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DRAFT

10 Feb 1959

WS 117L PROGRAM AND FUNDING CHRONOLOGY

- 1946-47 RAND Corporation investigated the feasibility of a satellite as a reconnaissance vehicle. These studies continued through 1953.
- 12 Jan 48 General Hoyt S. Vandenberg, in a policy statement on a satellite vehicle, noted that R and D on a satellite vehicle should be pursued as rapidly as state of the art permitted.
- 1951 Air Force let feasibility studies for critical satellite subsystems to RCA, RAA, Bendix, Flader, Chalmers and Vitro Companies.
- Feb 54 Final RAND report on Advanced Reconnaissance System. Feasibility established. Development recommended.
- 27 Nov 54 ARDC published System Requirement No. 5 on Advanced Reconnaissance System.
- 16 Mar 55 Air Force issued GOR 80(8A-2c) for a strategic reconnaissance satellite weapon system.
- Mar 55 Design study proposals solicited from IAC, RCA, Martin, Bell Telephone. Bell declined to propose.
- May 55 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. Emphasize peaceful purposes. Would be a technical step to demonstrated satellite achievement, with prestige and psychological benefits. Cost estimated as \$15-20M. (Vanguard the result).
- Oct 55 General Power directed that Advanced Reconnaissance System development program be transferred to WDD.
- 13 Jan 56 Memorandum of Understanding on transfer of Advanced Reconnaissance System from ARDC Detachment No. 1 to WDD. Generals Schriever and Estes agreed WDD office would be established about 15 February 1956, take over Advanced Reconnaissance System program.

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- 14 Jan 56 WDD published a WS 117L Preliminary Development Plan in response to a request from Hq ARDC. Based on a possible need to demonstrate an orbital capability within the IOY, total cost was estimated at \$95.5M.
- 2 Apr 56 WDD published WS 117L Advanced Reconnaissance System Development Plan. R and D contract funds for system estimated at: FY 56, \$7.4M; FY 57, \$32.1M; FY 58, \$75.6M.
- 24 Jul 56 WDD Development Plan for WS 117L approved by Hq USAF.
- 3 Aug 56 USAF (DCS/D) issued Development Directive No. 85 on WS 117L, Advanced Reconnaissance System. WS 117L given 1A priority, 1-6 precedence rating "Because of fund limitations, only \$3M of FY 57 P-600 series funds are available to your Command to initiate this development".
- 28 Aug 56 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.
- Oct 56 Missile Systems Division, Lockheed Aircraft, awarded prime contract on WS 117L.
- 23 Oct 56 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 xxx Plan target completion dates. TWX stated that Hq attempting to reprogram \$7M more P-600 FY 1957 funds.
- 21 Nov 56 WDD submitted FY-57 WS 117L fund requirements totaling \$17.8M in P-100 and 200 to DCS/D.
- 29 Nov 56 SAF Donald Quarles briefed on WS 117L status and program.
- 10 Dec 56 Lt General D. L. Putt, DCS/D, informed ARDC that FY 57 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 58 also. Other efforts will be made to get P-100 and 200 funds. Other guidance: 1) develop and test components, 2) do not make mock up until advised, 3) do not plan launch before FY 1961.

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- 30 Jan 57 Comdr, WDD, informed DCS/D that lack of FY 57 P-100 and 200 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 58 were considered inadequate to meet the program minimum component development and test needs.
- 9 Feb 57 Answering a DOD request, WDD furnished DCS/D with material on possible use of WS 117L as IGY satellite. Indicated it could be done at cost of \$66M by late 58 or early 59 if ATLAS development was satisfactory. WDD not enthusiastic about approach because of possible interference, short development time, order of confidence.
- 11 Feb 57 WDD warned LMSD that they had \$8.5M on contract through 30 Jun 1957, and that they should not overcommit.
- 6 Mar 57 ARDC received guidance letter from DCS/D, USAF on planning and funding requirements for WS 117L. Indicated that P-100 and 200 FY 1957 funds were over-programmed. Decision had been made to slow down the system. \$10M P-600 funds available. Indicate no orbital testing in development prior to January 1960. Development of WS 117L should be conducted along conventional lines. Establish a WSFO at WDD. Emphasize component development to insure maximum success. For FY 1958, estimates were that a total of \$35M would be available for WS 117L.
- 2 Apr 57 WDD published Systems Development Plan, Advanced Reconnaissance System, WS 117L, for various degrees of operational uses, 1960-1965. Funding needs estimated through 1965 totalled [REDACTED]
- 8 Jul 57 LMSD informed BMD they needed \$7.9M to fund the WS 117L program between 15 August and 30 November 1957.
- 10 Jul 57 WS 117L assigned unclassified nickname New Horizon.
- 13 Aug 57 LMSD informed by BMD that WS 117L FY 58 funds totaling \$3.9M were available to carry the program through 30 October 1957. Adjust program accordingly.
- 21 Aug 57 BMD informed LMSD that WS 117L FY 58 P-600 funds could not exceed \$9.6M, with no more than 50% expended in the first six months.

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- 3 Sep 57 BMD informed by DCS/D that only \$10M P-600 FY 57 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 mock up vehicles granted.
- 19 Sep 57 BMD submitted WS 117L FY 58 and 59 austere funding requirements to DCS/D. Stated that \$48M in FY 58 would allow initiation of the flight test program by mid CY 58.
- 9 Oct 57 Following Sputnik, in answer to Hq USAF request as to efforts and resources required to accelerate the IC and IREM, an estimate was made for WS 117L. AFEND 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 58 and \$121.7M FY 59 funds program could be advanced 6 months to one year if priority is given effort.
- 10 Oct 57 BMD requested interim FY 58 procurement authority of at least \$4M P-100 and \$1M P-200 funds by 25 October to prevent a work stoppage.
- 10 Oct 57 SAF James Douglas approved the WS 117L program as presented to the Air Council as a planning objective, subject to Mr. Quarles' review.
- 15 Oct 57 \$35.1M (FY 58) P-100 funds authorized WS 117L by DCS/D. Later (19 Oct) AFEND 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 Oct 57 DS/D Donald Quarles again briefed on WS 117L.
- 27 Nov 57 BMD requested that ICBM/IREM overtime policies be extended to WS 117L, replacing the existing 2% of programmed manhours overtime limitation.
- 6 Jan 58 LMSD submitted a program acceleration plan for WS 117L (LMSD-2832) as requested by BMD in November 1957. Based on THOR-boosted early flight with a recoverable capsule as proposed by RAND. Flights to begin in late 1958. Increase manufacture of LMSD vehicles. ATLAS-boosted flights to begin in early 1959. General Schriever approved in principle, subject to reviews of special areas.

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21 Jan 58

BMD notified that Asst' Sec AF (Material) had approved use of overtime on WS 117L "as may be necessary to meet the approved objective".

23 Jan 58

C/S USAF approved acceleration of WS 117L Program. FY 58 funds will be provided when actually required.

Feb 58

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

3 Feb 58

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

24 Feb 58

Secretary of Defense Neil McElroy approved in principle the proposed acceleration of WS 117L to be conducted under direction of ARPA. BMD to submit a development plan.

26 Feb 58

WS 117L Site Selection Board convened at AFEMD. Board chaired by Colonel F. C. E. Oder, members from BMD, SAC, AMC, Hq USAF. Board to select tracking and data acquisition sites for the system.

28 Feb 58

Mr. Roy Johnson, ARPA, in a memo to the Sec/AF concluded that:

- a. ATLAS/WS 117L Project should be accelerated and given highest national priority in order to attain IOC at earliest date.
- b. THOR-boosted interim reconnaissance system with light weight recoverable capsule was a duplication of "a". Do not pursue.
- c. To attain early flights of Lockheed second stage, AF may find it desirable to use THOR-boosted test firings. THOR-boosters cheaper and available sooner than ATLAS, also can be used with second stage Lockheed vehicle for experimental recovery flights with animals.

Mar 58

Activity in interim visual reconnaissance program (II A) terminated in accordance with Mr. Johnson's message of 28 February.

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- 4 Mar 58 Chief of Staff, USAF, directed that WS 117L and other space projects which depend on the use of IC/IREM's be administered in same manner and with same procedures as IC/IREM programs. ("Gillette procedures") AFCEM to be central point of contact, coordination. Approved development plans would constitute action documents.
- 4 Mar 58 OSD approved acceleration of WS 117L to include launching satellite test vehicles based on THOR booster.
- 12 Mar 58 Lockheed notified that Hq USAF had disapproved the WS 117L recoverable reconnaissance payload program. (WS 117L Program IIA). LMSD notified to reorient THOR-booster WS 117L program for acceleration using THOR-boosted flights for early WS 117L tests--orbital flights for exercise of ground-space communication network, concept for recoverable capsule, for aero-medical research flights.
- 14 Mar 58 AFMCC reviewed accelerated WS 117L program, agreed on use of THOR booster for system test in orbital satellites.
- 19 Mar 58 BMD informed that all statements on the nature and timing of ARPA missile and satellite projects will come from OSD.
- Apr 58 BMD requested by USAF to revise 15 March WS 117L Development Plan financial annex to downward from 214 to \$152M. Keep program flexible.
- Apr 58 Biosatellite programs added to Advanced Reconnaissance System--recoverable capsule.
- Apr 58 UNDE engine development initiated.
- 28 Apr 58 DOD directed interchange of technical information and visits on satellites and space programs between US Army and Air Force up to SECRET. Refer other cases to headquarters.
- 30 Apr 58 NORAD expressed interest in infrared capability of WS 117L as an air defense attack alarm against ICBM launches.
- May-Jun 58 Ft Stevens, Oregon, selected as location of WS 117L NW tracking and data acquisition station.
- May 58 Advanced Reconnaissance System renamed SENTRY.

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- 9 May 58 Lt General Francis H. Griswold, V/Cinc/SAC, in a letter to Comdr, ARDC, pointed out that SAC has enthusiastically supported WS 117L. Reconnaissance features a tremendous potential, especially infrared, photographic, electronic. Also a requirement for a communications satellite, high altitude (22,000 miles) advanced surveillance systems.
- 19 May 58 Cognizance over WS 117L assigned to ARPA. (DOD Directive 3200.5)
- 21-22 May 58 First meeting, ARS Weapon System Phasing Group.
- 20 Jun 58 USAF informed major commands that WS 117L carried highest national priority, DR rating of .011 Brickbat, precedence rating of 1-1. Informed commands that field activities would begin in early 1959.
- 30 Jun 58 ARPA Order No. 9-58 issued. Announced Sec Defense had approved the assumption of responsibility for the Advanced Reconnaissance System (WS 117L) by ARPA. BMD to continue the project: to submit a detailed development and financial plan to ARPA. \$22.7M made available initially.
- 1 Jul 58 AFMCD Advanced Reconnaissance System (WS 117L) "New Horizon" Development plan published. Funding program FY 58, \$60M; FY 59, \$215M, later revised to FY 58, \$67M; FY 59, \$198M. Plan contained both TBOR-boosted version for component test and demonstration of orbital capability, and ATLAS-boosted reconnaissance program.
- Jul 58 Initial arrangements made by BMD to organize a unit capable of aerial recovery of WS 117L capsules. 9/CL19J aircraft to be used. "Aerial Snatch" called Project Hot Hand. Aircraft to come from TAC, 6593d Test Squadron (Special) activated by ARDC GO 38, effective 1 August 1958. Unit to be based at Hickam AFB.
- Jul 58 WS 117L Site Selection Board selected NE tracking and data acquisition station site at New Boston Gunnery Range, N. H. Only site which met criteria and BOD needs.
- 8 Jul 58 ARPA noted to Secretary of Defense that the question of the operating agency for WS 117L should be reviewed in the light that many agencies have an interest in the information.

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- Jul 58 ARPA expressed interest in features (subsystem G) of WS 117L as an infrared attack alarm system.
- 15 Jul 58 ARPA directed that monthly and quarterly progress reports on WS 117L be forwarded directly to them. Form prescribed by ARPA.
- 17 Jul 58 ARPA Order No. 9-58 funds increased to \$30.7M to purchase four WS 117L upper stages. (Amendment No. 1)
- 18 Jul 58 AF authorized by ARPA to procure long lead time items to support THOR-WS 117L firing schedule which is to begin in Nov 58.
- 20 Jul 58 ARPA requested briefing on WS 117L with special reference to applicability of subsystems and components to other uses such as communications, weather, and scientific measurements, use of ground components for general satellite tracking. Also wanted information on advanced reconnaissance satellite--engines, television, infrared, power supplies.
- 20 Jul 58 Director, ARPA, informed Sec Air Force \$215M was programmed for WS 117L in FY 1959. \$30.7M available to BMD. Balance subject to Congressional action, BOB apportionment. Total included bio-medical project. BMD informally requested to submit a new development and funding plan within these limitations, and to indicate how they would use more money if additional funds are available.
- 22 Jul 58 ARDC GO No. 38 designated and organized 6593d Test Squadron (Special). (In place at AFFTC for training, Aug-Dec 58, then to Hickam AFB, Hawaii.) Squadron assigned to Det #2, ARDC, AFEMD, for administrative and operational control.
- 22 Jul 58 Ottumwa, Iowa (Naval Air Station) picked for location of WS 117L Central Tracking and Data Acquisition station.
- Aug 58 New Boston Bombing Range, Grenier AFB, N. H., approved as site of Northeast tracking and data acquisition station.
- 4 Aug 58 ARPA Order No. 9-58 funds increased to \$50.7M. (Amendment No. 2)

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- 5 Aug 58 Procurement of long lead time items authorized. THOR-WS 117L vehicle procurement increased an additional 2 over the 10 authorized to a total of 19. Intent to utilize these for bio-medical and other measurements of space phenomena. Prepare new development plan based on \$21.5M FY 1959 ARPA program.
- 22 Aug 58 BMD established a Management Survey Team to look into all aspects of WS 117L Program Management at IMSD, LAC. (ARDC SO M-770)
- 25 Aug 58 ARPA Order No. 9-58 funds increased to \$70.7M. (Amendment No. 3)
- Sep 58 WS 117L interim tracking and telemetry facilities beneficially occupied at Vandenberg AFB, Calif.; Naval Air Station, Pt Mugu, Calif., Kaena Point, Oahu, Hawaii, Amette Island, Alaska; Kodiak Island, Alaska.
- Sep 58 Former Naval Air Station at Ottumwa, Iowa, approved as the site of the WS 117L central tracking and data acquisition station.
- 15 Sep 58 AFMD published Advanced Reconnaissance System (WS 117L) Development Plan. Contained both THOR and ATLAS-boosted phases of program. Funding program, FY 59, \$231M; FY 60, \$296M. Plan is profusely illustrated and explanatory in detail.
- 15 Sep 58 AFMD published Sentry Operational Annex to Advanced Reconnaissance System Development Plan. Contained operational concept, command responsibilities, system characteristics. Operations, personnel and training, logistics, facilities, schedules, funding program.
- 17 Sep 58 ARPA requested that term Sentry instead of WS 117L be applied to ATLAS Operational Capability previously designated as Pioneer visual, Pioneer ferret. Budget these separately, budget rest of program as improved military space systems.
- 23 Sep 58 In a personal TWX, General Power informed General Le May that he was distressed over the reluctance of agencies to support an early reconnaissance and infrared attack alarm features of WS 117L.
- 25 Sep 58 ARPA Order No. 9-58 funds increased to \$136.2M. (Amendment No. 4)

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25 Sep 58

Director, ARPA, informed BMD he was not able to approve current SENTRY Development Plan. Reasons: FY 59 funding plan exceeds ceiling of \$215M; achievements of major program objectives have been substantially delayed in spite of proposed funding level increases; FY 60 budget is in excess of a considered realistic funding level. ARPA sending an Ad Hoc Project Group out to investigate, evaluate and recommend on ARPA SENTRY and follow on program. (Cesaro, Lind Irvine, Truax)

29 Sep 58

Responsibility for execution of ARPA Order No. 9-58 transferred from Comdr, AFMD to Comdr, ARDC. (Amendment No. 5)

7 Oct 58

In a personal message, General Le May informed General Power that the Air Staff was solidly behind WS 117L, but basic budgetary restrictions prevent reprogramming response to this problem in a manner similar to wholly AF Programs. In his opinion ARPA was also sympathetic but was suffering under the curse of an arbitrarily imposed financial ceiling. Assured Power USAF was providing support for ICBM attack alarm system.

10 Oct 58

ARPA directed BMD to cancel all actions in WS 117L SENTRY program directed toward an ATLAS launch capability at AFMTC, but not to cancel boosters since they may be used at Vandenberg AFB.

1 Nov 58

DCS/D authorized \$2.4M FY 58 P-244 funds for WS 117L.

25 Nov 58

ARDC directed to eliminate two of the small primate shots from the DISCOVERER test series. Two mouse, one small primate shot are authorized. The two cancelled small primate boosters are to be reassigned.

4 Dec 58

Mr. Roy W. Johnson, Director, ARPA, informed the Under Secretary of the Air Force that a program to develop a number of systems and techniques which will be employed in the operation of space vehicles had been inaugurated. This program, to be known as DISCOVERER, was to include THOR launchings associated with WS 117L plus other similar projects not operationally oriented. Separate out DISCOVERER-THOR costs from WS 117L program (SENTRY). Prepare separate development plans and progress reports for each. Tentative reallocation of funds is:

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DISCOVERER; FY 59, \$108M; FY 60, \$60M; SENTRY; FY 59, \$10M, FY 60, \$100M. Secretary of Defense and ARPA agreed to assign IOC for SENTRY to ARDC "for the next several years and until final objectives are obtained". Tentative "centers" for the program will be operated by ARDC.

5 Dec 58

Mr. Roy W. Johnson, Director, ARPA, informed Under Secretary of the Air Force that reorientations of the Discoverer and Sentry programs were proposed, and a study and review would be made. For this review, AF was to assure that \$213.3M was available in FY 59 and \$160M in FY 60. AFEMD should not exceed these resources. In areas where cancellations were contemplated, no procurements beyond those absolutely necessary should be made.

11 Dec 58

Responsibility for execution of ARPA Order No. 9-58 transferred from Comdr, ARDC to Secretary of the Air Force (Amendment No. 6)

15 Dec 58

AFEMD briefed AF and ARPA on WS 117L reorientation in response to 4-5 December ARPA directives. BMD also submitted alternate program reorientation suggestions.

16 Dec 58

ARPA Order No. 48-59 to Sec AF. Requested Sec AF to continue study, development, and launch operations originally associated with the THOR phase of SENTRY program under ARPA Order No. 9-58, as an independent project identified as DISCOVERER-THOR project. Earlier costs will be transferred to the new project. Prepare a new financial plan by 15 January 1959.

17 Dec 58

Mr. Roy Johnson, in a memorandum for the U/Sec AF, stated that the fundamental objectives of the ARPA SENTRY R and D program should be development of improved area reconnaissance with recovery techniques, point reconnaissance development. Surveillance should be based on planned film read out, reconnaissance on film recovery. Fly recoverable ATLAS-boosted capsule early in 1961, with surveillance camera system in mid 1961. Funds for ARPA SENTRY: FY 59, \$215M, FY 60, \$160M. 1959 figure includes 13 Discoverer flights. To meet fund limitations, USAF requested to delete: 1) high energy fuels program for second stage; 2) development and test of 6 "read out camera, and to consider use of recoverable ATLAS space vehicle as test

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bed for surveillance camera and ferret systems; and to consider use of ATLAS with 1960 operational recovery program for additional uses, etc.

Mr. Johnson announced that ANPA supported USAF proposed operational program as presented.

Late Dec 58

First THOR-boosted DISCOVERER on pad at Vandenberg AFB awaiting launch.

Dec 58-Jan 59

Intense activity at AFMD, in separating out various phases of the program, preparing separate development plans on THOR-DISCOVERER, SEVERY, MIDAS, and CARROUSEL phases of the program.

21 Jan 59

First launch attempt of a THOR-DISCOVERER from Vandenberg AFB. Launch terminated at T-60 as a result of inadvertent firing of the ullage rockets.

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