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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 12 YEAR  
INTERVALS; NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

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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 \$39,000,000 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 decrease 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.

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

4 Incls:

1. Action required of ICEM 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

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Action Required of IGH 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 IAC 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.

RAMO-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 WDD.
6. Supply interface coordination between WS 438L and WS 117L.

AFMTC or IOC Launch Site

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

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Incl. #1

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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 WS 117L Funds between ICM contractors

	<u>Ramo Wooldridge</u>	<u>Convair</u>	<u>North American</u>	<u>O.E.</u>
FY 1957	.264	.1	.1	0
FY 1958	.26	17.0	7.5	.6

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

<u>ITEM</u>	<u>COST</u>	<u>SOURCE</u>
Convair Series "C" Airframe	\$313,800 - P-130	Book 2 - Page C-46 Book 2 - Page C-46
Wide Band Telemetry Sys.	19,150 - P-130	
	<u>362,950</u>	
Spares 23.3%	84,700 - P-141	
	<u>\$447,650</u>	
NAA 360,000# thrust engines	550,000 - P-130	Capt Mullady, 6 Jan Capt Mullady, 6 Jan
Spare parts/package	75,000 - P-142	
	<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>(Total Item 8 FY 58 Less flight)</u> 39 missiles Prod. FY 58
Each Missile FOB Convair	\$1,358,650	
Flight Test per missile	\$240,000	Book 1, Page D-86 & 87 <u>(Item 8 FY Flight + AFMC)</u> 13 missiles launched FY 58
Gnd Hdlg, 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-244	Book 2, Page A-27 Total A,B,C + spares/61 missiles
Fuel, lubricants, etc. Total each Missile Launched	60,000 - P-130 <u>\$2,119,650</u>	Book 2, Page G-2 O <sub>2</sub> factor is 4; R-W he factor is 13. Fuel = \$36,225; He = \$14,000; \$9,775 for contingencies.
Tooling to provide Convair with six missile/month capacity (Does not include labor)	\$560,000 - P-130	Book 2, Pages E-4 & F-1 <u>Total E-4 + F-1</u> Present 5 missile capacity
Launch 10 missiles	21,496,500 560,000 <u>\$22,056,500</u> 200,000 ? 1,330,000 <u>23,586,500</u>	10 missile program cost M.C. adapter eng. & test Engr'g changes Fee <u>Total CVAO for 10 missile program</u>

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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)

\$25,071,800

Convair  
\$16,971,800

North American  
\$7,500,000

O. B.  
\$600,000

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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.

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