCEPT PRIOR TO CATE-  
GORY B ENCRYPTION—PHYSICALLY REMOVE ALL REFERENCES BY DATE-TIME GROUP PRIOR TO DECLASSIFICATION—  
NO UNCLASSIFIED REFERENCE IF DATE-TIME GROUP IS REQUIRED."

SECRET FROM WDTR 8-1

ATTN RDZPI INFO RDSCB

IN RESPONSE TO TELEPHONE REQUEST FROM RDZPI THE FOLLOWING IS A  
BREAKDOWN OF FUNDING FOR WS 117L BY SUBSYSTEMS: (1) VEHICLE CMM  
POINT THREE (2) PROPULSION CMM POINT ONE (3) APU CMM POINT THREE  
(4) GUIDANCE AND CONTROL CMM POINT FOUR FIVE (5) VISUAL EQUIPMENT  
CMM POINT EIGHT (6) FERRET CMM POINT ONE (7) INFRA-RED CMM  
POINT ZERO FIVE (8) GROUND SPACE COMMUNICATIONS CMM POINT SEVEN  
(9) DATA PROCESSING CMM POINT ONE (10) GROUND SUPPORT AND  
TRAINING CMM POINT ONE. FIGURES ARE IN MILLIONS. BASED ON  
ASSUMED TOTAL FY 57 FUNDING 3.0 MILLION P-600. NO OTHER.  
CURRENTLY STUDYING OPTIMUM SPENDING PROGRAM WITH CONTRACTOR SO  
ABOVE ESTIMATES MUST BE CONSIDERED HIGHLY TENTATIVE. ESTIMATED  
ACHIEVEMENTS IN EACH AREA WITH ABOVE PROGRAM AS FOLLOWS (1) MAINTAIN  
DESIGN CURRENT AND COMPATIBLE WITH PAYLOAD PROPULSION AND BOOSTER

WDTR  
**SIGNED**

R. C. TRUAX, Commander, USN  
236 1

**SIGNED**

HAROLD W. NORTON  
Colonel, USAF  
Assistant Deputy Commander  
Technical Operations

2

DOWNGRADED AT 12 YEAR  
INTERVALS; NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

WDTR 56-119

[REDACTED]

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AUG 1956  
1700Z

(2) DETERMINE ADAPTABILITY OF EXISTING SMALL ENGINES TO SERVE AS VERNIERS, MAKE UNGYMBALLED DESIGN FOR MAIN NOSE CONE ENGINE

(3) COMPONENT RESEARCH AND DESIGN FOR NUCLEAR APU POWER CONVERSION EQUIPMENT. COMPONENT RESEARCH ONLY IN OTHER AREAS.

(4) COMPONENT DEVELOPMENT POSSIBLY CULMINATING IN BREADBOARD ASCENT GUIDANCE SYSTEM (5) DETAILED CAMERA DESIGN, CONTINUATION OF SIMULATION STUDIES AND COMPONENT DEVELOPMENT (6) MAINTAIN SYSTEMS LIAISON WITH CURRENT FERRET TECHNICAL PROGRAM, PAPER STUDIES ONLY (7) ANALYSIS AND RESEARCH ONLY (8) COMPONENT DEVELOPMENT AND SYSTEM DESIGN (9) LIAISON WITH WS 438L PROGRAM AND SYSTEM STUDIES ONLY. (10) TRAIN LAUNCHING CREWS AND ANALYZE GROUND EQUIPMENT REQUIREMENTS. THE ABOVE PROGRAM WILL RESULT IN LITTLE MORE THAN KEEPING WS 117L ALIVE DURING FY 57 AND IS TOTALLY INADEQUATE TO PERMIT ANY APPRECIABLE PROGRESS TOWARDS CAPABILITIES SET FORTH IN DEVELOPMENT PLAN OF 2 APRIL. ALL DATES WILL BE SET BACK SUBSTANTIALLY ONE YEAR IF ADDITIONAL FY 57 MONEY NOT RECEIVED. CERTAIN LONG LEAD TIME ITEMS REQUIRE NON P-600 FUNDS WHICH ALSO MUST BE PROVIDED IF THESE ITEMS ARE NOT TO BECOME LIMITING FACTORS.

\*AC—PARAPHRASING NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCRYPTION—PHYSICALLY REMOVE ALL REFERENCES BY DATE-TIME GROUP PRIOR TO DECLASSIFICATION NO UNCLASSIFIED REFERENCE IF DATE-TIME GROUP IS QUO

[REDACTED]

WDTR 56-119

WDTR

2 2

[REDACTED]

AUG 9 1956

WDOS

WDTR

SUBJECT: 438 System Development Plan.

TO: Commander  
Rome Air Development Center  
Attn: RCDI  
Griffiss Air Force Base, New York

1. Reference letter dated 10 July 1956, Subject: Draft of 438L System Development Plan. It has been determined that the preliminary draft of the 438L System Development Plan dated 2 July 1956, submitted to Western Development Division for comment has been superseded.
2. It is therefore requested that comments from Western Development Division be deferred until the revised 438L System Development Plan is received and studied.
3. Since the 438L System Development Plan does include a considerable discussion of the WS 117L, it is assumed that need to know for the WS 117L program has been established for recipients of the 438L System Development Plan.

FOR THE COMMANDER:

SIGNED

H. C. TRUAX  
Commander, USN  
Assistant Deputy for WS 117L  
Technical Operations

WDTR  
Capt. Troetschel

DH  
236

MEMORANDUM TO: Colonel Norton

6 August 1956

Subject: WS 117L Program

1. Reference your verbal request of 3 August 1956 concerning the planned procedures to finance WS 117L work by WS 107A, WS 315 contractors which is of sufficient magnitude to warrant incurred costs above the cost level of existing contracts.

2. Whenever an item requirement or a requirement for services should develop which could be satisfied by contractors engaged in the WS 107A, WS 315 programs, the WS 117L WSFO will coordinate this requirement with the appropriate weapons and BMO office to make the following determinations:

- A. Probable availability of an existing contractor to satisfy the requirement.
- B. The extent to which the added requirement would constitute an acceptable level of interference with other weapons programs, if any.
- C. Whether the requirement and the performance on the equipment fall within the scope of an existing contract.
  1. Where it is determined that the performance on the requirement is within the scope of the contract but additional cost is involved, a CCN would be executed and WS 117L funds would be provided to cover the additional cost.
  2. Where it is determined that the performance on the requirement is not within the scope of existing contracts, a new contract would be negotiated and the costs involved will be satisfied by the use of available WS 117L funds.

**SIGNED**

R. C. TRUAX  
Commander, USN  
Assistant Deputy for WS 117L  
Technical Operations



ad J

## (U) Suggested Names for 117L Vehicles

WDCH

WDOS-1

3 Aug 56  
Lt Col Lynn/frp/549

1. In Norse Mythology, Odin was the sky-father. He was a strange and solemn figure, always aloof. He usually stayed in his golden palace, Gladsheim, and he depended on two ravens to bring him news.

2. These ravens normally perched on Odin's shoulders, but each day they would fly through the world and bring him news of all that men do. The name of one raven was Thought (Hugin) and of the other Memory (Munin). While the other gods feasted, Odin pondered on what Hugin and Munin taught him.

3. It is suggested that these names be used where applicable in the 117L program.

cc: WDCH

HARVEY P. LYNN, Jr.  
Lt Colonel, USAF  
WDOS-1WDOS-1  
Lt Col Lynnfrp  
549

MEMORANDUM TO: Colonel Ritland

AUG 3 1956

SUBJECT: Interference between WS 117L and WS 107A

1. One of the important aspects of WS 117L is the extent to which it might delay the WS 107A program. There are two ways to reduce this interference to zero. One is not to provide any additional funds for WS 117L. The other is to provide enough money to support a completely separate program. If we grant that WS 117L represents a worthwhile addition to our arsenal, neither of the above extremes seems practical. The most sensible procedure would be to apply WS 117L monies in a selective fashion at times and in areas where they would maximize WS 117L progress and minimize the deleterious effect on WS 107A. The optimum balance between these two factors cannot be measured precisely, but some qualitative indication of a tolerable amount of interference is necessary to permit planning on WS 117L to proceed. The original WS 117L development program called for initial SM65 boosted flights in the fall of 1958. Prior to submission of the development plan, the first flight date was pushed back to the second quarter of 1959 to reduce the anticipated interference to a level considered acceptable. This decision was made by Colonel Terhune and confirmed by Major General Schriever.

2. In your memo of 17 July, you requested a priority breakdown of the fiscal year 1957 budget by projects, and an indication of interference with the ICBM program. Based on the assumption that the objectives outlined in the development plan are valid, the cost breakdown by subsystems contained in the plan also hold. If a major fraction of the amount requested were received, funds would be apportioned similarly on a pro rated basis. If the cut were drastic, or if it were deemed desirable to emphasize elements of the program having "sales" value, to the detriment of the operational capabilities, some reallocation of funds would be made. It would require some weeks of study to determine exactly how a lesser amount could best be spent. We are now doing this in conjunction with Lockheed for the \$3,000,000 figure that has been mentioned.

DOWNGRADED AT 10 YEAR  
INTERVALS. NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

56-111

[REDACTED]

MEMO TO: Colonel Ritland (Cont'd)

SUBJECT: Interference between WS 117L and WS 107A

3. In order to give some feel for the interference, I have listed in Inclosure 1, those WS 107A contractors and agencies who would be required to contribute to WS 117L, the nature of the contribution, and the estimated dollar value for fiscal year 1957 and fiscal year 1958. Even at the \$19,000,000 level the interference is very small except for R-W, and even here it amounts to only 1% of the total effort. It should be remarked, however, that a few experienced people at each plant will be required to train WS 117L program personnel in the use of the equipment being provided.

4. Because of the time required to convert dollars into man hours of effort, the budget breakdown does not give an indication of the level of interference at the time the money is obligated, but one or two years later. Graphs I, II and III show estimated monthly WS 117L dollar expenditures and items in work for the three major ICBM contractors who will be affected by WS 117L.

5. Based on a twelve month fabrication time, an eighteen month order lead time, the relative number of missiles to be delivered indicates that the additional load to be placed on Convair, North American, and General Electric will reach a maximum of about 16% by the end of calendar year 1958 and then decreases because of the continued increase in production for WS 107A and level requirement for WS 117L.

6. During fiscal year 1958, the types of personnel required to support WS 117L at these contractors will be first, production planners, then procurement people, then factory labor. Experienced factory test and checkout personnel will not be required in any sensible numbers until the beginning of fiscal year 1959.

7. It appears from the above analysis that the WS 117L program, as outlined in the Development Plan of 2 April, will result in a small, but noticeable interference with WS 107A. It is believed that this level of interference is amply justified by the military value expected of WS 117L.

MEMO TO: Colonel Ritland (Cont'd)

SUBJECT: Interference between WS 117L and WS 107A

8. It is the belief of the WS 117L project office that, because of the extreme difficulty of scheduling research and development in such a large undertaking as WS 107A, that opportunities will arise from time to time to divert equipment, test facility time, etc to the WS 117L program with great advantage to the latter and without appreciable damage to the former. It is intended to schedule WS 117L activities in a fashion to be ready to utilize such equipment and facilities to advance the program wherever possible. It would be appreciated if General Schriever would make the above procedure a matter of official policy for the guidance of those charged with prosecuting both programs.

SIGNED

R. G. TRUAK  
Commander, USM  
Assistant Deputy for WS 117L  
Technical Operations

4 Incls:

1. Action required of ICGM contractors  
2 pages (SECRET)
2. 3 graphs (SECRET)
  - a. Missiles in Production
  - b. Power Plants in Production
  - c. Guidance Units in Production (Omitted)
3. Estimated Cost, 3 pages (SECRET)
4. Proposed Delivery Schedule, Fy 58-61 (SECRET) 2 pages

1 + 3

WDR 56-111

[REDACTED]

Action Required of IOEM Contractors in support of WS 117L

CONVAIR

1. Deliver one extra missile (airframe, propulsion and autopilot only) per month beginning January 1959.
2. In April 1959 train one additional launch team (either Convair or LAC personnel) in the preparation of the booster for launch. Prepare and launch one additional missile/month until the end of 1959.
3. Provide one additional set of ground checkout equipment firing consoles, and servicing equipment by January 1959; two sets by January 1960.

RAND-WOOLDRIDGE

1. Conduct an engineering study of the structural and control limitations of the SM65 missile with different sizes and weights of nose cone. (Partially completed now)
2. Make available one SM65 missile on captive test stand for environment checks of orbiting nose cone. It is estimated that a total of about ten such runs will be necessary, beginning in early 1958. They may be made in conjunction with other missile tests if the standard warhead will not be mounted.
3. Supply coordination relative to flight test schedules at AFMTC and manufacturing schedules at Convair. (Delete if IOC site used for WS 117L R & D)
4. Provide consulting and engineering services on request in areas where they have special competence. Estimated level 12 man months per month.
5. Supply logistic support to WID.
6. Supply interface coordination between WS 138L and WS 117L.

AFMTC or IOC Launch Site

1. Supply range and support facilities (with new constructions planned) and services to support missile launchings at the rate of 1 per month beginning April 1959.

[REDACTED]

[REDACTED]

MTR 56-111

Incl. 1

**North American**

1. Produce engines to meet Convair delivery schedule
2. Train L.A.C. Personnel in engine operation

**General Electric**

1. Produce and deliver airborne guidance components to meet Convair production schedule.
2. Deliver ground guidance checkout equipment(1 set) by 1 Jan. 1959.

**Estimated Breakdown of W<sup>3</sup> 117L Funds between ICOM contractors**

	<u>Ramo Wooldridge</u>	<u>Convair</u>	<u>North American</u>	<u>G.E.</u>
FY 1957	.26M	.1	.1	0
FY 1958	.26	17.0	7.5	.6

**ESTIMATED COST OF XSM-65 SERIES "0" FOR ARS**  
(Does not include Fee)

<u>ITEM</u>	<u>COST</u>	<u>SOURCE</u>
Convair Series "0" Airframe	\$343,800 - P-130	Book 2 - Page C-46
Wide Band Telemetry Sys.	19,150 - P-130	Book 2 - Page C-46
	<u>362,950</u>	
Spares 23.3%	84,700 - P-111	
	<u>\$447,650</u>	
NAA 360,000# thrust engines	550,000 - P-130	Capt Mallery, 6 Jan
Spare parts/package	75,000 - P-112	Capt Mallery, 6 Jan
	<u>\$625,000</u>	
G. E. Airborne guidance	\$50,000 - P-130	Col Blasingame, 6 Jan
Convair In-Plant testing	236,000 - P-130	Book 1, Page D-86
	<u>          </u>	(Total Item 8 FY 58 less flight)
		39 missiles Prod. FY 58
Each Missile FOB Convair	\$1,358,650	
Flight Test per missile	\$210,000	Book 1, Page D-86 & 87
		(Item 8 FY Flight + AFMC)
		13 missiles launched FY 58
Gen Bldg, Sv & Launching Equipment, Incl Spares	\$233,000 - P-244	Book 2, Page A-26
		Total A,B,C + spares/61 missiles
Checkout Equipment, Incl spares	\$258,000 - P-111	Book 2, Page A-27
		Total A,B,C + spares/61 missiles
Fuel, lubricants, etc.	60,000 - P-130	Book 2, Page G-2
Total each Missile Launched	<u>\$2,119,650</u>	0. factor is 4; R-W he factor is 13. Fuel = \$36,225; He = \$11,000; \$9,775 for contingencies.
Pooling to provide Convair with six missile/month capacity (Does not include labor)	\$560,000 - P-130	Book 2, Pages E-4 & F-1
		Total E-4 + F-1
		Present 5 missile capacity
Launch 10 missiles	21,496,500	
	560,000	
	<u>\$22,056,500</u>	10 missile program cost
	200,000	M.O. adapter eng. & test
	?	Engr'g changes
	1,330,000	Fee
	<u>\$23,586,500</u>	Total CVAC for 10 missile program

WDTR 56-111

[REDACTED]

12 Missile Order FY 58 Budget

P-130	\$17,263,400
P-141	\$ 1,016,400
(Airframe Spares)	
P-142	\$ 900,000
(Power Plant Spares)	
P-244	\$ 5,892,000
(Ground Handling Equipment)	
	<u>\$25,071,800</u>

Convair

\$16,971,800

North American

\$7,500,000

G. B.

\$600,000

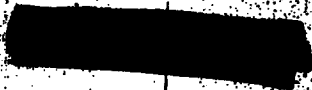




Fiscal Year 1958

<u>Subsystem</u>	<u>F600</u>	<u>Other</u>
1. Vehicle (including boosters)	10.0	22.5
2. Propulsion	1.5	5.7
3. Auxiliary Power Unit	5.1	0.4
4. Guidance & Control	5.0	4.1
5. Visual Recon	7.1	4.1
6. Electronic Recon	1.6	0.9
7. Infra-red Recon	1.4	0.0
8. Ground Space Communication	1.4	25.8
9. Data Processing & Intelligence Dissemination	7.5	4.1
10. Ground Support & Training	0.0	6.5
	<u>10.6</u>	<u>74.1</u>

Source: WS 117L Development Plan  
dated 2 April 1956



WDTR 56-111

[REDACTED]

Ramo-Wooldridge  
WS-107A-1 Program Director  
Attn: Mr. Abramson

2 Aug 56

Availability of SM 65A Missiles for WS 117L

WDTC (JDR)

1. The attached copy of memo is forwarded for your information.
2. It is requested that you coordinate with Commander Truxax when preparing revisions to missile allocations, and that he be kept informed of possibilities of missiles and supporting equipment becoming available to WS-117L from currently programmed equipment.
3. The above does not mean that missiles will be programmed against a possible WS-117L requirement, but rather, that the requirements of WS-117L as approved will be considered in any revision of WS-107A-1 missile allocations or production quantities.

JOSEPH D. HECK, JR.  
Lt. Colonel, USAF  
OTTO J. GLASSER  
Colonel, USAF  
Assistant for WS-107A-1

1 Incl  
cy of Memo from Cmdr  
Truxax, dtd 23 Jul 56

WDTCX

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INTERVALS. NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

WDTC  
L/C Heck

rr 2 Aug 56  
575

[REDACTED]

**FINAL REPORT**

**July 31, 1956**

**ADVANCED RECONNAISSANCE SYSTEM**

**COMPONENT  
RELIABILITY STUDY**



**RADIO CORPORATION OF AMERICA**

**DEFENSE ELECTRONIC PRODUCTS  
CAMDEN, NEW JERSEY**

**and  
RCA LABORATORIES  
PRINCETON, NEW JERSEY**

Contract AF 33(616)3641

[REDACTED]

Master Control

No. 50435

Copy 11 of 40

FINAL REPORT

(u) ADVANCED RECONNAISSANCE SYSTEM  
COMPONENT RELIABILITY STUDY

DOWNGRADED AT 3 YEAR INTERVALS  
DECLASSIFIED AFTER 12 YEARS.  
DOD DIR 5200.10

Prepared for:

WRIGHT AIR DEVELOPMENT CENTER

Dayton, Ohio

Contract No. AF33(616)3641

Exhibit No. 56-8

Prepared by:

RADIO CORPORATION OF AMERICA

RCA Laboratories

Princeton, New Jersey

Defense Electronic Products

Camden, New Jersey

[REDACTED]

WD-57-00097

WESTERN DEVELOPMENT DIVISION

HEADQUARTERS AIR RESEARCH AND DEVELOPMENT COMMAND  
POST OFFICE BOX 262  
INGLEWOOD, CALIFORNIA

INTEROFFICE CORRESPONDENCE

Hullerman

117L  
HTV  
756  
nose cone

TO: Colonel Terhune, WDT

CC: Colonel Leonhard, WDI DATE:

SUBJECT: HADC Sled Track Requirements and Related Requirement for Relocating Existing Launch Stands

FROM: LtCol Jacobson, WDTT

1. On 17 January 1956, WDD stated by TWX to Headquarters USAF the projected WDD requirements for track testing (see Incl 1 to this memo). These requirements called for:

a. 150 runs for inertial guidance component testing (tests are already scheduled for the SMORT track at NOTS).

b. 150 runs for ICBM guidance and nose cone component testing at velocities of 2,500 ft/second for one to two seconds, accelerations of 5-15G and decelerations from 10-16G.

c. 100-150 runs for ICBM development.

d. Unspecified number of test runs for the WS-117L Program.

2. To date the following tests have been identified, planned and/or conducted in support of WDD projects:

a. 150 run for inertial guidance component testing (to date, 12 runs of this series have been made at NOTS).

b. 15-20 test runs for impact fuze testing on GE nose cone on Sandia track. Testing is to take place during the period February to December 1957.

c. 15-20 test runs for impact fuze testing on AVCO nose cone on Sandia track; tests to be conducted in 1957.

d. 10-20 test runs for Bell Telephone Lab guidance components environmental testing; to be complete by April 1957. Track to be used is unknown at this time.

e. 10-20 test runs for AVCO stable platform (nose cone) testing; to be completed during the period April to July 1957. Track to be used is unknown at this time.

f. Testing of WS-117L components. At present, approximately 50 test runs have been identified. Testing is to start in November 1957. Track to be used is unknown at this time but due to the expected requirement of high velocities for several seconds, the HADC track is indicated.

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[REDACTED]

g. 10 test runs for the North American Aviation engine structural integrity tests at 10-15 G acceleration are proposed. Tests to be run in late 1956 and early 1957. AFFTC track would be used. Requirements for this series of tests are now being reviewed.

3. The originally stated requirements for sled testing made in January 1956 are proving firm in that of the original estimate of 450 sled test runs, 280 runs already have been identified. Additional runs are expected to be identified as the program progresses. Among these already being considered are:

a. A second series of tests for GE, AVCO and Sandia. These tests will total approximately 30 runs.

b. Advanced systems test for inertial guidance sub-systems. These tests would total at least 50 runs.

4. The recent progress of the NOTS test runs indicates that sled testing will prove satisfactory for inertial guidance components. There is an indication that drift measurements will be available at accuracies commensurate with velocity measurements. If such proves to be the case, additional inertial component test runs will be programmed.

5. The extension of the HADC track has cut across the missile test range in such a fashion as to divide the launch complexes from the impact areas. Missiles therefore must overfly the track. Considering all types of missiles, the average number of launchings per month is approximately 21. This includes MATADOR, X-7B's, Q-4's, HTV's and the air-to-air rockets. Inclosure 2 summarizes the HADC position on relocation of these facilities. The cost involved is that required for relocation of the instrumentation facilities. This is, in essence, the complete Holloman test range. (Colonel Leonhard, WII, is preparing a memo this date for General Schriever summarizing the background on the planning for relocation for this area).

6. Simultaneous operation of the sled track and the launch complex is not considered practical for several reasons. Among these are:

a. The entire sled track area must be evacuated during missile launchings as missiles overflying the track would endanger personnel working on the track. Proper scheduling could eliminate this danger to personnel but would result in greatly increased costs of operation for both the missile launch range and the track.

b. Missiles scheduled to overfly the track present definite hazards to the track and the related facilities. On 26 July 1956, HTV Launching Flight W-2 terminated approximately 150 yards from the new track. When the track is completed, each rail will be a pre-stressed continuous beam of 35,000 feet, stretched 12 feet longer than normal in order to keep it under continuous tension. Hits on or near the track would require repair and the estimated cost of re-stressing the track is \$900,000.

[REDACTED]

7. From the above, it appears that relocation of the existing HADC instrumentation for ground and air launch missiles is necessary in order to insure uninterrupted operations of both the track and test facility. This relocation will result in savings of funds to the Air Force.

*Richard K. Jacobson*

RICHARD K. JACOBSON  
Lt Colonel, USAF  
Chief, Test Group

2 Incl

1. Cy TWX WDTT-1-8-C-E,  
17 Jan 56
2. Cy ARDC ltr w/1st Ind,  
26 Apr 56, subj: Re-  
siting of Missile Launch  
Area

*see  
Hullomaufeld*

WDTR

23 July 1956

SUBJECT: R-W Support of WS 117L Contractor

TO: Ramo-Wooldridge Corporation  
Attn: Dr. Fletcher

1. As per agreement of 18 June 1956, a request for information has been received from Lockheed Aircraft Corporation and is herewith forwarded to you. Due to the delay in transmitting this request, some of the due dates have passed, therefore, a realistic time schedule for submission of the material through Western Development Division, WDTR, to Lockheed Aircraft Corporation should be established with the keynote being "As soon as practical".
2. With regard to inclosure paragraphs 5 and 6, it is felt that R-W might suggest a list of pertinent reports representing the most up-to-date information in the various areas. (5a through c and 6). This list should be furnished WDTR for report transmittal to Lockheed Aircraft Corporation. After Lockheed has these reports, meetings between Lockheed and R-W or contractors may be arranged to supplement the information.
3. In addition to the information requested by Lockheed, it is requested that the appropriate guidance group, responsible for establishing IOC Site Selection Criteria, perform a study on the joint use of an IOC guidance station for WS 117L launchings. It is hoped that one of these guidance stations intended for Camp Cooke can, without appreciably degrading its IOC performance, be used to guide a WS 117L vehicle up through sustainer cut-off. The study should presume that separate ARS launch pads exist and can be properly located with respect to the guidance station. ARS launch direction requirements exist from 180° True to 270° True.
4. In the event that an involved realignment must be made for the southerly launch, an estimate of the amount of time when the station would not be "ready" for operational firings should be made as well as suggestions for any modifications feasible for eliminating this as a problem area for joint use with IOC.

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INTERVALS; NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR

WDTR 56-107



[REDACTED]  
WDD (HQ ARDC) WDIR Subject: R-W Support of WS 117L Contractor

5. It is intended that this criteria be fed into the IOC Site Selection at the earliest possible date, hence, an early transmittal of results would be appreciated.

1 Incl.

Lockheed letter dtd 2 Jul 56  
WD 56-02146 (Secret)

CC: Lockheed Aircraft Corporation  
Missiles Systems Division  
Attn: Mr. J. H. Carter  
7701 Woodley Avenue  
Van Nuys, California

SIGNED

R. C. TRUAX  
Commander, USN  
Assistant Deputy for WS 117L  
Technical Operations

WDIR  
Lt Herther

E.H.  
236  
[REDACTED]

WDIR 56-107

[REDACTED]

23 July 1956

MEMORANDUM FOR: Captain Penick

SUBJECT: WS 117L Training Program

1. From the standpoint of reducing interference with the WS 107A program, it would seem advisable to train Lockheed Aircraft Corporation people at the earliest appropriate time and so get them "on their own" at the earliest practicable date. This training will, in itself constitute some interference. The WS 117L Project Office would like the answers to the following questions:

a. How many people would be required to conduct an independent SM 65 launch operation. (Can you get me a list of people and their duties?)

b. How much would it cost to train these people at Convair on the SM 65? (Assume fairly well qualified people to start with)

c. What would be the most propitious time to start such a training program?

d. What do you think Convair's attitude would be towards training Lockheed people?

2. It would be appreciated if at least rough answers to the above could be obtained from Convair as soon as possible.

SIGNED

R. C. TRUAX  
Commander, USN  
Assistant Deputy for WS 117L  
Technical Operations

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DOD DIR 5200.10

WDTR

E.H.

RC Truax

[REDACTED]

*Date: subsequent to  
13 Jul 56*

MEMORANDUM TO: Colonel Ritland

SUBJECT: Progress Report on WS 117L

Activation of the WS 117L development plan is still awaiting USAF approval and allocation of funds. On 22 May the ARDC approved the selection of Lockheed as prime systems contractor and authorized expenditure of any remaining Project 1115 funds to continue studies and maintain continuity at Lockheed. A total of \$389,245 has been collected in Project 1115 Fy 56 funds and allocated to support continued studies at Lockheed. A GCN was issued to Lockheed on 12 June calling for the following additional studies:

- a. A revised development program consistent with the USAF Development Plan.
- b. Establishment of launching site criteria
- c. Determine most suitable guidance system.
- d. Preliminary detailed designs for Pioneer Reconnaissance vehicle.

Work by MIT on ascent guidance and orbital stabilization has been continued in an amount of approximately \$30,000 primarily to keep the team together pending selection of a contractor by Lockheed for guidance work.

A WDD team briefed the Antarctic Committee of the ODM, on 12 July 1956 and the President's Scientific Advisory Committee on 13 July 1956.

HQ, USAF has released \$3,000,000 of Fy 57 R & D funds to HQ ARDC for WS 117L. A request is being prepared by HQ USAF to the OSD for the remainder of the Fy 57 money called for in the Development Plan.

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INTERVALS; NOT AUTOMATICALLY  
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DECLASSIFIED AFTER 12 YEARS  
DOD DIR 5200.10

WDTR 56-100

**MEMO TO:** Colonel Ritland

**SUBJECT:** Progress Report on WS 117L

No Fy 57 funds have, however, been received at WDD. Processing of the Development Plan by the Air Staff is approximately 50% complete.

Work has continued at the Centers and at WDD on the preparation of subsystem development plans and the formulation of work statements in preparation for contractual negotiations.

**SIGNED**

R. G. TRUAX  
Commander, USN  
Assistant Deputy for WS 117L  
Technical Operations

MEMORANDUM TO COMMANDER TRAC  
FROM: [REDACTED]

20 JULY 1976

SUBJECT: 112 MANAGEMENT

1. IT IS REQUESTED THAT A NEW POSITION BE ADDED TO THE STAFF  
MANAGEMENT OF THE 112. IN RESPONSE TO THE NEED FOR A POSITION. THIS POSITION  
WOULD HANDLE THE SECURITY MATTERS WHICH WERE PREVIOUSLY  
HANDLED BY THE PROJECT STAFF AND THE SCIENCE ADVISORY COMMITTEE.

2. THE POSITION TO BE OPEN-ALL USAP/ASCC/AD COMMANDER'S OFFICER,  
AS WELL AS SECURITY MATTERS AND TYPE OF CONTROL AND LIAISON UNDER WHICH  
LIAISON WITH THE PROJECT STAFF WILL BE REQUIRED TO FUNCTION.

3. REQUEST THAT THIS BE PROVIDED IN DRAFT FORM AT THE PRESENT TIME  
AND THAT UPON THE INITIATION OF THIS STAFF, I SHOULD LIKE TO MAKE A DIS-  
CUSSION OF THE MATTER CONCERNING WITH THE DEVELOPMENT OF THIS MANAGEMENT  
FUNCTION.

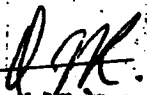
O. J. RITLAND  
Colonel, USAF  
Vice Commander  
O. J. RITLAND  
Colonel, USAF  
Vice Commander

MEMORANDUM TO COMMANDER TRUAX  
THRU: WDT

17 JULY 1956

SUBJECT: WEAPON SYSTEM 117L

1. REFERENCE IS MADE TO THE QUESTIONS POSED BY THE SCIENTIFIC ADVISORY COMMITTEE AFTER THE WS 117L PRESENTATION ON THE 16TH OF JULY 1956. THESE QUESTIONS INVOLVED FUNDING FOR THE PROJECT DURING FY 1957.
2. IT IS REALIZED THAT THE DEVELOPMENT PLAN IS BASED ON A COMPLETED WEAPON SYSTEM CONCEPT AT AN EARLY DATE AND IS COMMENSURATE WITH AND TIED TO THE AVAILABILITY OF BOOSTERS AND COMPONENTS OF THE 107A PROJECT. IT IS OBVIOUS THAT AT SOME FUTURE DATE, THERE WILL BE INTERFERENCE WITH THE ICBM PROGRAM IF THE 117L IS PROJECTED ON A FULL-OUT BASIS. THIS INTERFERENCE FACTOR IS MOST IMPORTANT TO ALL THOSE CONCERNED WITH THE ICBM PROGRAM. ACCORDINGLY, WE SHOULD BE MORE DEFINITIVE AND REALISTIC IN DETERMINING THE AMOUNT OF MONEY THAT CAN BE SPENT IN ANY FISCAL YEAR AND THE INTERFERENCE GENERATED IN THE ICBM PROGRAM THROUGH THIS EFFORT.
3. IT IS REQUESTED THAT WE IMMEDIATELY PREPARE A FUND BREAKDOWN BY INDIVIDUAL PROJECT FOR THE ENTIRE 1957 FISCAL YEAR ESTIMATE. NAMELY, WE SHOULD ESTABLISH A LISTING OF PROJECTS BY PRIORITY AND DOLLARS FOR THE \$37 MILLION REQUIRED IN 1957. FROM THIS LISTING, WE CAN THEN DETERMINE HOW MUCH OF THE WORK CAN BE ACCOMPLISHED WITH VARIOUS AMOUNTS OF MONEY AVAILABLE FOR THE PROJECT. AT SOME POINT IN THIS SCHEDULE, WE SHOULD GIVE AN INDICATION OF THE DEGREE OF INTERFERENCE WITH THE ICBM PROGRAM.

  
G. J. TRITLAND  
COLONEL, USAF  
VICE COMMANDER

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DECLASSIFIED AFTER 12 YEARS  
DOD DIR 5200.10

WDTIA

10 Jul 56

DOWNGRADED AT 3 YEAR INTERVALS;  
DECLASSIFIED AFTER 12 YEARS.  
EOD DA 1000

Mr. Harlow H. Curtice  
President, General Motors Corporation  
General Motors Building  
Detroit, Michigan

Dear Mr. Curtice:

In keeping with Western Development Division policy of informing the top management of each of our contractors concerning our over-all status, I am taking this opportunity to discuss with you the effort that the AC Spark Plug Division of General Motors Corporation is making in support of the ballistic missile program.

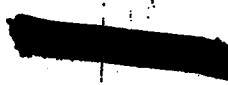
Last December AC Spark Plug was given full responsibility for the development of an all-inertial guidance system for the Air Force Intermediate Range Ballistic Missile Program. It is now necessary that we take action to provide for an operational capability with this missile at the earliest possible date. Therefore, we have decided to place the additional responsibility for production of this guidance system with the AC Spark Plug Division. No other guidance system is now planned for the initial operational capability of the IRBM. The entire IRBM program is of the greatest importance to our nation and is being carried out with the highest national priority. Accordingly, the General Motors Corporation shares a tremendous responsibility for the attainment of a successful operational capability.

We have noted shortcomings at AC Spark Plug which we feel result from an insufficient number of personnel experienced in the management of large scale research and development programs. Although this situation has been improving due to sincere effort on the part of the AC Spark Plug project personnel, we believe there is need for further action and for assistance from top General Motors management to AC Spark Plug.

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DOD DIR 5200.10

WDTIA  
Lt Col Box

pl  
1201



[REDACTED]

To help solve the problems my staff have noted, and others that may arise as the program grows, more direct participation by the General Motors corporate management in the AC Spark Plug program would be of great benefit. For example, I urge you to consider establishing a steering committee to regularly review the AC program and insure that this effort is receiving appropriate support from other divisions of the General Motors Corporation. Such a committee, headed by Dr. Lawrence E. Hafstad, Vice President, Research Staff, and composed of carefully selected personnel from the research center and the cooperation at large, would very materially increase our confidence in the success of the program. A similar organizational arrangement at General Electric headed by Dr. W. R. G. Baker, Vice President and General Manager, Electronics Division, has been most helpful to our program there. Dr. Baker has given particular aid in obtaining the transfer of key personnel to our project when needed.

I would appreciate your careful consideration of my proposal. If you agree to the formation of a committee of this type, I would like the opportunity to discuss more of the details with Dr. Hafstad in the immediate future. I have known Dr. Hafstad for many years and have the highest regard for his capabilities. The Air Force would be very pleased with a formal organizational arrangement which would insure Dr. Hafstad's continued and active support of the AC Spark Plug program.

Sincerely,

Original signed by  
General Schriever  
10 July 1956



WESTERN DEVELOPMENT DIVISION  
HEADQUARTERS  
AIR RESEARCH AND DEVELOPMENT COMMAND  
Post Office Box 262  
Inglewood, California

*Dr. P. R. Schafel*  
*W D & H*

PERSONNEL ACTIONS MEMORANDUM  
NUMBER 16)

5 July 1956

1. VOC, iss 28 Jun 56, Asg LTCOL FRANCIS K BAGBY, 4456A, this Div, this sta, Prim By as Proj 0 (Systems Integration) Systems Integration Ofc WS 107A-2, Tech Opns (8446), are cfm ESPWO. FA: 57000.
2. VOC, iss 2 Jul 56, Asg LTCOL JOHN S CHAMLER, 10102A, this Div, this sta, Prim By as Proj 0, Facilities, Facil & Test Ofc WS 107A-2, Tech Opns (8446), are cfm ESPWO. FA: 57000.
3. VOC, iss 2 Jul 56, Asg LTCOL RICHIE B GOOCH, 7003A, this Div, this sta, Prim By as Proj 0 (Systems Integration) Systems Integration Ofc, Asst for WS 107A-1, Tech Opns (8446), are cfm ESPWO. FA: 57000.
4. VOC, iss 2 Jul 56, Asg LTCOL FREDERICK S PORTER, JR, 12848A, this Div, this sta, Prim By as Asst Ch, Test Group, Tech Opns (8446), are cfm ESPWO. FA: 57000.
- ✓ 5. VOC, iss 2 Jul 56, Asg LTCOL CHRISTEN A RIEPE, 9883A, this Div, this sta, Prim By as Proj 0 (Schedules) Plans & Prog Ofc, Asst for WS 1174, Tech Opns (8446), are cfm ESPWO. FA: 57000.
6. VOC, iss 1 Jul 56, Asg LTCOL ROY J WELLMAN, A9311160, this Div, this sta, Prim By as Asst Ch, Propulsion Gp, Tech Opns (8446), are cfm ESPWO. FA: 57000.
7. VOC, iss 1 Jul 56, Asg MAJ ALBERT L BUEHLER, A9748057, this Div, this sta, Prim By as Ch, Acctg. Br, Comptroller, Support Opns (6736), are cfm ESPWO. FA: 57000.
8. VOC, iss 2 Jul 56, Asg MAJ DAVID L CARTER, 12035A, this Div, this sta, Prim By as Dep Asst for Tech Gps, Tech Opns (8446), are cfm ESPWO. FA: 57000.
9. VOC, iss 2 Jul 56, Asg MAJ RICHARD L BENNETT, 15837A, this Div, this sta, Prim By as Test Proj 0, WS 107A-1 Test Br, Test Gp, Tech Opns (8446), are cfm ESPWO. FA: 57000.
10. VOC, iss 2 Jul 56, Asg MAJ WILLIAM H EHRHKE, 13235A, this Div, this sta, Prim By as R & D Proj Adm, Branch "C", Armament Gp, Tech Opns (8446), are cfm ESPWO. FA: 57000.

Para 1 thru 26, PERAM 16, WED (ARDC) 5 Jul 56

11. VOC, iss 2 Jul 56, Asg MAJ SIMNEY GREENE, 20658A, this Div, this sta, Prim Dy as Proj O, Systems Integration Ofc, Asst for WS 315A, Tech Opns (8446), are cfm ESPWO. FA: 57000.
12. VOC, iss 1 Jul 56, Asg MAJ WILLIAM F HEIDLER, 8979A, this Div, Dy Sta Patrick AFB, Fla, Prim Dy as Proj O (Schedules) WS 107A-1 Proj Ofc, WED Field Ofc, AFMTC, Tech Opns (8446) are cfm ESPWO. FA: 57000.
13. VOC, iss 2 Jul 56, Asg MAJ JOHN W HINEY, 12105A, this Div, this sta, Prim Dy as Asst Ch, (WS 107A) Programs Br, Prog & Proc Gp, Tech Opns (8446), are cfm ESPWO. FA: 57000.
14. VOC, iss 2 Jul 56, Asg MAJ ULLIN L HUBBON, 10120A, this Div, this sta, Prim Dy as Ch, Programs Contl Br Br, Prog & Proc Gp, Tech Opns (8446), are cfm ESPWO. FA: 57000.
15. VOC, iss 1 Jul 56, Asg MAJ JOHN C LE SUEUR, A0884110, this Div, Dy Sta Patrick AFB, Fla, Prim Dy as Proj O (Schedules), WS 107A-2 Proj Ofc, WED Field Ofc, AFMTC, Tech Opns (8446), are cfm ESPWO. FA: 57000.
16. VOC, iss 2 Jul 56, Asg MAJ PETER G PALMOS, 14919A, this Div, this sta, Prim Dy as Ch, Budget Br, Comptroller, Support Opns (6736), are cfm ESPWO. FA: 57000.
17. VOC, iss 1 Jul 56, Asg MAJ ANTHONY J BOSE, 17043A, this Div, Dy Sta Patrick AFB, Fla, Prim Dy as Proj O (Airframe) WS 315A Proj Ofc, WED Field Ofc, AFMTC, Tech Opns (8446), are cfm ESPWO. FA: 57000.
18. VOC, iss 2 Jul 56, Asg MAJ ROBERT J RUSHING, A9684899, this Div, this sta, Prim Dy as Proj Assistance O, Proj Asst Sec, Security Gp, Support Opns (7716), are cfm ESPWO. FA: 57000.
19. VOC, iss 2 Jul 56, Asg MAJ JOHN A WEBSTER, 14134A, this Div, this sta, Prim Dy as Proj Assistance O, Proj Asst Sec, Security Gp, Support Opns (7716), are cfm ESPWO. FA: 57000.
20. VOC, iss 24 Jun 56, Asg MAJ RAYMOND E ZELENKA, 12701A, this Div, this sta, Prim Dy as Proj O (Programs), Plans & Prog Ofc, Asst for WS 117L, Tech Opns (8446), are cfm ESPWO. FA: 57000.
21. VOC, iss 24 Jun 56, Asg CAPT LEWIS B C LOGAN, 17345A, this Div, this sta, Prim Dy as Proj O (Guidance), Systems Integration Ofc, Asst for WS 117L, Tech Opns (8446), are cfm ESPWO. FA: 57000.
22. VOC, iss 1 Jul 56, Asg CAPT ROBERT W ROY, 22332A, this Div, Dy Sta Patrick AFB, Fla, Prim Dy as Proj O X-17, X-17 Proj Ofc, WED Field Ofc, AFMTC, Tech Opns (8446), are cfm ESPWO. FA: 57000.

Para 1 thru 26, PERAM 16, EDD (ARDC) 5 Jul 56

23. VOC, iss 1 Jul 56, Asg CAPT WILMER C WALTERS, JR, 27017A, this Div, this sta, Prim Dy as Asst Proj O (Systems Integration Ofc) Asst for WS 315A, Tech Opns (8446), are cfm ESPWO. FA: 57000.

24. SMOP 2, PERAM 15, this Div, this sta, ca, PERT to LTCOL LANGDON F AYRES, 9512A, as reads "VOC, iss 18 Jun 56" IATR "VOC, iss 30 Jun 56."

25. SMOP 9, PERAM 14, this Div, this sta, ca, PERT to MAJ BERNARD R AHLER, 13982A, as reads "13982A" IATR "13982A."

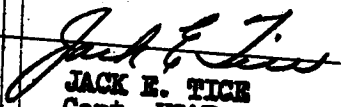
26. Functional Category of the FPO is changed from PFA to FEB:

LTCOL FRANCIS K BAGEY, 4456A  
LTCOL JOHN S CHANDLER, 10102A  
LTCOL RITCHIE B GOUGH, 7003A  
LTCOL FREDERICK S PORTER, JR, 12848A  
LTCOL QUESTEN A RINPE, 9883A  
LTCOL ROY J WELLMAN, A031160  
MAJ ALBERT L BUEHLER, A0748057  
MAJ DAVID L CARTER, 12035A  
MAJ RICHARD L DENNEN, 15837A  
MAJ WILLIAM H HENLKE, 13235A  
MAJ SIENEY GREENE, 20658A  
MAJ WILLIAM F HETSLER, 8979A

MAJ JOHN W HINNEY, 12105A  
MAJ ULLIN L HUBSON, 10120A  
MAJ JOHN C LE SUER, A0884110  
MAJ FREDERICK C PALMOS, 14919A  
MAJ ANTHONY J ROSE, 17043A  
MAJ ROBERT J RUSHING, A0684899  
MAJ JOHN A WEBSTER, 14134A  
MAJ RAYMOND E ZELENIKA, 12701A  
CAPT LEWIS B C LOGAN, 17345A  
CAPT ROBERT W ROY, 22332A  
CAPT WILMER C WALTERS, JR, 27017A

BY ORDER OF THE COMMANDER:

OFFICIAL:

  
JACK E. TICE  
Capt, USAF  
Asst Div Adjutant

JACK E. TICE  
Capt, USAF  
Asst Div Adjutant

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85 - Pers Serv

[REDACTED]

WDTR

3 July 1956

SUBJECT: WS 117L Presentation

THRU: Air Force Plant Representative  
Lockheed Aircraft Corporation  
P.O. Box 551  
Burbank, California

TO: Lockheed Aircraft Corporation  
Missile Systems Division  
Attn: Mr. W. D. Orr  
7701 Woodley Avenue  
Van Nuys, California

1. It is requested that Lockheed Aircraft Corporation make a presentation of the current WS 117L system concept, particularly as it pertains to the auxiliary power unit, to the Atomic Energy Commission and Air Force contractors studying the nuclear type auxiliary power unit for the satellite.

2. The briefing will be given at Western Development Division on 12 July 1956 to Atomics International, Air Research, Lockheed Missile Systems Division, Thompson Products and the Glenn L. Martin Company.

3. Particular attention should be given to time phasing and interaction problems involved in integration of this type of power unit in the WS 117L development.

FOR THE COMMANDER:

SIGNED

R. C. TRUAX  
Commander, USN  
Assistant Deputy for WS 117L  
Technical Operations

DOWNGRADED AT 3 YEAR INTERVALS  
DECLASSIFIED AFTER 12 YEARS.  
DOD DIR 5200.10

[REDACTED]

[REDACTED]

[REDACTED]

WDTR 56-95