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CHRONOLOGY

WS 117L BACKGROUND

Fall - 1945

German work in the field of Earth-circling satellites was acquired by the Armed Forces.

The U. S. Navy let a study contract with the Elcom L. Martin Company in this field.

Spring - 1946

U. S. Air Corps requested the RAND Corporation to perform studies on the feasibility of artificial satellite vehicles. First job done by the new RAND Corporation. These studies continued through 1953.

April - 1947

The Bureau of Aeronautics of the U. S. Navy informed the NBS that an earth satellite vehicle is technically possible and requested they be designated as coordinating agency.

September - 1947

RAND Corporation determined that a satellite is technically feasible.

December - 1947 - January - 1948

Navy and the Air Force requested assignment of any Earth-circling satellite developments to their respective services. On 16 January 1948, the Navy withdrew their "sole right" claim.

12 January 1948

General Hoyt S. Vandenberg, in a policy statement on a satellite vehicle, noted that R&D on a satellite vehicle should be pursued as rapidly as state-of-the-art permitted.

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February - 1948

USAF requested the RAND Corporation to establish a program for a study of satellite development. Shortly afterwards the Research and Development Board (RDB) concurred with the Air Force's undertaking this program and stated that RAND should have the sole responsibility in this field. The Navy and the Glenn L. Martin Company activities in the area were phased out at this time.

6 November 1950

RAND recommended that the Air Force initiate component research and development work on a small portable nuclear reactor, a television and communication system and an orbital attitude sensing and control system.

1 April 1951

RAND issued report on the utility of satellite vehicles and the use of satellite vehicles to televise ground scenes and weather information to surface stations. Report concluded feasibility and utility, and directed particular attention to major problems in payload technical development cited under entry of 6 November 1950.

1 November 1951

Air Force made arrangements for the AEC to begin work on small, portable nuclear reactors as a source of auxiliary power. Studies were initiated with four companies, the Bendix Corporation, Allis-Chalmers, the Vitro Corporation and Frederic Flader.

1 March 1952

RAND Corporation initiated a subcontract with North American Aviation, Inc., for the study of a satellite orbital attitude sensing and control.

2 June 1952

The four studies of small, portable nuclear reactors were completed. All four contractors concluded that such reactors are technically feasible.

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16 June 1952

RAND Corporation initiated a subcontract with the Radio Corporation of America for the study of optical systems, TV camera, radiation, kinescope recording, correlation and presentation, and reliability in connection with the satellite reconnaissance system.

2 July 1953

The Communications Laboratory of WADC initiated a contract with North American Aviation, Inc. for study of a pre-orbital ascent guidance system for a satellite vehicle.

3 December 1953

Hq. Air Research and Development Command directed Wright Air Development Center to embark on a research and technical development program to demonstrate the feasibility of the major components of a satellite reconnaissance system; specifically the television-optical subsystem, attitude and guidance control equipment and the auxiliary power plant.

23 December 1953

At the Wright Air Development Center, cognizance of Project Feedback was transferred from the Systems Planning Office to the Bombardment Missiles Branch of the Weapons System Division. Satellite effort was re-named Project 1115. Elements of a Weapon System program office was established at WADC.

8 January 1954

Project 1115 acquired an MX number, MX-2226, and an unclassified title, "Advanced Reconnaissance System." The reasoning behind selecting these additional numbers and names was to separate the new effort from Project Feedback of the RAND Corporation, which had received widespread promulgation in the Armed Services.

28 January 1954

WADC Communications and Navigation Laboratory initiated Task No. 44147, Attitude Guidance and Control for the Advanced Reconnaissance System. North American Aviation, Inc. was the contractor.

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March - 1954

Final RAND report on Advanced Reconnaissance System (Project Feedback). System feasibility established. System design studies recommended.

1 May 1954

Project 1115 was submitted to and approved by Hq ARDC.

15 June 1954

WADC Task No. 70843, Solar-Electrical Energy Converter, Aeronautical Research Laboratory initiated. The Barshaw Chemical Company received the contract for research and development work.

30 August 1954

Project 1115 was documented under Air Research and Development Command Manual 80-4. Approval was given by Hq ARDC.

14 September 1954

ARDC Project Development Directive, PDD No. 1115, was issued. Implementation of Development Plan No. 1115 was directed.

14 October 1954

Rome Air Development Center initiated Task No. 15000, Intelligence Parameters Study for Advanced Reconnaissance System.

15 October 1954

Rome Air Development Center initiated Task No. 15001, Study of Intelligence Processing Methods for Advanced Reconnaissance System.

8 November 1954

WADC Power Plant Laboratory initiated Task No. 30291, Auxiliary Power Plant for Advanced Reconnaissance System.

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November - 1954

a. Task No. 41700, Effects of Nuclear Radiation on Electronic Components, was initiated by the Electronic Components Laboratory.

b. A System Requirement, SR No. 5, was issued by Hq ARDC. This document directed WADC to "conduct system design studies on the Advanced Reconnaissance System."

27 November 1954

ARDC published System Requirement No. 5 on Advanced Reconnaissance System.

17 December 1954

An unclassified name, PIED PIPER, was assigned to the Advanced Reconnaissance System.

21 December 1954

WADC initiated Task No. 21010, Design Study-Advanced Reconnaissance System-MX-2226.

16 March 1955

Air Force issued OOR 80(SA-2c) for a strategic reconnaissance satellite weapon system.

March 1955

System design study proposals solicited from IAC, RCA, Martin, Bell Telephone. Bell Telephone declined to propose.

May - 1955

NSC action 5520 directed the Department of Defense to develop capability of launching small scientific satellite by 1958. Effort not to prejudice or interfere with other satellites for research or intelligence. Emphasized peaceful purposes. Would be a technical step to demonstrated satellite achievement with prestige and psychological benefits. Cost estimated as \$15-20M. (Vanguard the result).

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10 October 1955

General Power directed that Advanced Reconnaissance System Development program be transferred to WED.

13 January 1956

Memoandum of Understanding on transfer of Advanced Reconnaissance System from AFDC Detachment No. 1 to WED. Generals Schriever and Estes agreed WED office would be established about 15 February 1956; take over Advanced Reconnaissance System program.

14 January 1956

WED published a WS 117L Preliminary Development Plan in response to a request from Hq AFDC. Based on a possible need to demonstrate an orbital capability within the IGY, total cost was estimated at \$95.5M.

12-20 March 1956

A joint Air Force contractor evaluation board met at Wright-Patterson AFB to evaluate the design studies prepared by RCA, Glenn L. Martin, and Lockheed Aircraft. Board found Lockheed as best qualified and recommended award of contract to Lockheed for development of WS 117L. Infra-red proposal made by Lockheed. Later became MIDAS.

2 April 1956

WED published WS-117L Advanced Reconnaissance System Development Plan.

22 May 1956

WED authorized to announce Lockheed selection, expend remaining Project 1115 funds on 117L. No other funds available.

24 July 1956

WED Development Plan for WS 117L approved by Hq USAF.

3 August 1956

USAF (DCS/D) issued Development Directive No. 85 approving WS-117L, Advanced Reconnaissance System. WS 117L given 1A

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priority, 1-6 precedence rating. But "because of fund limitations, only \$3M of FY 1957 P-600 series funds are available to your Command to initiate this development."

28 August 1956

WDD pointed out the effect of FY 1957 WS 117L fund limitations on WS 117L development, and requested \$21.9M additional FY 1957 funds for the program.

23 October 1956

USAF again cited limitations on WS 117L P-600 funds. Guidance given WDD included: 1) prolong development, 2) maintain minimum balanced rate of development progress on vehicle and components instead of on Development Plan target completion dates. TMI stated that Headquarters attempting to reprogram \$7.1M more P-600 FY 1957 funds.

29 October 1956

Contract on WS 117L given to Missile Systems Division, Lockheed Aircraft (Contract AF 04(617)-97).

21 November 1956

WDD submitted FY 1957 WS 117L fund requirements totalling \$17.8M in P-100 and 200 to DCS/D.

29 November 1956

Secretary of the Air Force Donald Quarles was briefed on WS-117L status and program.

10 December 1956

Lt General D. L. Pitt, DCS/D, informed ARDC that FY 1957 P-600 funds for WS 117L had been increased from \$3M to \$5M, and efforts were under way to reprogram \$5M more. For management planning, WDD should count on \$10M total P-600 for FY 1958 also. Other efforts would be made to get P-100 and 200 funds. Other guidance: 1) develop and test components, 2) do not make hookup until advised, 3) do not plan launch before FY 1961.

30 January 1957

General Schriever informed DCS/D that lack of FY 1957

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P-100 and 800 funds was preventing procurement of material and equipment essential to maintaining a balanced system oriented development program, and that P-600 funds ceilings for FY 1958 were considered inadequate to meet the program minimum component development and test needs.

9 February 1957

Answering a Department of Defense request, WDD furnished DCS/D with information on possible use of WS 117L as IGY satellite. Indicated it could be done at cost of \$66M by late 1958 or early 1959 if ATLAS development was satisfactory. WDD not enthusiastic about approach because of possible interference, short development time.

11 February 1957

WDD warned IMED that they had \$8.5M on contract through 30 June 1957, and that they should not overcommit.

6 March 1957

ARDC received guidance letter from DCS/D, USAF, on planning and funding requirements for WS 117L. Indicated that P-100 and 800 FY 1957 funds were over-programmed. Mention was made of Secretary Quarles' views regarding a definite slowdown, and emphasis on component development to insure greater success. No orbital testing was to be undertaken in development prior to January 1960. Development of WS-117L should be conducted along conventional lines. \$10M P-600 funds were available. For FY 1958, estimates were that a total of \$35M would be available for WS 117L.

2 April 1957

WDD published Systems Development Plan, Advanced Reconnaissance System, WS 117L for various degrees of operational uses, 1950-1965.

8 July 1957

IMED informed AFBD* they needed \$7.9M to fund the WS 117L program between 15 August and 30 November 1957.

*Name of Western Development Division (WDD) was changed to Air Force Ballistic Missile Division (AFBD) 1 June 1957.

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10 July 1957

WS 117L assigned unclassified nickname Bar Horizon.

13 August 1957

IASD informed by AFMD that WS 117L FY 1958 funds totaling \$3.9M were available to carry the program through 30 October 1957. Adjust program accordingly.

21 August 1957

AFMD informed IASD that WS 117L FY 1958 P-600 funds could not exceed \$9.6M, with no more than 50% expended in the first six months.

3 September 1957

AFMD informed by DCS/D that only \$100M P-600 FY 1958 WS 117L funds were available, and as yet no P-100 or 200 funds, though efforts were being made. Limit activity to \$10M funds. Authority to mockup satellite vehicle granted.

16 September 1957

Air Council reviewed, approved WS 117L program as presented, approved go-ahead as fast as possible consistent with good management.

19 September 1957

AFMD submitted WS 117L FY 1958 and 1959 sustere funding requirements to DCS/D. Stated that \$68M in FY 1958 would allow initiation of the flight test program by mid-CY 1958.

9 October 1957

Following Sputnik, in answer to Hq USAF request as to efforts and resources required to accelerate the ICBM and IRBM, an estimate was made for WS 117L. AFMD pointed out that a large amount of funds would be needed to regain lost time due to fund strictures and lack of firm program approval. With \$99.2M FY 1958 and \$121.7M FY 1959 funds program could be advanced six months to one year if priority were given effort.

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10 October 1957

Secretary of the Air Force James Douglas approved the WS 117L program as presented to the Air Council as a planning objective, subject to Secretary Quarles' review.

15 October 1957

\$35.1M (FY 1958) P-100 funds authorized WS 117L by DCS/D. Later (19 October) AFMD told to limit obligations on this procurement authorization to \$15.5M through January 1958. This was rescinded in November. No P-200 funds to date.

16 October 1957

DOD Assistant Secretary Quarles was again briefed on WS 117L, without resolution of need for acceleration.

12 November 1957

RAND Research Memorandum 2812, A Family of Recoverable Reconnaissance Satellites published. Prepared by M. S. Davies, A. H. Eric and others, it proposed using THER plus Aerojet (second stage of Vanguard) as boosters. This became basis of Able and Discoverer programs (with different second stages).

27 November 1957

AFMD requested that ICBM/IRBM overtime policies be extended to WS 117L, replacing the existing 2% of programmed manhours overtime limitation.

20 December 1957

Subsystem "G", WS 117L, (ICBM Attack Alarm) preliminary design completed. Fabrication of experimental payload units begun.

6 January 1958

USMD submitted a program acceleration plan for WS 117L (USMD-2832) as requested by AFMD in November 1957. Accelerated program was based on Thor-boosted early flight with a recoverable capsule as proposed by RAND. Flights to begin in late

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1958. Increase manufacture of LMSD vehicles. Atlas-boosted flights to begin in early 1959. General Schriever approved plan in principle, subject to reviews of special areas.

21 January 1958

AFMS notified that Assistant Secretary of Air Force (Material) had approved use of overtime on WS 117L "as may be necessary to meet the approved objective."

23 January 1958

Program acceleration plan submitted. Plan included a photographic reconnaissance configuration of a Thor-boosted recoverable reconnaissance package.

27 January 1958

Chief of Staff USAF approved acceleration of WS 117L program. FY 1958 funds would be provided when actually required.

29 January 1958

Contract AF 04(647)-181 given LMSD for Thor-boosted test vehicles. This became the DISCOVERER program.

February - 1958

Hq USAF considered expanding Project Able to include WS 117L test vehicles. AFMS recommended against this because 1) Able configuration not yet proven; 2) would disrupt Able schedules. After several successful launches, their use as WS 117L test vehicles could be reprogrammed if authority to proceed were given immediately.

3 February 1958

President Dwight D. Eisenhower directed that highest and equal national priority be given to ballistic missiles, satellites and defense programs. (ICBM, ICBM, WS 117L, WS 224A)

24 February 1958

Secretary of Defense Neil McElroy approved in principle

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