

~~CONFIDENTIAL~~

30 OCT 1999

MSD 2011

EXEMPTED FROM 25 MAR 1996
DECLASSIFICATION IAW EO 12958
REVIEW DATE _____ REVIEWER 61
REFER TO _____
EXEMPTION (S): 1 2 3 4 5 6 7 8 9

3-9 pages correct

Director	AD-10	AD-11	AD-12	AD-13	AD-14	AD-15	AD-16	AD-17	AD-18	AD-19	AD-20	AD-21	AD-22	AD-23	AD-24	AD-25	AD-26	AD-27	AD-28	AD-29	AD-30
Maxwell																					
Just																					
Smith																					

7 NOV 1956

pt. 9

K243.8636-37

WS 117L ADVANCED RECONNAISSANCE SYSTEM

DEVELOPMENT PLAN

VOLUME II SUBSYSTEM PLANS

J. Ground Support and Training

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

LOCKHEED AIRCRAFT CORPORATION
MISSILE SYSTEMS DIVISION
PALO ALTO, CALIFORNIA

MICROFILMED BY ADA

~~CONFIDENTIAL~~

3-6806-22
00920392



30 OCT 1989

NOTE: Do not return
to WDSIT. Destroy
according to applicable
security regulations.

MSD 2011
1 NOVEMBER 1956

COPY NO. 4
57 SHEETS

REVIEW ON 31 Dec 2006

Distribution Restricted to AT/IT/Adm. Serv. Branch Maxwell AFB, Alabama	1 Nov 1956 pt 9 K243,8636-37
--	------------------------------------

WS 117L ADVANCED RECONNAISSANCE SYSTEM

DEVELOPMENT PLAN

VOLUME II SUBSYSTEM PLANS

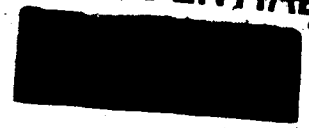
J. Ground Support and Training

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

LOCKHEED AIRCRAFT CORPORATION
MISSILE SYSTEMS DIVISION
PALO ALTO, CALIFORNIA

MICROFILMED BY ADU

~~CONFIDENTIAL~~



0-0200-22
00920392

SECRET

THIS DOCUMENT CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF THE ESPIONAGE LAWS, TITLE 18 U.S.C., SECTIONS 793 & 794. ITS TRANSMISSION OR THE REVELATION OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW.

MICROFILMED BY ADM

LOCKHEED AIRCRAFT CORPORATION

SECRET

MISSILE SYSTEMS DIVISION

WDSIT- 56-1770

~~CONFIDENTIAL~~

MSD 2011

FOREWORD TO VOLUME II

The Advanced Reconnaissance System (Weapon System 117L) consists of a satellite vehicle which can perform visual, electronic, and infrared reconnaissance, together with the necessary system of ground stations, data processing centers, and training facilities.

In accordance with the instructions of CCN No. 1 to Contract AF 33(616)-3105, the Missile Systems Division, Lockheed Aircraft Corporation, has revised its Subsystem Development Plan (MSD 1536, Volume II) to be consonant with the WDD Development Plan, dated 2 April 1956, as modified and published in Volume I of this report.

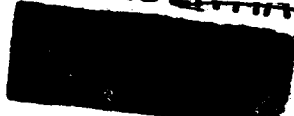
It should be noted the outline of subsystems as given in MSD 1536 has been changed to agree with the WDD Plan. Subsystems H and J of MSD 1536 have been combined to give a new Subsystem H - Ground-Space Communications.

In accordance with oral instructions from WDD, the Flight Test Subsystem I of MSD 1536 has not been documented at this time. The information pertaining to flight testing is presented in the other subsystem volumes as appropriate. The titles of old Subsystems K and L (now I and J, respectively) have been changed.

~~CONFIDENTIAL~~

LOCKHEED AIRCRAFT CORPORATION

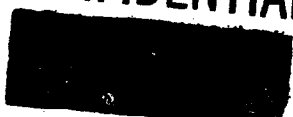
MISSILE SYSTEMS DIVISION
WDSIT- 56-1779



OUTLINE
OF
WS 117L DEVELOPMENT PLAN

- Volume I SYSTEM PLAN
- Supplement (Top Secret)
- Volume II SUBSYSTEM PLANS
- A Vehicle
- B Propulsion
- C Auxiliary Power
- D Guidance and Control
- E Visual Reconnaissance
- F Electronic Reconnaissance
- G Infrared Reconnaissance
- H Ground-Space Communications
- I Data Processing and Intelligence Dissemination
- J Ground Support and Training

~~CONFIDENTIAL~~



CONTENTS

RDB Project Card (Form DD613)

Tab 1 General Design Specification

Tab 2 Subsystem Summaries (Revised Form 103)

Milestones

Hardware Delivery

Test Schedules

R and D Schedules

Tab 3 R & D Test Annex (ARDC Form 105)

Tab 4 R & D Test and Support Aircraft Annex (ARDC Form 106)

Tab 5 R & D Material Annex (ARDC Form 107)

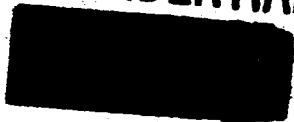
Tab 6 Facilities (Revised Form 108)

Tab 7 Contract Funds

Tab 8 Manpower

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~



MSD 2011

RDB PROJECT CARD

**LOCKHEED AIRCRAFT CORPORATION
MISSILE SYSTEMS DIVISION**

~~CONFIDENTIAL~~



RDB PROJECT CARD

TYPE OF REPORT

REPORTS CONTROL SYMBOL
DD-RDB(A)48

1. PROJECT TITLE
GROUND SUPPORT AND TRAINING SUBSYSTEM FOR
ADVANCED RECONNAISSANCE SYSTEM (Uncl)
WEAPON SYSTEM 117L

2. SECURITY
S

3. PROJECT NUMBER
WS 117L

4. INDEX NUMBER

5. REPORT DATE
1 November 1956

6. BASIC FIELD OR SUBJECT
Strategic Air Warfare

7. SUBFIELD OR SUBJECT SUBGROUP

7A. TECH. OBJ.

8. COGNIZANT AGENCY
Air Research and
Development Command

12. CONTRACTOR AND/OR LABORATORY
Lockheed Aircraft Corp.
Missile Systems Division

CONTRACT/W.O. NO.

9. DIRECTING AGENCY
Hq ARDC
Western Development Division

OFFICE SYMBOL

TELEPHONE NO.

10. REQUESTING AGENCY
Hq. USAF

13. RELATED PROJECTS

17. EST. COMPL. DATES

RES.

DEV.

TEST

OP. EVAL.

18. FY FISCAL ESTS. (M \$)

11. PARTICIPATION, COORDINATION, INTEREST

14. DATE APPROVED

15. PRIORITY
1A

16.

19.

20. REQUIREMENT AND/OR JUSTIFICATION
a. The ground support and training subsystem provides facilities for vehicle launching, logistical methods and procedures, system and component testing, and component evaluation testing. This subsystem identifies specialized ground handling, check out, test equipment, and processing necessary to prepare the ARS vehicle for flight evaluation, and provides by training programs qualified personnel for all phases of ARS operations.
b. Specific applications and procedures which will be established in the ground support area during the research and development program will serve as a guide to establish methods which will be employed when the ARS becomes operational. The results expected from this work can be obtained in no other manner; however, other programs currently in process will furnish many important inputs.
c. This work will increase the capability of the program participants to indoctrinate personnel and supply functional data useful in modifying ground support handling techniques, logistics programs and equipment

22. RDB SN CN

IC & P

CONFIDENTIAL

X I C
PAGE J-1 OF 8 PAGES

DD FORM 613
1 JAN 52

LOCKHEED AIRCRAFT CORPORATION

MISSILE SYSTEMS DIVISION

~~CONFIDENTIAL~~

SECURITY CLASSIFICATION

1. PROJECT TITLE GROUND SUPPORT AND TRAINING SUBSYSTEM FOR ADVANCED RECONNAISSANCE SYSTEM (Uncl)	2. SECURITY OF PROJECT S	3. PROJECT NUMBER WS 117L
	4.	5. REPORT DATE 1 November 1956

checkout procedures. Programs will also be initiated to correct any deficiencies in reliability, human factors and personnel safety.

21 a. Summary of Operational Scheme

The ultimate attainment of a facility, with supporting equipment, which insures an acceptable logistics plan and provides methodical assembly, pre-launch checkout, handling and erecting the ARS booster-vehicle combination on the firing pad is the primary objective of this subsystem.

Prior to the acceptance of a final scheme, many preliminary steps must be analyzed and either accepted, modified, or discarded. The step-by-step analysis commences with the first fabrication of a flight hardware article and continues through flight test to data processing and assimilation. First fabrication of flight hardware assumes that component testing and evaluation have been accomplished in order to select and modify components and to ensure their reliability. For the most part component testing and evaluation will occur at "in-plant" test facilities. These test facilities are various laboratories devoted to testing such elements as telemetry, transducers, gyros, controls, computers, and other electronic and electromechanical components.

Fabrication and assembly facilities present no unusual requirements that need be detailed here, since vehicles will be transported fully assembled to the various sites.

A Captive System Test Facility will be required for complete ARS vehicle systems tests under hot run conditions. This facility will also provide for separate sustainer and control engine tests along with auxiliary power units and other hazardous components testing which cannot be performed at the in plant site.

For the initial flight test programs, a complete test base will be required at AFMIC, Patrick AFB, Florida. Tests that will be conducted at this facility include the initial non-orbiting and early orbit programs.

The requirements for launching of more advanced non-orbiting, orbit tests, and operational test vehicles, dictate the need for an alternate launching site, separate from AFMIC. Consideration has been given to the West Coast and the Pacific area (Hawaiian Islands). Since the WS-107 program will employ a West Coast IOC Site, it has been determined that this location would also be suitable for the more advanced stages of the ARS program.

DD FORM 613-1
FEB 53 PREVIOUS EDITIONS
OF THIS FORM MAY
BE USED.

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

SECURITY CLASSIFICATION

1. PROJECT TITLE GROUND SUPPORT AND TRAINING SUBSYSTEM FOR ADVANCED RECONNAISSANCE SYSTEM (Uncl)	2. SECURITY OF PROJECT S	3. PROJECT NUMBER WS 117L
	4.	5. REPORT DATE 1 November 1956

21 b. Approach

Indoctrination of personnel assigned to duty at the facilities will be the first step toward satisfying the ground support requirements. This will be accomplished by integrating these personnel in the design fabrication and liaison groups in their particular fields to acquaint them with fundamental problems likely to occur in the field. They will be phased into the proper facilities as their services are needed.

21 c. Subsystem Tasks1. a. In-Plant Facilities

b. Contractor: Lockheed Aircraft Corporation, Missile Systems Division.

c. Research, development, and engineering tests for design and evaluation will be the responsibilities of the various departments assigned subsystem and system tasks. Existing test equipment will be expanded and supplemented by the addition of considerable specialized equipment.

The normal facility expansion will include electronic, telemetry, gyro simulators, propulsion components, structures, materials, environmental and control test equipment. The requirements for specialized facilities include gyro environment tables, rapid altitude chambers, electronic system checkout consoles, hazardous fuel chemistry and material testing, and, to the extent possible, a complete orbit environment test chamber. The basic philosophy of all in-plant facilities is to provide services to duplicate in-flight conditions on the ground.

2. a. Captive System Test Facility

b. Contractor: Lockheed Aircraft Corporation, Missile Systems Division; Ralph M. Parsons Co., Holmes & Narver, Sverdrup & Parcel.

c. The facility for supporting tests of the propulsion system, vehicle system, and hazardous components is to be isolated from the general manufacturing and office areas in the interest of safety. It will probably be located within reasonable proximity of the San Francisco Bay Area. This facility is to be divided into three sections, (1) vehicle

DD FORM 613-1
FEB 53

PREVIOUS EDITIONS
OF THIS FORM MAY
BE USED.

CONFIDENTIAL

PAGE J-3 OF 8 PAGES

LOCKHEED AIRCRAFT CORPORATION

MISSILE SYSTEMS DIVISION

SECURITY CLASSIFICATION

1. PROJECT TITLE GROUND SUPPORT AND TRAINING SUBSYSTEM FOR ADVANCED RECONNAISSANCE SYSTEM (Uncl)	2. SECURITY OF PROJECT S	3. PROJECT NUMBER WS 117L
	4.	5. REPORT DATE 1 November 1956

and propulsion, (2) components and hazard, and (3) a central instrumentation data acceptance office.

Basic vehicle system, propulsion system and full environmental (altitude, etc.) testing will be centered around a single control building. Provision for control booths, offices, shops and local fuel support control will be in this building. Four pads are planned in this area to be operated as desired.

The component and hazard area is to be devoted to testing materials, auxiliary power units in suitable altitude chambers, components, pneumatic devices under radiation and similar conditions. The general arrangement again is to be based upon a single control building housing control booths, cells, shop and office area. The fuel support for the two areas will be designed to contain any fire and to suppress all toxic vapors and waste by filtration.

The central instrumentation and data facility will handle all information from the various areas. Multiple quick-look, control data recorders, "go no-go" inspection control and tape recorders will be provided. The existing computers will be utilized for reduction and analysis.

3. a. AFMFC

b. Contractor: Lockheed Aircraft Corporation, Missile Systems Division, and Government Furnished Equipment.

c. The initial flight program of the early vehicles will be activated at AFMFC, Florida. Facilities required for this program are independent of existing X-17 Facilities. One-half of a Missile Assembly Building, approximately 17,000 sq. ft., is required for assembly and checkout of all vehicles.

Launching Support for this program will be on a joint use basis with the WS-107A program. Specifically, common use of pads, blockhouse and modified firing console is intended, assisted by WS-107 Convair crews to accomplish mating with the booster and final checkout.

4. a. Alternate Launch Site - West Coast IOC

b. Contractor: Lockheed Aircraft Corporation, Missile Systems Division, and Government Furnished Equipment.

DD FORM 613-1
FEB 53PREVIOUS EDITIONS
OF THIS FORM MAY
BE USED.~~CONFIDENTIAL~~

PAGE J-4 OF 8 PAGES

LOCKHEED AIRCRAFT CORPORATION

MISSILE SYSTEMS DIVISION

SECURITY CLASSIFICATION

1. PROJECT TITLE GROUND SUPPORT AND TRAINING SUBSYSTEM FOR ADVANCED RECONNAISSANCE SYSTEM (Uncl)	2. SECURITY OF PROJECT S	3. PROJECT NUMBER WS 117L
	4.	5. REPORT DATE 1 November 1956

- c. Basically, the alternate site will be another Cape Canaveral with the supporting features of Patrick Air Force Base incorporated. The major difference will be the emphasis on data acquisition and reduction as opposed to in-flight tracking.

To support the sixty personnel required in the test operations, it is estimated that an additional 300 people will be required for program support at the Alternate Site. As the program reaches operational use, the site should include two launching pads, a blockhouse, data and telemetering building, assembly building, control equipment, electronic equipment, fuel and oxygen storage, generator plant, complete internal communication, outside communication, range safety, housing, ground equipment, air conditioning of critical areas, transportation and special electronic, radar and nuclear equipment. The West Coast IOC Site at Camp Cooke appears acceptable although details are still being resolved.

5. a. Vehicle Intercept, Control and Data Stations
- b. Contractor: Lockheed Aircraft Corporation, Missile Systems Division and Government Furnished Equipment.
- c. Initial plans and considerations have been formulated on the premise that facilities will be required at three different locations for intercept, control and data acquisition for the ARS. Locations that provide maximum intercept capabilities of the vehicle are of primary consideration. As a result of studies conducted in this regard and described in detail in the second Pied Piper Quarterly Progress Report, locations have been tentatively selected for installation in the Northeastern USA, Northwestern USA, South Central USA, and in the Hawaiian Islands. The requirements for equipment and instrumentation for these stations are discussed under Subsystems H and I.
6. a. Advanced Reconnaissance System Intelligence Center
- b. Contractor: Lockheed Aircraft Corp., Missile Systems Division
Eastman Kodak Company
GFF
and additional Subsystem I subcontractors

DD FORM 613-1
FEB 53PREVIOUS EDITIONS
OF THIS FORM MAY
BE USED.~~CONFIDENTIAL~~

PAGE J-5 OF 8 PAGES

LOCKHEED AIRCRAFT CORPORATION

MISSILE SYSTEMS DIVISION

R&D PROJECT CARD
CONTINUATION SHEET

SECURITY CLASSIFICATION

1. PROJECT TITLE GROUND SUPPORT AND TRAINING SUBSYSTEM FOR ADVANCED RECONNAISSANCE SYSTEM (Uncl)	2. SECURITY OF PROJECT S	3. PROJECT NUMBER WS 117L
	4.	5. REPORT DATE 1 November 1956

c. Tentative requirements for a central data assimilation center are presented in the volume describing Subsystem I, Ground Data Processing. In general, it is expected that the facilities will be operated by contractor personnel in order to provide a stable organizational structure. Location of the facility has not been suggested pending operational analysis to determine the best sites; however, it should be where transportation for both military and contractor personnel is readily available. This includes an airstrip for all types of military aircraft. Central U.S. locations are being considered.

Equipment and instrumentation required for the Intelligence Center will, for the most part, be fabricated by the Lockheed Aircraft Corporation, Missile Systems Division, the Eastman Kodak Company and IBM. Development and training of ARSIC operational personnel will be accomplished under this project.

This task encompasses the obvious aspects of real estate acquisition as well as design, construction, and installation of building facilities. Shops for general maintenance and repair will be included. Additional instrument shops and electronic laboratories will provide for the installation and maintenance of the components of the center.

7. a. Training

b. Contractor: Lockheed Aircraft Corporation, Missile Systems Division

c. This task involves the orientation and schooling required to establish operational and personnel capability potential.

8. a. Personnel Protection and Material Safety

b. Contractor: Lockheed Aircraft Corporation, Missile Systems Division

c. Consideration has been given to personnel protection and material safety in planning all facilities, handling and test equipment. Protection of operational personnel by use of protective clothing and sprays, and provision of escape areas is a standard practice used in the propulsion and chemical industries. Protection of "nearby" personnel and work areas will be by filtration (modification of vapors to

DD FORM 613-1
FEB 53PREVIOUS EDITIONS
OF THIS FORM MAY
BE USED.~~CONFIDENTIAL~~

PAGE J-6 OF 8 PAGES

LOCKHEED AIRCRAFT CORPORATION

MISSILE SYSTEMS DIVISION

R&D PROJECT CARD
CONTINUATION SHEET

SECURITY CLASSIFICATION

1. PROJECT TITLE GROUND SUPPORT AND TRAINING SUBSYSTEM FOR ADVANCED RECONNAISSANCE SYSTEM (Uncl)	2. SECURITY OF PROJECT S	3. PROJECT NUMBER WS 117L
	4.	5. REPORT DATE 1 November 1956

secondary products) of vapors and deep sea disposal of waste liquids and solids.

Other buildup and operational personnel will be shielded against blast, noise and vibration by the latest design techniques developed by the propulsion industry. Ground vibrations are of low magnitude and are not considered a serious problem.

21 d. Other Information

Detailed requirements of base support and equipment requirements are presented in the appendix to this subsystem*. Many of the support services required for the vehicle ground support program currently exist at AFMTC. Those not currently in use are contained in the AFMTC development plan for support of the ICBM program. These support services will be employed to the fullest extent in the ARS program and only specific items not currently planned for at AFMTC will be delineated in the support requirements detailed in the following tabs.

21 e. Background History

The requirements that have originated specifically for ARS ground support can be traced in part to the effort of IMSD in establishing the X-17 (RTV) as a forerunner of the WS107A (ICBM) at AFMTC. Many deficiencies in the operation of the range have been uncovered and in the interest of expediting the development of a satellite vehicle continued surveillance of the base operations must be critically examined to furnish procedures and data required to establish an alternate launch facility.

21 f. Future Plans

The ARS ground support subsystem will adequately comply with the requirements that have been dictated in an effort to permit the achievement of orbital capabilities with maximum reconnaissance utility. Since the booster for this system is used in the initial stages of the WS-107 A program the support plan will adhere as closely as possible to the WS 107 A system. Future plans will emphasize the compatible design and construction of handling equipment and other base and range support equipment so long as orbital and reconnaissance capability can be demonstrated.

* See MSD 1536, Vol. II-L Appendix.

DD FORM 613-1
FEB 53 PREVIOUS EDITIONS
OF THIS FORM MAY
BE USED.

SECURITY CLASSIFICATION
~~CONFIDENTIAL~~

PAGE J-7 OF 8 PAGES

LOCKHEED AIRCRAFT CORPORATION

MISSILE SYSTEMS DIVISION

R&D PROJECT CARD
CONTINUATION SHEET

SECURITY CLASSIFICATION

1. PROJECT TITLE GROUND SUPPORT AND TRAINING SUBSYSTEM FOR ADVANCED RECONNAISSANCE SYSTEM (Uncl)	2. SECURITY OF PROJECT S	3. PROJECT NUMBER WS 117L
	4.	5. REPORT DATE 1 November 1956

21 g. References

1. Lockheed X-17 Facilities Requirement Report, MSD 1075
2. Ramo-Wooldridge - Collection of WS 107 A program technical data, submitted to Pied Piper Phase I Contractors January 3, 1956
3. Lockheed First Quarterly Progress Report, MSD 1363, Sections 5.3, 5.4, 5.5.
4. AFMTC Operations Directive, 11-55.

DD FORM 613-1
FEB 53

PREVIOUS EDITIONS
OF THIS FORM MAY
BE USED.

~~CONFIDENTIAL~~



MSD 2011

TABS

LOCKHEED AIRCRAFT CORPORATION
MISSILE SYSTEMS DIVISION

~~CONFIDENTIAL~~



Subsystem J - GROUND SUPPORT AND TRAINING

Tab 1 - General Design Specification

I. GENERAL

A. Statement of the Problem

The purpose of this subsystem is to provide plans and designs for facilities, ground handling, test equipment, and general support of the Advanced Reconnaissance System.

B. Approach

Preliminary studies have been made to evaluate the total problems that will be encountered in establishing a suitable vehicle fabrication schedule to match testing and flight schedules. In addition, consideration has been given to component evaluation tests at in-plant laboratories before components are approved for subsystem use and subsequent subsystem prototype installation.

An evaluation has been made of the preliminary requirements for the Captive Systems Test Facility which will be primarily concerned with testing of liquid propellant engines, complete vehicle systems during hot firing runs, complete vehicle systems in radiation and other hazardous environments, and the simulation of the complete orbit environment.

The present X-17 facility at AFMTC has been critically examined in an effort to provide a well-organized scheme of operation for the

support of the Advanced Reconnaissance System and to ensure that the operation will integrate easily and remain compatible with the WS 107A operation.

Consideration has been given to the problems that will be encountered in establishing an ultimate launching facility. For purposes of discussion this facility appears to have requirements for launching and tracking similar to the current facility at AFMTC, although the functional support will not be as elaborate.

The tentative requirements for the establishment of vehicle intercept and control stations, which will also serve as data acquisition stations, have been established.

In addition, a central intelligence center, which will serve as the focus for data interpretation, data analysis, and data display, is planned. This facility is discussed in Subsystem I.

C. Solution or Recommendations

Since the in-plant facilities of this support subsystem involve the design of many different units of test, check-out, handling and processing equipment, and since much of this equipment is standard laboratory or handling equipment used on other current programs, no effort has been made to present general design specifications of the units.

The principal ground handling units will be similar to those used on the X-17 (RTV) program which are discussed in Volume IV of the First Pied Piper Quarterly Progress Report (MSD 1363).



A re-evaluation of the vehicle logistic flow scheme has been made (see Fig. J-1).

AFMTC FACILITY. Consideration has been given to the handling of the vehicle during its assembly on the Atlas booster. Although little detail concerning the type of equipment which is to be supplied at the Atlas launching pads has been supplied by the Air Force, preliminary design of the vehicle places emphasis on using cranes and hoisting gear similar to that which will be used for handling and assembly of the Atlas warhead. The more advanced vehicles require additional clearance of the Atlas gantry equipment, and it appears that a modification to the equipment can be made as the subsequent pads are built. It also appears that the early vehicles will require a modification of the gantry equipment as well as modifications of electrical and electronic wiring and equipment.

A critical examination will be made of the Atlas ground handling and launcher design to provide a foundation for design optimization with the ARS vehicle. This design will be evolved at a later date for inclusion at the Alternate Launch Facility.



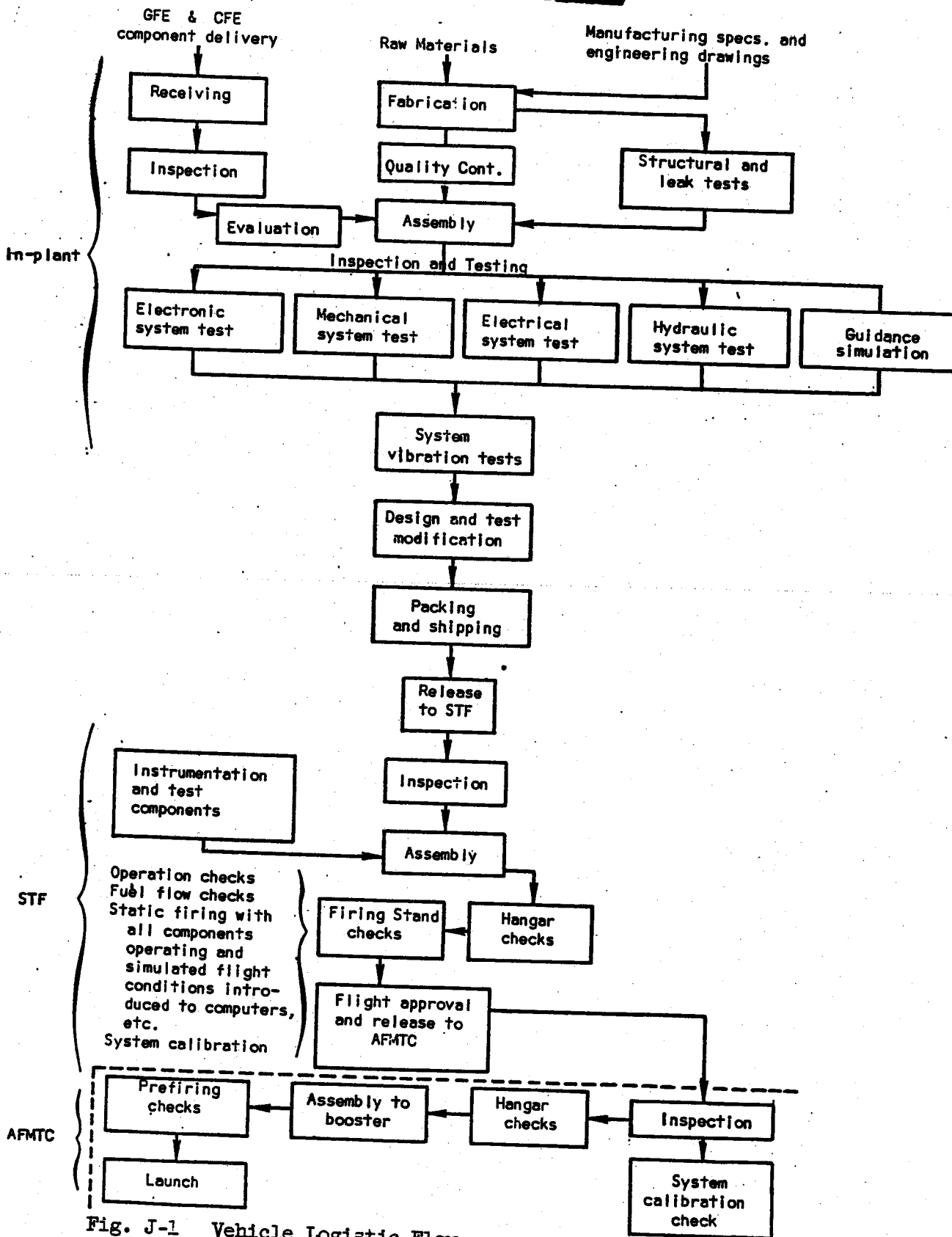


Fig. J-1 Vehicle Logistic Flow

~~CONFIDENTIAL~~



MSD-2011

Subsystem J

Tabs 2 and 3, Milestones and Schedules, are presented in the other volumes of this Development Plan.

~~CONFIDENTIAL~~



LOCKHEED AIRCRAFT CORPORATION

J - Tabs 2 and 3

MISSILE SYSTEMS DIVISION



1. **R & D TEST AND TEST SUPPORT AIRCRAFT ANNEX**
 SYSTEM PROJECT TASK OTHER

2. REPORTS CONTROL SYMBOL

PAGE 1 OF 1 PAGES

3. DATE
1 November 1956

4. TITLE
Subsystem J - GROUND SUPPORT AND TRAINING

5. INITIAL CHANGE

6. NUMBER
WS 117L

7. ITEM NUMBER	8. QTY	8. AIRCRAFT REQUIRED		9. ASG CODE	10. MOD REQ	11. DATE REQD AND LOCATION	12. ESTIMATED RELEASE DATE	13. RECOMMENDED DISPOSITION	14. EST. COST	15. EST. COST
		TYPE, MODEL AND SERIES	SERIAL NUMBER							
SUMMARY OF AIRCRAFT SPECIFIED FOR SUBSYSTEM TESTING										
1.	1	B 50			x	1 June '57 Sunnyvale, Calif.	Oct '60		2500	
** 2.	1	B 50			x	Aug '57	Jan '61		1500	
These aircraft will be used by Subsystems E, F, G and H.										
** Item No. 2 will serve as back-up aircraft.										
* The extent of modification required is not known now, but it will be indicated in the bailment agreement.										



~~CONFIDENTIAL~~

2. REPORTS CONTROL SYMBOL

PAGE 1 OF 9 PAGES

3. DATE 1 November 1956

6. NUMBER WS 117L

R & D MATERIEL ANNEX

SYSTEM PROJECT TASK OTHER

4. TITLE - Subsystem J - GROUND SUPPORT AND TRAINING
Contractor equipment requirements for AFMTC -
Electrical and Electronic

5. INITIAL CHANGE

7. MATERIEL REQUIREMENTS (Indicate Items in Columnar Form using Columns as cited in Examples)

Qty	Nomenclature	Cost.	Year Req'd
1	Checkout Console	\$75,000	1957
*1	Mobile Ground Instrumentation Station	25,000	1958
*	Ground Instrumentation Station Equipment	150,000	1958
		<hr/>	
		\$250,000	

* Equipment required to supplement existing capital equipment

~~CONFIDENTIAL~~

R & D MATERIEL ANNEX

SYSTEM PROJECT TASK OTHER

2. REPORTS CONTROL SYMBOL

PAGE 2 OF 9 PAGES

3. DATE 1 November 1956

4. NUMBER WS 117L

4. TITLE Subsystem J - GROUND SUPPORT AND TRAINING Contractor ground handling and Vehicular requirements at AFMTC

5. INITIAL CHANGE

7. MATERIEL REQUIREMENTS (Indicate items in Column Form using Columns as cited in Examples)

Qty	Nomenclature	Cost	Year Req'd
1	Ground Handling and Assembly Equipment	\$200,000	1957-1958
4	Truck (1½ ton)	3,200	1957
1	Truck (½ ton) at 1,500	6,000	(2) 1957 (2) 1958
	Forklift (4000 # cap)	5,700	1957
	TOTAL	\$214,900	