HISTORY OF THE SPACE SYSTEMS DIVISION

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8. Midas

[redacted] The Midas Satellite Programs (Program 461 and 266), a satellite-borne system of infra-red sensors, had their origins in parallel with the Air Force ballistic missile development programs of the 1954-1961 era. Indeed very few responsible managers, project engineers, or scientific advisors of that period allowed themselves to be deluded with the notion that the strategic ICBM under development and test, with its multi-megaton nuclear payload, was the "ultimate weapon." The consensus by 1956 was that it was technically feasible to develop, if not interceptor systems, at least warning systems; and these systems would employ ballistic missile boosters to place ever-vigilant satellites on-station in space and linked to ground receiving and communication networks. This was the 1956 Program 117L on which Lockheed Aircraft Company submitted proposals in March 1956. After the initial success of the Soviet Sputniks in October and November 1957, however, the Department of Defense, early in 1958, established the Advanced Research Projects Agency (ARPA), and the Air Force lost management control of the "spy-in-the-sky" programs.

[redacted] In November 1959, the Air Force Ballistic Missile Division resumed management of a scaled-down and reoriented Midas Program the forerunner of the present Programs 461 and 266. The first Air Force launch of a Midas Satellite occurred on 26 February 1960; it failed to orbit. Further program definition and feasibility studies followed, along with sharply reduced levels of effort and the unresolved questions as to the military value of such a warning system. After all, the ground based sites for the Ballistic Missile Early Warning System (BMEWS) in Alaska, Greenland, and the United Kingdom would provide about as much warning of an all-out attack as could be expected. By the end of 1963, Midas funding had dwindled to $10 million. Between the initial 1960 launch and 1962, four more Midas Satellites established the technical feasibility of the system as did all subsequent launches; and late in 1962 the program was reduced to the status of a research and demonstration effort. In May and again in July 1963 Midas demonstration flights provided useful information.

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[redacted] In January 1964, Air Force headquarters published Specific Operational Requirement No. 209 for a Missile Defense Alarm System (MIDAS), and the system requirement was aimed at a capability to detect and report on

[redacted] An up-dated preliminary technical development plan was published by Space Systems on 15 May 1964. The Midas Research Test Series II launches, to evaluate detection of submarine launched ballistic missiles (SLBM) was redesignated Program 266 on 25 October 1965. The Preliminary Technical Development Plan for the SLBM was submitted on 15 November, and the Development Plan submitted 23 December 1965. The plans were essentially for development and demonstration that a technological base would be available in the 1970 time period from which satellite systems could effect world wide surveillance, detection, and warning. In due course the Program 266 objectives were redefined to include, as a high priority item, a missile strike reporting capability.[19]

[redacted] The revived Program 461 had envisioned a series of progressively enhanced technical capabilities for the missile alarm system. Three program launches, designated Research Test Series I were scheduled for flights to occur in late summer and fall of 1966. The contractors associated with Space Systems were General Dynamics/Convair Division (Atlas); Lockheed, Missile and Space Division (Agena), and the Aerojet-General Corporation (sensors). Aerospace Corporation was the general systems engineering/technical direction contractor for Space Systems Program 461.

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Systems Command headquarters released $34.5 million of the Fiscal Year 1966 Program 461 funding on 1 July 1965. Pending evaluation of Aerospace level of support for the program and a strike labor problem at Aerojet-General, $5 million of the $39.5 million approved program was deferred. The labor difficulty was settled on 9 July following a 36 day strike. The System Program Office reported 1 August 1965 on the schedule impact on the Research Test Series I flights. These had been scheduled initially for 15 March, 22 May, and 24 July 1966. Although the deferred funds were released on 22 November, at about the same time it was acknowledged that technical difficulties with the hardware would require a slip of approximately one month in each of the Series I flights. Moreover, Air Force headquarters had indicated in August that Program 461 funding for Fiscal Year 1967 would probably be reduced from the $80 million requested in the development plan.[20]

[redacted] The Research Test Series II of Program 461, as noted above, was redesignated Program 266 on 25 October 1965. Early in December, Air Force headquarters requested additional information with which it was planned to study further the development plan submitted to the Air Defense Panel on 23 November. The new information was to reassess the estimated cost for an operationally configured read-out station, the approximate cost of satellite and payload vehicles upon completion of the research and development program, and a cost estimate for conversion of the Fort Greely Research Test Series I read-out station to a Series II operational configuration.

[redacted] Although Program 266 had an approved $38 million budget for Fiscal Year 1967, in late December 1965, Systems Command headquarters advised that new schedules and funding requirements consistent with a reduced figure of approximately $29 million were required. The scope of the program effort, however, was not subject to change; and the schedules, headquarters admonished, were to be kept within good procurement practice. The Program 266 Development Plan had projected a

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Fiscal Year 67 requirement for $60 million and a "five-year" total (through Fiscal Year 1970) of $178 million. At the end of December 1965, no firm budget figure was available.[21] Contractor source selection board action was scheduled for July 1966.

[redacted] The Engineering Division, Program 461, had responsibility for systems requirements, design, development, and integration, respectively, and for reliability engineering, engineering management, and development planning. During the July-December 1965 period, experiments continued in the infrared and ultraviolet spectra. Development components for the Research Test Series I continued and at year's end, the contractors had progressed to a stage of manufacture, flight qualification, and satellite integration with the booster vehicles.

The Configuration Management Division processed 43 engineering change proposals during the same period, and published Configuration Management Instructions Nos. 1 and 3, in preparation for formal Air Force acceptance for the Research Test Series I hardware. The Procurement and Production Division closed out three study contracts during July-December 1965. The Lockheed Missile and Space Division contract accounted for 15 modifications, negotiated at a cost of approximately $1.239 million; and the Aerojet-General contract had 11 modifications, negotiated at an approximate total of $1.205 million.[22]

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Although the Engineering Division conducted protracted search for another launch on which to attempt the experiments again, none was found. On 9 December assistance was sought from the commander in an effort to obtain space on a non-interference basis on any scheduled launch, for the information was vital to timely

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development of sensors for Program 266. Some radiometric data, insufficient for the requirements, however, was obtained from experiments conducted on the Gemini VII flight launched 15 December 1965.

In the period before Program 266 had been designated a separate effort (prior to 15 November 1965), in May 1965, the Lockheed Company/Missile and Space Division; TRW, Systems Group; and the Hughes Aircraft Company had been awarded study contracts aimed at definition and proposals on the follow-on operational system for those aspects of Specific Operational Requirement No. 209 (January 1964) which became Program 266. Each of the contracts was for firm-fixed-price of $0.5 million; the study reports were received at Space Systems in September 1965.

Both the Program 461 and 266 activities were directed by Colonel R. N. Retzer. During the course of the July-December 1965 period, the Systems Program Office gained four assignees from the completed Snapshot program, among these were Lieutenant Colonel C. B. Rupert who moved from Director of Snapshot to become Director of the Program 266 Study Group. A total of 25 Aerospace Corporation personnel, members of the technical staff, were assigned to the joint Program 461/266 effort to monitor the study contractors' efforts and the subsequent Space Systems/ Aerospace systems definition phase.[23]

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18. SOR No. 209, Hq USAF, 28 January 1964.

19. Report, "SSD Programs as of 15 September 1966."

20. HR Dep Manned Sys, Prog Control Div, 461 SPO, July-December 1965.

21. Ibid.

22. HR, Dep Unmanned Sys, July-December 1965.

23. Ibid.