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Subject: Request for Proposal, PR 57-MD-196  
Lockheed Aircraft Company

OCT 15 1956

TO: MCPTS  
Attn: Major Rowland

FROM: WDR

COMMENT NO. 2  
Cdr Truxx/dh/1344

1. Lockheed's Proposal of 28 September 1956 (MSD/20302) to the Ballistic Missiles Office suggested a number of changes to the USAF Development Plan of 2 April 1956 for WS 117L. It is not considered necessary that these changes be accepted or rejected prior to issuance of a letter contract, however, the approach should be determined in some detail for the purpose of the definitive contract to follow.

2. The Development Plan of 2 April 1956 was based on that submitted by Lockheed Aircraft Corporation in March 1956. The latter document contained much material to substantiate the program presented. No supporting information has been presented regarding the proposed changes. It is requested that such information be supplied either as special reports or as part of the regular reporting system. This information should be supplied prior to any significant expenditures along the lines of the program changes mentioned. In particular, the following data should be included: (Numbers refer to Inclosure (a) of MSD/20302)

A-1

- including:
- 1a. Characteristics of the X-17 as an environmental test vehicle
 

Cost	State of development
Payload	Launch facilities and location
Altitude	Availability (interference)
Accelerations	Crew training status
Stability	

These characteristics should be compared with the Aerobee-HI.

b. The same information is required for the ATV, with comparable data for Redstone. If it is desired that the number 13 be included in the development plan, a test annex should also be provided showing a test schedule and the general payload and test objectives of each flight.

c. It is assumed that the number of vehicles mentioned was determined by the estimated availability of SM 65's. The time period needs to be fixed more accurately and the test payload and objectives outlined as described for the ATV. In addition, further explanation of the idea of proceeding from simple to complex payloads is desired. In view of the cost of each launching, it would appear that the complexity of the payload should be limited only by the availability or reasonably well ground-tested components or by the reduced success probability for the flight. Whether this last factor actually enters or not would depend on how a given test item interacts with other items.

DOWNGRADED AT 12 YEAR  
INTERVALS: NO AUTOMATICALLY  
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2. It is not expected that a firm weight limitation for the SM 65 can be established prior to about 1 November 1956. The Western Development Division agrees with the general principal of increasing the orbiting vehicle weight so long as worthwhile gains in payload accrue from such increase.

3. The Western Development Division is particularly interested in a detailed comparison of the Hustler and second stage Vanguard engines. Rough calculations indicate that an inconsequential gain in payload will result from using the more costly and complicated Hustler System. The comparison should include appraisal of the following:

(a) Relative reliability

(b) Relative cost

(c) Payload differences for a realistic gross weight and trajectory due to:

(1) Specific impulse including propellant consumed by turbo-pump.

(2) Propulsion system weight

(3) Different mixture ratios/control tolerances (different propellant utilization).

(4) Difference in weight of thrust carry-through structures because of different thrusts of the two engines.

(d) Summary of problems in Hustler engine because of different attitude.

(e) Relative difficulty of varying propulsion program.

(f) Differences in count-down time launch crew requirements, checkout equipment, etc.

(g) Guidance and control problem engendered by turbine during coast-down.

(h) Adequacy of residual gas pressure for post-cut off control for both Systems. (if used)

(i) Effect of difference in thrust on guidance accuracy and trajectory.

A-4. No special requirement other than a complete evaluation of competing systems.

A-5. Availability of Minitrack system should be considered.

A-6. No additional data required

A-7. No additional data required.

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3. The request for Lockheed Aircraft Corporation for 2.6 million of government financing for the Captive Systems Test facility is at variance with their cost estimate of March 1956. Since Lockheed stated willingness to provide all brick and mortar at or near their plant had a considerable influence in their selection as contractor, it is felt that further pressure should be brought to bear to encourage them to provide all non severables for this System Test Facility.

4. WDIR has no comment at this time on the selection of subcontractors. It is believed that the Air Force should not signify approval or disapproval of the proposed team until it is reasonably complete.

SIGNED

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

1 Incl:  
Contractor's Proposal  
subject as above.

WDIR

dh

Cmdr Truxx

1344

EAR, 10 Oct 56

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