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# AEROSPACE TECHNICAL INTELLIGENCE CENTER

AFCIN - 4



WRIGHT-PATTERSON AIR FORCE BASE, OHIO

RCS : AU - D5

1 JAN 1960 - 30 JUN 1960

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RCS: AU-D5

HISTORY OF  
AEROSPACE TECHNICAL INTELLIGENCE CENTER  
(AFCIN-4)  
Wright-Patterson Air Force Base  
OHIO

1 January 1960 - 30 June 1960

Prepared By  
Air Intelligence Office  
AEROSPACE TECHNICAL INTELLIGENCE CENTER  
31 July 1960

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FOREWORD

ATIC policy for greater reliance on inputs from other key intelligence organizations imposed a host of specific requirements, the fulfillment of which served as a supporting brace to comprehensive analyses in major fields of aerospace warfare. To establish the significance of source contributions in relation to the priority intelligence objectives previously established, the Center engaged in an exercise for correlating information in a variety of technical areas and evaluating the available raw intelligence inputs when weighed against the specific needs for outputs by ATIC.

The task-force approach was developed for ATIC production. This involved the establishment of groups or teams of analysts in heterogeneous areas of technology for combined effort in a systems approach to major technical intelligence problems.

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SECTION I

ATIC ORGANIZATION AND MANAGEMENT

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CHAPTER 1

GENERAL

CIA-ATIC INTERCHANGES:

The Office of Scientific Intelligence, CIA, and ATIC reached satisfactory agreements on the ATIC request for CIA to assume responsibility for collection and production of intelligence in certain basic science areas. In general, it was agreed the OSI will be able to provide ATIC with basic science intelligence support needed in estimating and evaluating Soviet air weapons systems and space developments. Implementation processes consisting of various meetings with operational personnel have been underway since March to achieve mutual understanding. Five key personnel of the Office of Scientific Intelligence, CIA, concerned with production, visited ATIC on 31 March and 1 April to discuss mutual interests and objectives in the basic sciences areas for which they have agreed to accept responsibility from ATIC. (UNCLASSIFIED)

ATIC-ARDC INTERCHANGES:

Monthly meetings of the DCS/I, Hq ARDC and the Commander, ATIC were implemented by the formation of two working teams.

The mission of the team on R&D in support of intelligence was established as monitoring the progress of R&D projects of interest to intelligence, and managing the development and prosecution of

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intelligence requirements for R&D hardware and for follow-on systems. A status reporting system and provision of regulatory guidance publications were established as immediate objectives. An ARDC team chairman was appointed and ARDC membership designated. A representative of AFCIN-4A was appointed as the Chief ATIC representative on the team, and both AFCIN-4A and AFCIN-4C members were designated.

(UNCLASSIFIED)

The mission of the team on intelligence in support of R&D was established as monitoring and managing substantive intelligence contributions to ARDC, and to provide regulatory guidance publications. An AFCIN-4F team chairman was appointed and both AFCIN-4E and AFCIN-4F members and ARDC members were designated. (UNCLASSIFIED)

INHOUSE CAPABILITIES STUDY

A continuing study of resource requirements to implement the ATIC objective emphasizing in-house capabilities was undertaken. The study embraced manpower, funds, equipment and facilities; and was addressed to determination of optimum allocations for mission fulfillment, with the assumption that external assistance contracts would be reduced to minimum possible levels. (UNCLASSIFIED)

SCIENTIFIC ADVISORY GROUP (SAG):

The ATIC Scientific Advisory Group, acting under the guidance of the Scientific Advisor, functioned within its mission to provide scientific and technical consultant services to the Commander, Directors, and technical personnel, on problems of current and

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future programs. New techniques for development of aerospace technical intelligence courses of action were studied and recommended. Early study and final evaluation and recommendations for approval of ATIC products have been conducted. ~~(CONFIDENTIAL)~~ (U)

In accordance with individual assignments, the members of the group acted as observers on Air Force Scientific Advisory Board panel meetings, such as the one on Dyna Soar, the manned reentry research vehicle. Additionally, the members are gathering information to form the basis for future recommendations to the Commander.

~~(CONFIDENTIAL)~~ (U)

The initial visit to industry to gather technical information having a bearing on long-range (15 year) estimates was made to Westinghouse Research Laboratories. The problems of detection and discrimination of nose cones have been discussed at CONAD. Evidence suggesting that the Adena stage of Discoverer XII went into resonant burning was obtained from an independent contact in industry and was immediately relayed to the Air Force EMD and Vandenberg project officers. Problems in the field of infrared have been discussed with attendees at the Infrared Information Symposium, as well as at Wright-Patterson AFB. Numerous discussions involving operational analysis and reliability aspects of information storage and retrieval have been held with responsible groups and individuals and contractors. Assistance was given to assure that all pertinent data from accelerated infrared technical-intelligence-collection programs would be available

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to ATIC. Preliminary information on the findings and recommendations of the winter study group on Guide Line Investigation Programs-Antimissile Research was disseminated within ATIC. ~~(CONFIDENTIAL)~~(U)

PUBLICATIONS SURVEYS:

During the first four months of 1960, ATIC furnished contributions to the USIB Survey of Foreign Intelligence Publications and to the directives of the Vice Chief of Staff, USAF, and the ACS/I dealing with various ATIC publications. (UNCLASSIFIED)

Detailed costing data on production, graphics processing, and dissemination of aerospace technical intelligence publications were furnished together with manpower estimates, item by item. These data were processed as inputs to the AFCIN program, and provided back-up to the USIB Ad Hoc Committee on Foreign intelligence publications. The latest available report of Committee, 16 May 1960, announced no current USAF intelligence publications were identified as duplicative or non-essential. (UNCLASSIFIED)

EVENTS:

Mr. Carroll L. Zimmerman, Chief USAF Operations Analysis in the Office of the Chief of Staff, USAF, visited the Center on 15 February 1960 for orientation on ATIC, as well as special briefings on Soviet Missiles and Soviet Nuclear Estimate. (UNCLASSIFIED)

Mr. Patrick Coyne, White House Advisor to the President on Intelligence matters, spent the afternoon of 22 March and morning of 23 March at ATIC for indoctrination on certain phases of the

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Center's work. His interest centered primarily in the areas of electronics intelligence, weapon systems and engineering support.

(UNCLASSIFIED)

Mr. Hubert Stanley Young, Deputy Director, Scientific Intelligence, Joint Intelligence Bureau, London, England, visited ATIC on 4 and 5 May to discuss guided weapons estimates, space science, surveillance of space, telemetry, scientific aids for intelligence collection and a general survey of scientific intelligence. (~~CONFIDENTIAL~~) (✓)

Group Captain L. C. Dilworth, Director of Air Intelligence, Royal Canadian Air Force, Ottawa, Canada, visited ATIC on 15 and 16 June for orientation on activities of the Center and discussion of matters of especial interest to him. (UNCLASSIFIED)

Secretary of Air Staff and ACS/I representatives visited ATIC for a general orientation on 21, 22 and 23 June. (UNCLASSIFIED)

COMMAND ACTIVITIES:

Colonel Eriksen departed 26 February on an orientation tour of the installations of the 6900th USAF Security Wing throughout Europe and returned to duty on 15 April. (UNCLASSIFIED)

During February and March, General Dougher visited ATIC contractors in the East, South, and on the West Coast. This tour included Johns Hopkins University in Maryland, Melpar and American Machine & Foundry in Virginia, Lockheed at Marietta, Georgia; Radiation, Inc. at Orlando, Florida; and Aerojet, Northrop, Lockheed Rocketdyne, Convair, and Lockheed in California. Upon his return from these visits

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to contractors, he directed cancellation of certain tasks not considered to be in direct support of the ATIC mission. (UNCLASSIFIED)

General Dougher and Lt Col Paul Marriott, 4X7, visited Hq ARDC on 3 May for a meeting with Brig Gen Dougherty, DCS/I, and his people to continue discussions on inter-related ARDC/ATIC projects.

(UNCLASSIFIED)

During the month of May, Maj Gen Dougher and Mr. Arcier visited Hawaii, Wake Island, Guam, Taiwan, Hong Kong, Tokyo; and Shemya AB and Elmendorf AFB, Alaska.

PERSONNEL:

Effective 1 May 1960, Col William E. Boyd was relieved from assignment as Chief of Staff and named Special Assistant to the Commander.<sup>1</sup> He departed on permanent change of station to the 1st Missile Division at Vandenberg AFB, Calif on 23 May 1960.<sup>2</sup>

Col Donald N. Wackwitz assumed the duties of Chief of Staff on 1 May 1960.<sup>1</sup> Col Wackwitz departed on leave on 11 May and Col Barton S. Pulling was named Acting Chief of Staff during his absence.<sup>3</sup>

However, during this period, on 13 June, Col Wackwitz was relieved from assignment as Chief of Staff and was assigned as Deputy Commander.<sup>4</sup> Col Pulling then assumed the position of Chief of Staff as his principal duty with additional duty as Chief, Production Control Office, effective 13 June.<sup>4</sup>

- 
1. GO #4, 1125th USAF FAG, 28 Apr 60 (4X2)
  2. SO #R-47, 1125th USAF FAG (4X2)
  3. GO #5, 1125th USAF FAG, 21 May (4X2)
  4. GO #7, 1125th USAF FAG, 15 Jun (4X2)

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CHAPTER 2

MANAGEMENT CONTROL AND SERVICES

PLANS AND PROGRAMS:

Work continued on the revision and up-dating of the Aerospace Technical Intelligence Center emergency and war plans during this period. Relocation of ATIC Alternate Headquarters from Battelle Memorial Institute at Columbus, Ohio, to Maxwell Air Force Base, Alabama, was approved.<sup>1</sup> Under an interim plan in support of the reconstitution of the JCC, the Commander, ATIC, and one Colonel are to become members of the JCS under condition ALPHA. ~~(SECRET)~~ (u)

The FY 61 ATIC program was presented to General G. B. Erskine, OSD, and other OSD personnel on 8 June 1960. (UNCLASSIFIED)

The second edition of the Program Planning Document and two revisions were published during the first half of 1960. (UNCLASSIFIED)

BUDGET AND ACCOUNTING:

The 3rd Revisions to the FY 60 Annual Financial Plans, the FY 61 Annual Financial Plans, and the FY 62 Budgets for P-481, P-489, P-492, P-850, and P-533 and P-531 were prepared and forwarded during this period. (UNCLASSIFIED)

Funding, supply, and procurement procedures were established for P-492 fund procured supplies and equipment for World Wide USAF Attache System. (UNCLASSIFIED)

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The USAF Resident Auditor performed the semi-annual audit, summary of findings determined that the system of internal control is adequate and effectively applied and that the present accounting procedures are in accordance with applicable directives. (UNCLASSIFIED)

STATISTICAL SERVICES:

During this period preparation of the monthly Statistical Summary was revised to include two separate parts with two different publication dates. The primary objective of this was to enable an earlier distribution of the Procurement Section, now known as Part I of the Statistical Summary. Part II includes all other data normally covered in the Summary in its original form and is now published as soon as possible after the dissemination of Part I. (UNCLASSIFIED)

In the Reports Control area, controls were maintained over approximately 590 recurring report submissions. Approximately 99% of these were submitted in sufficient time to meet the established due date. (UNCLASSIFIED)

In the Statistical Audit area continued emphasis was placed on the audit of military and civilian personnel reports thus resulting in more accurate and timely submission of reports to higher headquarters. (UNCLASSIFIED)

MANAGEMENT ANALYSIS:

The Comptroller continued to prepare one-time analyses to point out problem areas in Center operations and to gauge effectiveness of contractual phasing in supporting production; and compiled cost breakdowns on individual reports, studies and handbooks prepared by

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ATIC during the calendar year 1959 for inclusion in the ATIC report to USIB. AFCIN-4 also provided man-hour data for consolidation with similar AFCIN-1, 2, and 3 reports. Resultant consolidated reports summarize AFCIN capabilities and are graphically displayed in the AFCIN control room. (UNCLASSIFIED)

CONTRACT REQUIREMENTS:

The AMC Intelligence Support Section,<sup>2</sup> successfully negotiated 132 ATIC contracts during the 3rd and 4th Quarters of FY 1960 for both services and hardware. To assist the Intelligence Support Section, ATIC furnished Advance/Information copies on all 3rd and 4th Quarter FY 1960 procurements. (UNCLASSIFIED)

CIVILIAN PERSONNEL:

Effective 30 June 1960, ATIC was reduced by 65 civilian allotments, which set the new authorized strength figure at 574, 538 graded positions and 36 wage board positions. During the six-month period there were only 23 new civilians hired for the Center, primarily because the major effort was placed on reduction in force rather than on in-hiring. During the same period, there were 85 separations, here again primarily because of the reduction-in-force program. As of 30 June 1960, the assigned civilian strength was 547, leaving a total of 27 civilian vacancies to be filled. The turn-over rate in ATIC during the period was abnormally high because of the RIF, and figured to be approximately 13 percent as compared to the previous average turn-over rate of approximately 2.5 percent. (UNCLASSIFIED)

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During the week of 16 May, ATIC received a joint Air Force/Civil Service Commission inspection. In view of the fact a total of approximately 15 major deficiencies existed in the civilian personnel program areas, the survey team has been scheduled to return to ATIC shortly after 1 January 1961. (UNCLASSIFIED)

During the first half of 1960, a great number of manhours were expended in implementing the Federal Employees' Health Benefits Act of 1959. The plan was placed into effect on 3 July 1960 and all except 122 civilian employees elected to participate in one of the three plans which were made available to them. (UNCLASSIFIED)

In June, a tentative selection was made to fill the fourth and final PL 313 vacancy which was authorized to ATIC in August 1958. One PL 313 authorization was relinquished due to the inability to recruit against the position requirement. The major requirement for the position was in the area of data reduction and digital computer operations. (UNCLASSIFIED)

MILITARY PERSONNEL:

The following assignments and reassignments of key officer personnel were effected during this period:

1. Colonel D. N. Wackwitz, 1156A, assigned duty as Deputy Commander, effective 13 June 1960.<sup>3</sup> (General Order #7, 1125th USAF F/A Gp, 15 June 1960) (UNCLASSIFIED)
2. Colonel B. S. Pulling, 22569A, assigned duty as Chief of Staff, effective 13 June 1960.<sup>3</sup> (UNCLASSIFIED)
3. Colonel N. N. Perlberg, 8562A, assigned duty as Comptroller, effective 18 June 1960.<sup>4</sup> (UNCLASSIFIED)

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4. Colonel R. J. Gibbons, 3978A, assigned duty as Deputy for Documentation, effective 1 May 1960.<sup>5</sup> (UNCLASSIFIED)

5. Colonel G. C. Hoffman, A0290498, assigned duty as Deputy for Radiation Warfare Support, effective 1 May 1960.<sup>5</sup> (UNCLASSIFIED)

ORGANIZATION:

Air Force wide realignment of functional and program responsibilities, with related critical analysis of ATIC programs, resulted in reduction in both program funds and manpower authorizations, thus causing a number of organizational changes within the ATIC. In line with the Air Force policy, small organizational entities were combined or eliminated. (UNCLASSIFIED)

On 1 January 1960, the Air Sciences Division, Deputy for Science and Components, was discontinued.<sup>6</sup> Functions and projects were redistributed among other elements of the Deputy for Science and Components and the Office of the Scientific Advisor. (UNCLASSIFIED)

Within the Deputy for Acquisition, 4 February 1960,<sup>7</sup> the former Requirements Branch and the Collection Evaluation Branch were combined into the Requirements and Collection Evaluation Branch. The Equipment Branch and the Equipment Support Branch were similarly combined into the Equipment and Support Branch. The planning function was distributed among the operating elements and the former Operations Planning Branch discontinued. These changes eliminated three small branches. (UNCLASSIFIED)

Effective 1 May 1960, certain Headquarters Command units were redesignated thereby changing the numbered unit to which Aerospace Technical Intelligence Center is assigned, from 1125th USAF Field Activities

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Group (ATIC), to Headquarters, 1125th FAG (ATIC).<sup>8</sup> (UNCLASSIFIED)

On 2 June 1960, after responsibilities for ATILO Processing had been divided between the Military Personnel Branch, Personnel and Manpower, and the ATILO Activities Branch, Deputy for Acquisition, the ATILO Processing Branch, Personnel & Manpower, was discontinued.<sup>9</sup>(UNCLASSIFIED)

On 30 June 1960, functional workload of Detachment 1, SMITIG, was moved to ATIC headquarters and this detachment discontinued, effective 1 July 1960.<sup>10</sup> (UNCLASSIFIED)

On 7 June 1960, a regrouping of functions within Administrative Services resulted in the elimination of one branch and redesignation of others. Branch structure for Administrative Services at the end of the period was: Mail Control Branch, Dissemination and Document Control Branch, Services Branch, Security Branch.<sup>11</sup> (UNCLASSIFIED)

Changes in designation occurring during the period were:

a. The former Deputy for ELINT was redesignated the Deputy for Radiation Warfare Support.<sup>12</sup> (UNCLASSIFIED)

b. The parenthetical designations of Detachment 3 (European) and Detachment 4 (Pacific) were changed to Detachment 3 (EURATIC) and Detachment 4 (PACATIC).<sup>13</sup> (UNCLASSIFIED)

MANPOWER:

Two significant changes occurred in ATIC manning during the first six months of 1960. On 17 February, seven Warrant Officer authorizations were converted to Captain.<sup>14</sup> On 11 April, total authorizations were decreased by 32 Officer, 14 Airmen and 65 Civilians, Total 111. This reduction was a part of the Air Force wide J-3 Manpower Reduction Program; the total reduction was accomplished by 30 June 1960.<sup>15</sup> (UNCLASSIFIED)

The change in ATIC manning and grade distribution is reflected in the following tables: (UNCLASSIFIED)

TABLE I - AUTHORIZATIONS

	OFFICER	AIRMEN	CIVILIAN	TOTAL
1 January 1960	271	158	639	1068
30 June 1960	239	144	574	957
REDUCTION	32	14	65	111

TABLE II - OFFICER GRADE DISTRIBUTION

	GEN	COL	LTC	MAJ	CPT	LT	WO	TOTAL
1 January 1960	1	21	44	79	89	30	7	271
17 February 60	1	21	44	79	96	30	0	271
30 June 1960	1	20	42	72	83	21	0	239
REDUCTION		1	2	7	13	9		32

TABLE III - AIRMEN GRADE DISTRIBUTION

	E-9	E-8	MSGT	TSGT	SSGT	A1C	A2C	TOTAL
1 Jan 60	3	5	22	33	59	19	17	158
30 Jun 60	3	5	22	30	56	13	15	144
REDUCTION				3	3	6	2	14

Despite these reductions, the ATIC Manpower Augmentation Program, FY - 1960 through 1964, was not amended, it being felt the projected manpower requirements were still valid.<sup>16</sup> (UNCLASSIFIED)

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AIR INTELLIGENCE SERVICES:

ATIC continued its full intelligence service to the Air Materiel Command. ATIC-AMC relationships were redefined, and new procedures developed for handling the release of intelligence documents to AMC contractors, which were documented in a joint AMC-ATIC regulation. The Chief of Staff, AMC approved the request of WADD to receive on regular distribution copies of the AMC Weekly Intelligence Summary and the Daily AMC Intelligence Summary. (UNCLASSIFIED)

The Commander accepted the ATIC movie produced by APCS for use in the orientation of personnel concerning the work of the Center.<sup>17</sup> The film is used to supplement briefings for personnel of ATIC, its using agencies, contractors, the intelligence community, DOD, and outside organizations which have a need for such orientation. (UNCLASSIFIED)

ATIC implemented the Cold War Operations Plan of the JCS, and participated in an Air University exercise of alternate Hq USAF (Rear). This exercise was to: (1) test continuity of Operations Plan, USAF; (2) test alerting system at a specific base; (3) simulate alternate staff action at this base; (4) operate a limited communication GPS; and (5) simulate staff problems by generation of message traffic requiring staff action by alternate Hq USAF (Rear) Staff. (UNCLASSIFIED)

MATERIEL AND FLIGHT SERVICES:

The ATIC FY 61 Military Construction Program request was disapproved by USAF during January 1960. Plans were formulated and document submitted for the ATIC facility request in the FY 62 Military Construction Program. (UNCLASSIFIED)

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Work began on the additions to Buildings 828 and 259 (1960 MCP Items 60-005 and 60-004) during January 1960. Configuration changes and change orders were issued at our request by the Corps of Engineers.

(UNCLASSIFIED)

During this period, a rapid replenishing system of supplying expendable office supplies directly to the user's desk was initiated. This system, which provides service within 24 hours, is nicknamed "Rocket Express". One of the purposes of this system is to eliminate the necessity for so many supply cabinets throughout the Center.

(UNCLASSIFIED)

The Supply Branch was reorganized, merging two supply accounts, AFK4204 and Department 854. This reorganization has substantially improved the management and work flow of the supply function.

(UNCLASSIFIED)

The present value of Unit Authorization List (UAL) equipment is \$1,708,834.78, for an increase of \$811,658.52 over 1959, and the dollar value of AFK4204 is \$2,511,653.89, for an increase of \$690,139.04. The total value of equipment in use within the Aerospace Technical Intelligence Center is \$4,220,488.67. A total of 4,089 line items requested have been processed during this six months. (UNCLASSIFIED)

The C-47 and C-54 aircraft assigned to ATIC flew a total of 848 hours during this period, with 5,219 passenger hours logged in 66 passenger flights. Thirty-five support trips were flown. Allocation for this half of FY 60 was 834 hours. (UNCLASSIFIED)

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ADMINISTRATIVE SERVICES:

Considerable effort was made to reduce the volume of ATIC studies, reports, etc. being distributed. Approximately 100,000 copies of these intelligence publications were distributed during 1959 as compared to 62,000 during 1958. (UNCLASSIFIED)

In an effort to reduce widespread storage of TOP SECRET material, each Deputy and Staff Office consolidated authorized TOP SECRET storage areas for each activity. These areas are limited to divisions having a designated TOP SECRET Control Officer and alternate. (UNCLASSIFIED)

ATIC prepared a Special Publications Report regarding the propriety and essentiality of ATIC intelligence publications and administrative publications which indicated that ATIC publications were in accordance with AF publications standards. Subsequent to this report, an ATIC Publications Review Board was appointed on a one time basis to conduct a thorough review of administrative publications. The findings of this Board will be submitted to the Commander during the next period. (UNCLASSIFIED)

Policies and procedures affecting the release of information by ATIC contractors were reviewed and the Release Statement included in ATIC contractual documents was revised. New instructions prohibit contractors from releasing any information, documents, or material concerning these contracts without the approval of the ATIC Project Monitor. (UNCLASSIFIED)

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At the end of the reporting period, the Center had a volume of 4,902 cubic feet of records on hand which indicates a slight decrease of 19 cubic feet. In conjunction with the discontinuance of Det #1 (ATIC) on 1 July 1960, approximately 1,050 cubic feet of files were disposed of.  
(UNCLASSIFIED)

- 
1. Hq USAF Ltr dtd 31 May 60, "Continuity of Operations."
  2. ATIC History, 1 Jul - 31 Dec 1959, page 9
  3. GO#7, 1125th USAF F/A Gp, 15 Jun 60
  4. GO#8, 1125th USAF F/A Gp, 20 Jun 60
  5. GO#4, 1125th USAF F/A Gp, 28 Apr 60
  6. GO#1, 1125th USAF FAG (HEDCOM USAF), 1 Jan 60
  7. GO#3, 1125th USAF FAG (HEDCOM USAF), 4 Feb 60
  8. GO#19, HEDCOM USAF, 6 Apr 60
  9. GO#6, 1125th USAF FAG (HEDCOM USAF), 2 Jun 60
  10. GO#32, HEDCOM USAF, 13 Jun 60
  11. AFCSS 1st Ind to AFCIN-RI Ltr, 25 May 60, "Reorganization of Administrative Services Office, Aerospace Technical Intelligence Center".
  12. GO#2, 1125th USAF FAG (HEDCOM USAF), 28 Jan 60
  13. GO#23, 4 May 60, and amended by GO#25, 23 May 60, HEDCOM USAF
  14. MAV 62/1/8, 17 Feb 60
  15. MAV 62/2/9, 11 Apr 60
  16. T59-29505-A, Incl 5, "AFCIN Manpower Augmentation Document" (SECRET), 6 Nov 59
  17. ATIC History, 1 Jul - 21 Dec 1959, page 11

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SECTION II

ATIC ACTIVITIES

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## CHAPTER 3

COLLECTIONGENERAL:

In accordance with the change in policy concerning ATIC's collection effort<sup>1</sup>, a realignment of projects and tasks and the redeployment of some personnel was effected in order to concentrate on specified priority objective material and to avoid secondary and tertiary material. Participation in clandestine operations continued to be restricted or terminated and reliance for such activity, in fulfillment of requirements, has been placed on the resources of other collection agencies. ~~(SECRET)~~ (U)

In addition, various projects and tasks concerning the development and procurement of new and improved collection aids and techniques were either cancelled or transferred to the USAF R&D community and other sources engaged in collection hardware development. ~~(SECRET)~~ (U)

REQUIREMENTS:

The first half of 1960 was characterized by the development of a new requirements system and a more stringent control of these requirements in conformance with the aforementioned change in collection policy. The new system is comprised of STAIRS (Short Term Air Intelligence Requirements), CAIRS (Continuing Air Intelligence Requirements), and PAIRS (Priority Air Intelligence Requirements). This system provides for a more logical grouping of requirements and also facilitates the maintenance of these requirements on a current basis. ~~(SECRET)~~ (U)

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ATIC adopted a new system of processing and disseminating requirements on aircraft in conjunction with the CAIR and STAIR program. This system involves the compilation of a body of "Standing Requirements" on respective SovBloc aircraft which represent current gaps in information of a specific nature for these aircraft. After initial compilation, these requirements are incorporated into CAIR-1. In addition, they are also held and served as STAIRS when a specific collection potential arises. After each significant collection "take", a revision of the requirements is effected. The system proved advantageous from the following standpoints: (1) It provided coverage of ATIC aircraft requirements on an all source basis; (2) It provided a ready reserve of STAIR type requirements for specific collection potentials as they developed, thus obviating the need for last minute solicitation of requirements on a "crash basis." ~~(SECRET)~~ (U)

With regard to the satisfaction of ATIC requirements through the exploitation of Spanish repatriates, reports resulting from the interrogation of 69 new sources indicated ATIC potential in such priority requirement areas as aircraft and missile construction and testing, missile propulsion, electronics and missile fuels. Reports received contained information, of interest to ATIC, of varying degrees of value in priority-requirement areas. ~~(SECRET)~~ (U)

ATIC continued to follow and actively support the operations of the Defector Reception Center at Frankfurt, Germany. Specific requirements were served to aid in the exploitation of new sources, some of whom were considered to have an unusual potential for information in priority areas. ~~(SECRET)~~ (U)

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COLLECTION EVALUATION:

ATIC initiated three major evaluation procedures during this report period: (1) Examination of the final ATIC product to determine what information was used in the estimate, and from what collection resources it was received; (2) Preliminary tech briefs published have been related to the collection sources to show what organization, and through what media ATIC is receiving its best intelligence information; (3) The Air Force intelligence report evaluation procedures have been the subject of an intensive study. As a result, new procedures have been evolved within ATIC, and a proposal has been forwarded for ACS/I coordination and approval, and eventual acceptance by the Air Force to replace the present evaluation procedures. ~~(CONFIDENTIAL)~~ (U)

To fully implement the evaluation of collection responsiveness to ATIC requirements, ATIC's function is primarily one of planning. The goal is to use every possible yardstick to evaluate collection programs, projects, tasks, organizations and even input derived from other agencies within the intelligence community. (UNCLASSIFIED)

A program and general agreement was established between AFCIN-1, ATIC and the CIA for the exchange of periodic listings of proposed guidance material. The object of this was to eliminate possible duplication in the development of collection guidance products. (UNCLASSIFIED)

A considerable increase in the release of ATIC developed guidance products to foreign nationals was noted during the period. This increase was attributed to the timeliness of the products, plus a concerted effort to retain a Confidential (or lower) level of classification, where feasible. (UNCLASSIFIED)

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COLLECTION OPERATIONS:

The primary concern in this area was the transition from clandestine to overt collection operations. A number of projects were thus either terminated or transferred to the CIA. For all intents and purposes there was complete disengagement from clandestine operations, although certain administrative and rehabilitation problems resulting from past operations will continue for some time to come. ~~(SECRET)~~ (u)

In the overt collection area, a major effort was made to build up the collection potential through the exploitation of U.S. scientists and technicians traveling abroad on activities which would bring them into direct contact with their Soviet counterparts. Although a number of these domestic sources achieved successes in intelligence gathering missions, the total number of travelers responsive to ATIC requirements fell far below expectations. This was primarily due to our experiencing personnel cuts and a diversion of a large number of man hours to other than direct intelligence collection activities. ~~(SECRET)~~ (u)

The program to employ selected reserve officers in a project utilizing their technical talents under ATIC auspices remained in the organizational and planning stage. (UNCLASSIFIED)

The preparation and production of intelligence reports continued initially at a relatively high rate, but the withdrawal from clandestine operations resulted in a noticeable drop in the number of reports submitted during the latter part of this period. ~~(CONFIDENTIAL)~~ (u)

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ATIC's ATILO activities group was primarily concerned with (1) systematically displaying and administratively reorganizing data available within the Deputy for Collection and the oversea Detachments, on collection operations and collection equipment, development and procurement, (2) staffing and preparing various policy directives which established collection parameters and procedures as guidance for the oversea Detachments collection activities, and (3) serving as the responsible staff agency within the Deputy for Collection for matters relevant to general collection policies and procedures. (~~CONFIDENTIAL~~) (U)

In the area of exploitation of Soviet targets of opportunity, ATIC engaged in exercises associated with the first series of Soviet ballistic-missile firings in the Pacific range area. Considerable technical intelligence information was obtained during this first exercise, especially in the infrared and spectrographic areas. In the latter part of June, ATIC personnel were deployed to the range area for the second series of Soviet firings expected to take place in July. (~~SECRET~~) (U)

Exploitation of Soviet transient aircraft occurred on three separate occasions and involved the AN-10 and IL-18 aircraft. Reports submitted furnished ATIC with the first overall coverage of the AN-10 and fulfilled the greater portions of pertinent requirements. The results of the IL-18 exploitation were predominantly acquisitions of tracings, measurements and metal samples, plus the first close-up examination of the "Bean Shell" antenna which is believed to be an infrared altimeter. Other information obtained confirmed previous

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efforts against similar aircraft taken during previous exploitation exercises. (~~SECRET~~) (U)

Preliminary arrangements were made with interested agencies to provide for ATIC participation with any Civil Aeronautics Board crash-investigation team which may be called upon to investigate any Soviet air crash in the U.S. or its possessions. This is being accomplished in anticipation of the forthcoming U.S. Soviet reciprocal air agreement regarding scheduled Aeroflot and Pan American flights between the two countries. (~~SECRET~~) (U)

TECHNICAL RESOURCES:

ATIC personnel participated in the exploitation of the first series of Soviet ballistic-missile firings in the Pacific in January 1960. Spectral, radiometric and photographic data were obtained. The personnel worked with AFCRC and contractor personnel on the correlation and coordination of raw data. Preliminary estimates were submitted to ATIC analysts. (~~SECRET~~) (U)

In support of AFCIN-1, a joint team has been established to equip an airborne platform to record re-entry vehicles in the following areas: infrared, photographic, ferret, photogrammetric, radio noise and data recording. Ground based readout support will be provided by ATIC. Funding has been approved and the project is being staffed at headquarters level. (~~SECRET~~) (U)

In the infrared area, the two aircraft of the airborne flexible infrared collection system have been delivered and are undergoing flight testing at Wright-Patterson AFB with positive results. Other active infrared projects transferred to WADD include the airborne

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search and track system, airborne radiometer and a special ground measuring program. All of these projects are under contract. (~~SECRET~~) (U)

In the electronic area specific adaptations of special-purpose radar equipment have been achieved and are being used operationally. The feasibility and testing program on modulated radar returns has been transferred to ARDC. (~~SECRET~~) (U)

A concept of a global radar operating at very low frequencies for the detection of ICBM launchings and nuclear detonations was formulated and presented to the Vice Chief of Staff and the Scientific Advisory Board. Future contributions toward the global radar concept will be limited to monitorship and solicited recommendations. (~~SECRET~~) (U)

In the acoustics field, the final report on the airborne acoustics-collection system was received and evaluated. Results show that liquid and solid propelled missiles possess different signatures but testing is inconclusive as to whether this is powerplant or aerodynamic differences. Ranges of 1000 miles or more are predicted with over 50% reliability. Consideration is being given to extension of feasibility testing of this system against Atlantic Missile Range and comparable ZI targets. (~~SECRET~~) (U)

In the photographic field, a special aerial index camera system has been delivered and installed in ATIC aircraft. This system was successfully used in the Pacific Soviet missile firing exercise and is being flight tested at WADD. (~~SECRET~~) (U)

In the nuclear and micro sampling area a personalized gamma ray detection device has been delivered to ATIC which will provide ATIC against nuclear rocket propulsion systems being developed and/or tested on Soviet research and development centers or missile ranges.

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The system consists of a detector, tactile alerter, and a two-channel miniaturized target recorder. The airborne micro sampling program was completed with negative results. Work is still being accomplished on the ground sampling program at ARDC. Results of this work will provide planning for future ATIC participation in this area.

~~(SECRET)~~ (U)

During the period of this report, there has been a significant realignment of effort to relate the equipment under procurement to existing requirements. Several contracts which would not lend themselves to redirection were terminated. Specialized intelligence equipment on ATIC inventory that no longer supported Air Force collection projects was transferred to other Government agencies. Equipment now being procured will support the Air Force collection program or will be completed under Air Force guidance or continuity and then transferred to an appropriate using agency. The in-house capability for equipment support is accomplishing the function of testing, evaluating, performing special modification, and adaptations of photographic, electronic and infrared equipments. Especially noteworthy is a novel optical and mechanical design which produced a breakthrough for the procurement of ultra lightweight primary mirrors in long focal length reflector optics. The collapsible 200 inch focal length, F-16, 70mm system weighs around 75 pounds, thus providing a potential for peripheral collection at sites previously inaccessible. ~~(SECRET)~~ (U)

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During this period photographic training was completed by twenty-five (25) Air Attache Officers, ATILOs and special students in classes of three weeks' duration and two (2) ATIL officers for a short period of time. Fourteen (14) airmen attended classes of eight weeks' duration. A newly established special 35mm course in photography for ATIC personnel was presented to a class of nine (9) officers, airmen and civilian personnel. This course was established because of the requests by ATIC personnel who were unable to attend standard courses. (UNCLASSIFIED)

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CHAPTER 4

DOCUMENTATION

STEP EVALUATION PROGRAM:<sup>1</sup>

Highlights of the day's take of information through (1) Air Scientific and Technical Review (ASTAR), (2) Air Information Division/Library of Congress (AID) Press, and (3) Technical Information Processing System (TIPS) Press have generated numerous requests by analysts for further information, translations and evaluations. From October 1958 to 1 June 1960, 16,000 journal abstracts were received at Project Gold Eagle (PGE) Control II; 10,071 of these had received Phase I reviews by U.S. specialists for Control I; 3,128 of these were sent to ATIC analysts by the Scientific Coordinators of Control II; 617 responses were sent to Control II by the analysts; 136 items were translated for the analysts; and 56 phase II evaluations were completed for the analysts. More than 300 books were similarly evaluated through STEP. Three Phase III (state-of-the-art) reviews were scheduled by PGE during the autumn of 1959 in applications of nuclear shielding, uses of ultra high pressures in developing materials for space equipments, and plasma propulsion. These were completed 30 June 1960. Five requests have been released to PGE already for Phase III evaluations in FY 1961. The number of Phase III evaluations in progress by the middle of FY 1961 is expected to be fifteen (15). (UNCLASSIFIED)

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The establishment of closer liaison between the ATIC Library and AID, CIA and AFCIN-3D3 was significant during the first part of 1960. Specifically, the Library has been able to give much faster service in answer to requests for foreign material and translations. Wires are immediately dispatched to AID for material not available within ATIC.  
(UNCLASSIFIED)

DOCUMENT PROCESSING:

Document Processing has been engaged in punched-card processing of intelligence reports as previously reported in the ATIC History. This data-processing program was not initiated for information retrieval, but rather was designed for controlling and evaluating certain reports in selected areas on a test basis. Punched-cards have been effectively used in controlling reports disseminated within ATIC and to Project White Stork and thus provide for rapid location at any given time. Further, this program provides for a multiple-choice type of evaluation with answers on the validity and value of the information, and reliability of the source. To date, this punched-card program has provided ATIC with a considerable savings of manpower in certain areas of document processing. Qualitative and quantitative analyses have been made on the total flow of intelligence reports to ATIC as well as on reports submitted by specific intelligence-collection agencies. These tabulated analyses have proved to be exceedingly helpful as a management tool and also as a guide for the requirements people in reviewing and redirecting collection activities as the situation dictates. In the immediate future, this punched-card program will be expanded to include intelligence reports from all USIB agencies. Further, the evaluation will be

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modified to include more than 20 definitive answers on the technical quality, photographic coverage, validity and source of any given report. (UNCLASSIFIED)

ABSTRACT PRODUCTION:

During this period, the abstract production program was changed from cover-to-cover abstracting to selective abstracting. The 7000th Support Group at USAFE has phased out of the STEP abstract program. Also PGE abstract phase-out began 30 April 1960 and was completed 30 June 1960. As of this writing, a total of 255 journals (SOV, SAT and CHICOM, inclusive) are assigned to the selected list of journals to be selectively abstracted. (UNCLASSIFIED)

TRANSLATION CONTRACTS:

The FY 58 translation contract with O. W. Leibiger Research Laboratories, Inc., of Hoosick Falls, New York was completed in January 1960. The FY 59 translation contract with Language Services Bureau, Inc., Washington, D. C. was completed in March 1960. (UNCLASSIFIED)

As of 1 June 1960 approximately 2,364,000 words have been forwarded to O. W. Leibiger Laboratories, Inc., and Language Services Bureau for translation. Approximately 500,000 more words will be shipped to these contractors during June. The total amount of \$180,000.00 allotted for the FY 60 translation contract will not be used in its entirety due to the additional support afforded by PGE. (UNCLASSIFIED)

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The PGE inhouse (Control II) activity, in addition to honoring requests from ATIC analysts as a result of abstract cards, is now attempting to complete some of the unsatisfactory translations from the New York (Control I) activity. A great part of the translations forwarded during the FY 59 contract year still have not been completed and returned. Of those returned approximately 50% were rough drafts only. Under the present organizational structure, final editing and typing could not be done with any degree of speed. As of 30 June 1960 the translation activity in Control I was discontinued and all work on hand recalled. (UNCLASSIFIED)

INHOUSE TRANSLATIONS:

The total English words produced (translated) by inhouse resources during the reporting period amounted to 1,339,974, an increase of 180,000 over production of previous six months. The total foreign pages from which this wordage was produced was 3,118, an increase of 293 over the preceding six months. Project Gold Eagle (Control II) reduced its staff from 8 - 5 translators, 2 of whom are used primarily in review work. In January, ATIC inaugurated an oral translating service whereby analysts could obtain oral translations by appointment. Analysts have utilized this service on more than 50 occasions during this period. Data were also collected on linguistic qualifications of approximately 30 AF reservists throughout the U.S. in connection with project "Blue Squab" whereunder these reservists may earn credit points towards retirement by translating and editing technical material. A new system was actuated for identifying and publicizing the basic contents of

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foreign periodicals received by ATIC library; translators as of now use reproducible identification forms to record basic information from such journals. The translated information is then incorporated in accession lists to provide rapid access to contents of recently published foreign journals. (UNCLASSIFIED)

AUTOMATIC TRANSLATION:

The highlight of this period was the National Symposium on Machine Translation held in early February at the University of California to provide an appraisal of the current state of Machine Translation (MT) and to describe various methodologies used in MT centers throughout the U.S. About 120 representatives of universities, private corporations and federal agencies directly concerned with MT research were in attendance. Lectures presented led to the conclusion that MT is no longer regarded as an interesting problem but as a business proposition promising certain returns for its products. In mid-June, the ATIC MT monitor visited RADC Intelligence Laboratory, Rome, New York, to determine feasibility of ATIC supporting RADC's request to enlist the lexicographic assistance of AID in the compilation of the MT master dictionary which will cover approximately 50 scientific areas. ATIC recommended that the RADC request be favorably considered. (UNCLASSIFIED)

PROJECT WHITE STORK:

One major item occurred during the reporting period. The interpretation of AFCIN Policy Letter 205-3, dated 20 February 1959, stated: "For this purpose Project White Stork is considered

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an in-house library". On 13 June 1960, AFCIN-PLA reversed this policy and now Project White Stork is not an in-house library. This means that Air Force documents must be sanitized prior to release to Project White Stork the same as release to any other contractor. The impact of this decision on our Compatible Documentation System cannot be assessed at this time. A careful review of reestimated project costs as a result of cancellation of PCS's in the Air Sciences area, and reduced requests by AFCIN-3 and OSI/CIA, enabled the Center to withdraw \$101,000 from the contract for use elsewhere in the Air Force. This year, for the first time, the funds for Project White Stork were less than the contractor was prepared to support. It took three negotiation sessions to arrive at an agreed position. The FY 61 contract is over  $\frac{1}{4}$  million dollars less than the FY 60 contract. (UNCLASSIFIED)

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1. ATIC History, 1 Jul - 31 Dec 59, pages 24 and 25

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CHAPTER 5

ELECTRONIC INTELLIGENCE

Radiation Reconnaissance Requirements and Evaluation:

ATIC's ELINT Signal Environment Study, completed during the first half of 1960, provided a digital computer program which simulates the behavior of the electromagnetic environment. These computer techniques were corroborated by Tactical Air Command flight tests over selected and controlled ZI environments. The second phase of this effort, the System Simulation Study, will provide digital computer simulation techniques suitable for evaluating electromagnetic reconnaissance systems and ECM systems. (~~SECRET~~) (U)

Work continued on the determination of requirements for a universal time source for the US Air Force. Dayton Air Force Depot procured six Atomichrons for installation at both ZI and overseas sites, and completed plans for installation of the Electronic Timing Set, AN/USQ-18 in the aircraft. Problems were encountered in establishing a universal time source because National Security Agency prefers a newly developed non-standard timing system and proposes to use it at USAFSS sites. ATIC undertook a comparative evaluation of the NSA system and the AN/USQ-18 system. (~~CONFIDENTIAL~~) (U)

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ATIC and WADD engineers continued to collaborate on thermo-plastic recorder and playback systems. WADD encountered problems in that the proposals from the prospective contractor exceeded what WADD had budgeted. Then it became apparent that the read-out procedure as designed was not adequate. Defined requirements to record RF with 50 db dynamic range over a bandwidth of 5 Mc to 10 Mc were submitted to RADC who plans a two-year contractual effort on this problem. ~~(CONFIDENTIAL)~~ (U)

Radiation Analysis:

ATIC engaged in guided-missile signal-data research and performed analyses on S-band missile beacon signals, including details on frequency modulation, two types of PAM/FM telemetry signals, type D1 telemetry used on Lunik III, complete summary of FRUITSET signal data, graphical telemetry intercept composites showing patterns of Soviet telemetry usage on 1959 ICBM activity, current data on Soviet SAM associated signals and on Soviet ASM activity, and reception of harmonic energy of telemetry signals. ~~(SECRET)~~ (U)

The Airborne Electronics Signal Data Research Team performed studies on data in the 660 Mc signal category, expansion of the null-and-lobe method of measuring beamwidth for rectangular apertures, new technique for high accuracy measurements of MUSHROOM pulse-repetition frequency, and analysis of an unknown AAI type of signal possibly associated with FIITER aircraft. The 660 Mc data intercepted by the 7405th PRETTY GIRL aircraft possessed the highest quality of any data received in ATIC in the past two years. ~~(SECRET)~~ (U)

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The Ground Electronics Signal Data Research Team analyzed a number of tapes containing remote video signals. Comparison was made with the AN/APS-20E, a US Naval air-ground radar video link. A study of several new 170 Mc signals was completed. These signals, source of which is currently unidentified, are characterized by an unusually high reported power level. ~~(SECRET)~~ (U)

At the request of Alaskan Air Command (ALCOM/AAC), ATIC made a study of the feasibility of intercepting Soviet airborne jamming signals emanating from the Bering Strait, Bering Sea and Chukotski Peninsula areas by a ground intercept site located on St Lawrence Island. The Center received its first valid active jamming signal intercept, a possible radio-frequency sweeping band signal, from the South China area. ~~(SECRET)~~ (U)

ATIC engaged in Space Vehicle Data Research and processed signals from Lunik II and Sputnik IV. Complete details of the analysis were described in the twelve issues of the ATIC Radiation Review. ~~(CONFIDENTIAL)~~ (U)

ATIC continued the analysis of sonics data, and made preparations for the techniques and equipment necessary for the analysis of forthcoming infrared data. ~~(CONFIDENTIAL)~~ (U)

ATIC technicians engaged in a large scale effort of reading films on Soviet missile and space firings to provide sighting information (time, latitude, longitude and altitude) to National Space Surveillance Control Center. The processed data is used by ATIC as an input to technical estimates on Soviet guided missile, earth satellite vehicle and space exploration capabilities.

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External assistance has been initiated to resolve radar returns caused by various anomalous electromagnetic propagation conditions.

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Capability Improvement:

In January ATIC deployed the TALL TREE van to the USAFE theater to resolve the phase coherence and area coverage aspects of the Soviet MOON Navaid system. This van contained a phase-locking, receiving and recording system, with adequate resolution. The recording portion was designed to take data on a pulse for pulse basis, to resolve by actual measurement, the questions of stability of phase angle and the constancy of indicated time delay. Preliminary evaluation indicates most, if not all, of ATIC's detailed requirements were obtained. ~~(SECRET)~~ (u)

The Airborne Video Tape Recorder (AN/ALH-4) and the Recorder/Reproducer, Signal Data (AN/GLH-3) were inspected and accepted at the contractor's plant on 25 May 1960. These were evaluation models designed to provide a capability to record and analyze signals having forty times the bandwidth of the widest band signal susceptible to magnetic recording up to that time. The capability proved so attractive that it has been scheduled for inclusion in the RB-47H modification program. Also, National Security Agency has contracted for models for potential ground use where extremely wide-band capability is important. ~~(CONFIDENTIAL)~~ (u)

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One Processing Equipment Note was published. The text reviewed the state of the art in wide band recording, its effect on Radiation Warfare activities and the indication of the direction of future research and development in this area with its probable impact on processing activities. (UNCLASSIFIED)

A local contractor completed the fabrication and equippage of two mobile processing laboratories, which contain the latest equipments available for these types of processing. One van was airlifted to Hq SAC on 21 June 1960. (UNCLASSIFIED)

ATIC completed its technical support to Third Party Activities. This support included the procurement and deployment of equipment, and a revision of the Operations Plan. Responsibility for engineering planning, technical guidance and specialized equipment was transferred to Hq USAFE. ATIC will provide consulting engineering services, when specifically requested by the theater. ~~(SECRET)~~ (U)

ATIC ELINT personnel have encountered problems in the Space Collection Capability Improvement Program. Practically no equipment capability existed withing ARDC centers to solve ATIC's space intelligence requirements. ATIC discussed their problems with USAFSS, the basic ground intelligence collector; AFCEIN-1 ATIC's coordination point on collection requirements; and with National Security Agency, who levies collection requirements on USAFSS.

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Radiation Warfare Support Training:

Two complete sets of our Training Courses including lesson plans, general illustrations and visual training aids were forwarded to Hq USAFSS (PTD) and to DIRNSA (COSA-522). ATIC presented general courses in radiation warfare, as well as special courses for groups of analysts and technicians. (UNCLASSIFIED)

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## CHAPTER 6

ENGINEERING SUPPORTENGINEERING ANALYSIS:

During the first half of 1960, ATIC expended considerable effort on the methods development program in the following areas:

A procedure was developed for making an analytical analysis of structural weight penalties due to load path discontinuities such as landing gear or fuel tank cut-outs in the wing structure. The method is based on shear lag theory. (UNCLASSIFIED)

Utilizing an equation derived by Bell Aircraft Corporation for estimating torsional loads on a wing, a method was developed for designing the optimum wing bending box configuration for torsional stiffness. (UNCLASSIFIED)

A method was developed in which a structural approach can be used to make preliminary estimates of wing thickness ratios. The method also yields estimates of wing loading and preliminary wing weight. It was completed for fighter aircraft and work was begun to extend it to bomber and cargo aircraft. (UNCLASSIFIED)

Also completed was a method for making second phase fuselage structural design and weight estimates. In connection with this development a parametric method of determining frame spacing of fighter fuselage has been developed and yields a good accuracy over the entire

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sample range. It was determined that a similar parametric frame spacing approach for cruise missiles, bomber, and cargo type aircraft can also be accomplished. (UNCLASSIFIED)

A project was initiated to develop a more detailed theoretical method for estimating the structural design and weight characteristics of ballistic and cruise missiles. Where appropriate, this project will incorporate methods described above. In connection with this project, a considerable amount of research was done in the field of heat transfer in order to incorporate the effect of heat on structural strength. (UNCLASSIFIED)

In the field of missile performance, a program was developed to compute the trajectory variables of a body during re-entry. The variables are time, altitude, acceleration, velocity, earth surface distance, and flight path angle with respect to a local horizontal. The program assumes a rotating, spherical earth, and either time or altitude may be used as the independent variable. The drag parameter,  $\frac{W}{C_D A}$ , may either be constant or vary with Mach number. (UNCLASSIFIED)

For the case where a re-entry trajectory is known, a procedure was developed for computing the drag parameter,  $\frac{W}{C_D A}$ , of the body as a function of Mach number. This program can be improved, and further work will be done on it in the future. (UNCLASSIFIED)

Also in the field of missiles, an improved program was formulated for computing a trajectory from burnout to re-entry. As in the re-entry problem, this problem assumes a rotating, spherical earth. (UNCLASSIFIED)

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A preliminary investigation was initiated to determine the feasibility of programming the helicopter problem for the digital computer. (UNCLASSIFIED)

Work was continued on the programming of the expanded aircraft performance problem. (UNCLASSIFIED)

In answer to specific requests and in support of various Center projects, work was done on the following major tasks:

A structural analysis of two ballistic missiles was accomplished. This included a weight breakdown, inboard profile, and a discussion of probable types of construction. A trade-off study of weight savings (structural efficiency) versus reliability, mobility, cost, and simplicity was made in establishing the structural weight of the vehicles. ~~(SECRET)~~ (U)

A semi-analytical structural and weight analysis study was conducted on several basic cruise type missiles. The investigation involved the variation of 21 basic parameters of each configuration. The end result was the determination of one "most likely" configuration. ~~(SECRET)~~ (U)

During this time period detailed engineering analysis of the Bear wing was accomplished. The objective of this analysis was to estimate the section properties of the wing at given spanwise stations. ~~(SECRET)~~ (U)

A structural wing thickness evaluation study was accomplished for five fighter aircraft and on bomber aircraft. ~~(SECRET)~~

Maximum range trajectories were calculated for several short range ballistic missiles with nominal payload and also for possible

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ranges of payload weights. Maximum altitude vertical shots were also found for the possible range of payload weights. ~~(SECRET)~~ (U)

A project was initiated to obtain parametric body re-entry data. For six values of  $\frac{W}{C_{DA}}$ , six values of re-entry velocity, and twelve values of re-entry angle, a procedure was set up to run all possible combinations and accomplish requested plots. (UNCLASSIFIED)

In the area of aircraft performance estimates for handbook data sheets, analyses were made for the following aircraft: Fresco series, Farmer A & B, Fitter, Faceplate, Fishbed, Bear, and Bison A & B. These analyses involved either a new version or a revision of these aircraft. In addition to contributions for handbook data sheets, a large volume of miscellaneous mission and performance data was accomplished. ~~(SECRET)~~ (U)

An analysis was made to determine a minimum size nuclear manned bomber based on in-house contributions. (UNCLASSIFIED)

GRAPHICS:

Contractual service with the Fort Wayne Microfilm, Inc., was suspended in June 1960. This function, assumed by ATIC, includes micro-filming and copy-flo print-out of documents and publications. This in-house capability has resulted from the purchase of a Model 1C, Xerox Copy-flo machine. (UNCLASSIFIED)

The Joint Congressional Committee on Printing has approved purchase by ATIC of a power-operated stapling machine. (UNCLASSIFIED)

A new Ozalid Model 1000 Printmaster machine was installed 21 March 1960. This new unit has operational speeds of 100 ft. per minute, and will accommodate material up to 54" wide. (UNCLASSIFIED)

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ATIC acquired fully automatic tape-recorder rear-projection portable briefing device. This unit will be used for "canned" briefings of 35mm size, and as an aid for training briefing personnel within ATIC. This device can be quickly dismantled and the components utilized for standard briefing situations. (UNCLASSIFIED)

MACHINE COMPUTATION:

Final approval has been given for the installation of the IBM 7090 Ultra High Speed Digital Computer. Floor plans have been completed, and the present Computer area is being readied for necessary modification, and installation. (UNCLASSIFIED)

ATIC is experimenting with the establishment of an information-processing capability to investigate techniques for processing intelligence information on the Computer. (UNCLASSIFIED)

PHOTO EXPLOITATION:

During this reporting period the Photo Analysis Branch completed contractual arrangements with:

OPTOmechanisms, Inc., Mineola, New York, for the procurement of a photographic stereo coordinate reader. This device is to be used to make coordinate measurements of conjugate points on oblique and panoramic photography which, when analytically rectified by electronic computation, provide true distances. (UNCLASSIFIED)

Cook Electric Company, Morton Grove, Illinois for the procurement of a series of 10 coordinate readers which are connected to a Readix Computer. The purpose of this equipment is to take the coordinate readings made by photo analysts, feed these readings to the computer and by use of preset routines, analytically solve photogrammetric problems,

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and then give the rectified values to the photo analysts. (UNCLASSIFIED)

Fairchild Camera & Instrument Corporation, Syosset, New York, for a standard format photographic system. This equipment is designed to take all the varied size photography received by ATIC and reproduce this photography onto 70mm format for master file storage, and from these master file formats, be able to make hard copy for analysis or distribution. The quality requirements of this system are such that degradation from the original photography to the reproduced hard copy is negligible. (UNCLASSIFIED)

During the time period reported 108 work requests were completed. This number of requests was satisfied by 34 Photo Analysis Reports and 53 Engineering Drawings. In addition, 26 requests for Evaluation of Photography were answered. Of the PI Reports completed, 17 were concerned with aircraft, 5 with military electronic equipment, and the balance with missiles, missile sites, and support equipment. (UNCLASSIFIED)

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CHAPTER 7

AEROSPACE WEAPONS AND TECHNOLOGIES

AIRCRAFT ARMAMENT AND FIRE CONTROL SYSTEMS:

Photographs of Soviet bomber defensive configurations did not disclose any radical modifications of the all-around defense concept. SAF bombers are reported to utilize the tactic of maneuver to bring the maximum turret firepower to bear on lead-pursuit attackers. A new BISON variant disclosed an increased size tail fire control installation which could provide improved detection and tracking capabilities. ~~(SECRET)~~ (u)

The NR-30 gun installation in FARMER aircraft became the latest identified member of the Soviet fighter gun family. This gun had been described as a light weight linear action gun, capable of firing at 820 rpm. FARMER B fire control radar improvements tended to confirm the improved estimates, making a feasible mate to the new missile armament tentatively identified as having beam-rider guidance. Infrared sighting equipment was reported as standard FARMER day fighter cockpit equipment. Gunsight modifications reported include provisions for giving the pilot in-range indications by light signal to enhance armament delivery effectiveness. ~~(SECRET)~~ (u)

ATIC's initial effort in the area of space weapons was completed during this period. Feasible weapon techniques were defined.

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Preliminary analysis indicated that Soviet first attempts at defense against ICBM or satellite vehicles with direct intercept techniques would be feasible only if nuclear warhead was utilized. Fragmentation warheads are feasible and compatible with the more advanced co-orbital or rendezvous techniques. (~~SECRET~~) (U)

Activity in the field of airborne anti-submarine warfare was limited to in-house analysis of Soviet capabilities. The analysis included the evaluation of Soviet aircraft capabilities in detecting submarines and delivering suitable ordnance. (~~SECRET~~) (U)

ARMAMENT VULNERABILITY:

Vulnerability investigations continued to define the Soviet capabilities in the field of bomber survival and weapons lethality. A concentrated effort was made to determine the vulnerability of Soviet bombers to low-yield, air-launched nuclear warheads. (~~SECRET~~) (U)

In order to respond quickly to the growing requests for estimation of missile warhead configurations, the various parameters defining a warhead design were programmed for a high-speed computer and organized in tabular form to yield selection by weight, size, fragment size, fragment velocity, amount of high explosive, and principal type of warhead. (~~SECRET~~) (U)

Another study in the vulnerability area was directed toward the development of a method of determining the kill probability of a warhead against a bomber target through the utilization of a high-speed computer. This study reached the final phase. (~~SECRET~~) (U)

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AIR-TO-AIR GUIDED MISSILES:

The first substantial evidence of missile armed Soviet fighter aircraft was acquired. This consisted of wing mounted pylons suited to suspension of missiles on some FARMER B aircraft. Significantly, not only did the Soviet Air Force display this capability but the East German Air Force and possibly the CHICOM Air Force as well. The FITTER aircraft was also observed with pylons. The types to be employed were loosely judged to vary among these Bloc nations: beam rider, semiactive, and infrared homing. (~~SECRET~~)(U)

NUCLEAR WEAPONS:

During the past six months an ATIC Study, "Soviet Nuclear Weapons for Air Delivery," was completed and published. (~~SECRET~~)(U)

One conclusion was that Soviets have a capability to develop nuclear bombs and warheads compatible with most operational offensive and defensive air weapon systems. (~~SECRET~~)(U)

Another study was begun on Soviet capabilities to develop non-nuclear components (fuzes, detonators and arming systems) for nuclear weapons. Preliminary evaluation indicated the Soviets are capable of satisfying their requirements in these areas, although the specific types of systems actually used have not been identified. (~~SECRET~~)(U)

BIOLOGICAL AND CHEMICAL WARFARE:

During this period the first ATIC study of the Soviet potential for conducting biological and chemical warfare by means of aircraft and missile delivery systems was completed. The agents considered were limited to those most likely to have been chosen for warfare application. The biological agents considered: Pasteurella pestis, Pasteurella

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tularensis, Bacillus anthracis, and Brucella suis. The chemical agents considered: Tabun (GA), Sarin (GB), V-agents, and mustard (HD).

~~(SECRET)~~ (U)

ANTI-AIRCRAFT ARTILLERY:

ATIC completed a study to evaluate the capabilities of the Soviet 57-mm and 100-mm antiaircraft weapon complex. Particular emphasis was placed on the weapon complex capabilities against low flying attacking targets. ~~(SECRET)~~ (U)

AIR WEAPON MATERIALS:

During the reporting period, the Center produced conclusive estimates covering the Soviet status in every major metal and polymer system that limits availability and performance of aerospace weapon systems. The principal efforts were expended in making contributions and assisting in the preparation of ATIC formal estimates on Soviet aerospace weapon systems. ~~(SECRET)~~ (U)

A total of 24 such contributions were made to AF, ARDC, JAEIC, CIA, and DOD, in addition to the production of one position paper, 26 technical briefs, one briefing to General Dougher, and a special report for the Economic Defense Division, DOD for use in COCOM negotiations. All the major aspects in the metallurgical and polymer fields were covered relative to the following: ~~(SECRET)~~ (U)

Present Soviet re-entry materials used in the heat protective system are either refractory metals or a ceramic oxide of aluminum and magnesium. The use of these materials reduces efficiency when compared to purely ablating plastics used in the US. ~~(SECRET)~~ (U)

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The Soviets lag behind the US in high strength-to-weight ratio materials by at least three years. Their R&D activities in aluminum and magnesium alloys indicate the use of Soviet aircraft of less than 2.5 Mach for several years, although they do have materials for Mach 3-4 aircraft. (~~SECRET~~)(U)

A Soviet advance over the US in high temperature plastics coatings was confirmed by an ATIC laboratory examination of a Soviet sample, a metal siloxane, which withstood 1000°F. The USAF, after examining this sample, has in 1960 produced a similar one. (~~SECRET~~)(U)

Previous estimates of the availability of Soviet ANP materials in the 1962-70 time period did not change. (~~SECRET~~)(U)

The Soviet rate and quality of research effort (as reported last period) in high temperature materials could well result in the loss of US superiority by 1970. The USSR's objectives in new materials have been confirmed to be connected with advanced aerospace weapon systems. (~~SECRET~~)(U)

The Soviet desire to import critical metals and minerals is for military purposes and not for their civilian economy - as detailed in a special report to the DOD. (~~SECRET~~)(U)

INDUSTRIAL ENGINEERING:

By far the greatest effort was devoted to the preparation of contributions to over-all Weapon Systems estimates. These contributions took several forms: structural and producibility analyses of specific, current Soviet aircraft and guided missiles (fighter aircraft and numerous offensive and defensive guided missiles); appraisals of



future aircraft; and the revelation of manufacturing technology which presages yet unseen aerospace weapons and components. Indicative of the shift in emphasis to areas upon which the intelligence community places higher priority is the fact that during the first half of 1960, analytical effort devoted to guided missile contributions outweighed that applied to aircraft by a factor of three. ~~(SECRET)~~(U)

The Air Force intelligence function best serves the national interest insofar as it can predict the appearance of undisclosed foreign aerospace weapons. Since the Soviets choose not to identify openly aerospace weapons in development, indications of such activity must be sought in the applied technologies. Industrial Engineering is one such technology. During this report period, indications of Soviet development of a steel missile and a supersonic fighter aircraft were revealed through the study of manufacturing process technology. ~~(SECRET)~~(U)

Intelligence in the field of production technology has provided significant inputs to ATIC contractor evaluations. One such contribution, for example, resulted in major revisions in the estimate of Soviet aerodynamic cruise-missile performance and characteristics. ~~(SECRET)~~(U)

In estimating availability dates of future Soviet aerospace weapons, evaluations of states-of-the-art and trends in the many technical fields were used predominantly. In essence, the new methodology utilizes the knowledge that Soviet design bureaus are involved in the design of all Soviet aircraft. By determining the size and distribution of their engineering labor pool and by associating

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the several OKB's with known aircraft developments, uncommitted design capacity can be revealed. This constitutes an alert for new aircraft during certain time periods. The preliminary results of this study were well received, and the extension of this approach to the guided missile field was under consideration. (~~SECRET~~)(U)

Customarily, the US aviation industry, through ATIC contacts with Air Force procurement and production agencies, have benefitted from knowledge of foreign production technology. In response to a request by the Air Force Deputy Chief of Staff for R & D, ATIC prepared an appraisal of Soviet activity in the field of Very High Pressures. Major General Marvin Demler, AFDRD, used this contribution as guidance in preparing the agenda and his keynote speech at the first US Conference on Very High Pressures, sponsored jointly by the Air Force and the General Electric Company. Attendees included nationally recognized authorities in this embryonic field. The application of very high pressures to materials processing held promise of making available to aerospace weapon producers materials and alloys not attainable by present processing methods. (~~SECRET~~)(U)

Extensive Soviet development work on the electro-hydraulic effect continued to excite the interest of leading US aerospace vehicle manufacturers. The three leading proponents of the process in this country have kept in close touch with ATIC since our disclosure of Soviet activity in this area. (~~SECRET~~)(U)

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MAN IN SPACE:

ATIC noted that the Soviets succeeded again in vertically firing two living dogs and a rabbit and returning them intact. In both cases recovery was apparently successful, but the reasons for repeating the experiment were not determined. (~~SECRET~~) (u)

A second highlight regarding Soviet bio-astronautics during this period appears in a disproportionately great Soviet interest in the effects of the space environment upon the organisms which live within the human body. Apparently they feel that human survival in space or planetary environments will be materially affected by disturbances in the biological parity between man and his associated micro-organisms. They probably recognize that man does not exist independently but in biological equilibrium with the whole bio-sphere of the earth. That this equilibrium would be upset or totally destroyed in a planetary environment appears plausible. (~~SECRET~~) (u)

The lack of a capability to recover the subject safely remains as the principal obstacle to be overcome for the initiation of Soviet man-in-space experiments. Soviet achievements during the past six months, however, indicated that this obstacle is not long to remain. During this period, their flight tests showed a capability to recover living mammals from re-entries with velocities one-half of orbital, as well as to recover instrumentation from re-entries with velocities 90% of orbital. (~~SECRET~~) (u)

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~~SECRET~~RECONNAISSANCE:

In the area of aerospace photographic reconnaissance, it was established that the Soviets are not able to conduct strategic military reconnaissance of the earth from vehicles in space. There is, however, a present Soviet capability to provide equipment for large area survey type reconnaissance of mapping quality for geodetic location purposes. ~~(SECRET)~~ (U)

SECONDARY POWER:

Electric power for Soviet space vehicles launched during this reporting period was provided by silicon solar cells and chemical batteries, with no essential change from power systems previously used. The re-entry of Sputnik III in April 1960 marked the termination of 23 months of service for that vehicle's electric power system. ~~(SECRET)~~ (U)

AIRCRAFT AVAILABILITY:

For the purpose of utilizing technical information for estimating air weapons serviceability and reliability, the maintenance requirements and the malfunction rate of a Soviet bomber were calculated. This was done by estimating the characteristics of the components. The results indicated that the availability of the Soviet aircraft can be expected to be somewhat higher than that of a comparable USAF bomber. ~~(SECRET)~~ (U)

Although of a preliminary nature, a major effort toward the final objective of determining technical characteristics and capabilities of Soviet guided missile launching sites and ground support equipment was completed during the reporting period. It appeared that Soviets might build hard ICBM sites. ~~(SECRET)~~ (U)

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CHAPTER 8

PROPULSION

ENGINES:

ATIC expended considerable effort during the first half of 1960 in formulating revised estimates on the turbomachinery characteristics, thermodynamic cycle and altitude flight performance of the turbojet engines to be installed in the 1960 Soviet supersonic medium bomber. Coincidental with this activity, detailed studies were conducted on the problems of engine installation, thrust loss factors, etc. in order to arrive at a suitable compromise representative for a split-mission flight profile. ~~(SECRET)~~ (U)

Two contractor-evaluation reports were received and two ATIC reports were published within this period. One of the contractor reports was concerned with evaluating the Soviet capability in the field of turbojet engine controls as it would affect the development of advanced engines, while the second contractor report presented an analysis of the Soviet NK-4 turboprop engine. The ATIC technical reports dealt with the analysis of the RD-9 and RD-9b turbojet engines in FLASHLIGHT and FARMER, and with the analysis of the Soviet AV-50 propeller. ~~(SECRET)~~ (U)

Strong support to special guided missile projects was provided in the form of analyzing intelligence reports, formalizing ramjet performance and

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characteristics, and preparing a major contribution for a Mach 3.0 ICBM intelligence study. This endeavor was considered significant in that it established an estimate on a propulsion system for which, to date, the Soviets have displayed no hardware. ~~(SECRET)~~(U)

ATIC made significant progress in developing an in-house capability to design and predict more accurately the performance of Soviet air breathing engines at all modes of flight. The turbojet matching problem was programmed in Fortran and has been running; however, it has only been approximately 75% checked-out. The compressor map synthesis has been made to run-thru completely and is about 90% coded. The turbfan design problem has been made to run completely, still provides some erroneous answers, but is about 90% checked-out. Additionally, contracts were let in this time period to purchase flow charts for one ramjet cycle and three additional gas turbine cycles.

~~(SECRET)~~(U)

ROCKET PROPULSION:

The Center provided the US Air Force and the intelligence community with estimates of Soviet capabilities in the field of rocket propulsion applicable to aerospace vehicles. These estimates were disseminated in six Aerospace Technical Intelligence Center publications, including studies on offensive and defensive missiles, astronautics, weapon systems, and in contributions to National Studies and surveys.

~~(SECRET)~~(U)

The Soviet rocket-power-plant capabilities presented in these publications greatly assisted ATIC to estimate Soviet aerospace vehicle characteristics, and to predict their future trends. ~~(SECRET)~~(U)

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The Center continued critical evaluation of all intelligence informational sources as exemplified by open literature, collateral, and electronic intelligence. The matching of all isolated bits of intelligence information significantly increased ATIC's knowledge of the Soviet rocket-propulsion capability. Two of the major factors are the Soviets' present dependence upon a rocket engine of a nominal 150,000 pounds thrust, and their possible employment of an amine-liquid oxygen-propellant system in some of their high-thrust rocket engines. ~~(SECRET)~~(U)

Under STEP, the team effort for the exploitation of Sino-Soviet Bloc technical literature in the subject area of rocket propulsion served as the model effort for the establishment of similar teams in all technological fields for which ATIC is responsible. Products derived from this type of effort not only assist (primary purpose) ATIC in providing timely and quality products but, as a natural by-product, benefit the nation as a whole by providing basic scientific information to DOD contractors. ~~(SECRET)~~(U)

ATIC provided numerous guidance materials for responsible US intelligence-information collection agencies to improve the collection effort in the field of solid, liquid, and nuclear rocket propulsion.

~~(SECRET)~~(U)

ELECTRIC PROPULSION AND NUCLEAR REACTORS:

The application of technical-intelligence collection techniques to nuclear reactors and ion propulsion system assisted in the establishment of ATIC collection and radiation-warfare programs. Plans and schedules were completed for monitoring US development and experimental

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mock-up systems to establish preliminary design requirements for collection equipment. ~~(SECRET)~~(U)

Completed during this period were contractor evaluations of intelligence and literature for Soviet state-of-art posture in basic sciences and technologies applicable to development progress in nuclear propulsion reactors for nuclear gas turbines, rockets and ramjet and in electric propulsion systems. These endeavors were considered significant as they provided additional evidence for firming up the potential design-performance features of such developments and pinpointing development progress. ~~(SECRET)~~(U)

Contractor assistance was obtained to provide programming of intermediate and fast neutron reactors, for propulsion applications, to the ATIC IBM-7090 computer. (UNCLASSIFIED)

US industrial and research-institute personnel were selected for the Scientific and Technical Information Exploitation Program in this area of interest. These personnel are highly competent in the basic sciences, technologies and subsystems areas of nuclear propulsion reactors and electric propulsion systems. Experience during this period with Senior Evaluators in the areas of nuclear shielding and plasma propulsion was very successful, and shows the value of this approach to the evaluation of Soviet literature. ~~(CONFIDENTIAL)~~(U)

Estimates were provided the intelligence community on nuclear propulsion reactors and electric propulsion systems in ATIC weapon, space and propulsion-system publications; and contributions were made to the applicable NIE's. ~~(SECRET)~~(U)

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FUELS AND PROPELLANTS:

ATTC produced intelligence which reveals significant Soviet developments in all aspects of fuels and propellants. This has been made possible by a developed in-house capability attuned to probable areas of Soviet technological achievements by the authoritative guidance received through former external assistance programs. Meaningful assistance was received also through the close working-level liaison maintained with other intelligence activities and the Air Information Division of the Library of Congress. (~~CONFIDENTIAL~~)(U)

The USSR continues to conduct research in basic science areas which could ultimately contribute to new propulsive energy sources. These would embrace the use of free radicals, metastable states, ionospheric particles and anti matter. In none of these areas, however, has Soviet interest gone beyond purely academic realms. On several occasions ATTC has had to disprove unwarranted claims of the proposed Soviet use of such advanced sources of energy. (~~CONFIDENTIAL~~)(U)

In the field of solid propellants, the release for the first time by the USSR of research reports of possible significance was noted and studied. None of these reports are clearly indicative of Soviet activities; however, they may portend or relate to the collateral research supporting solid-propellant investigations. Intimations of the Soviet interest in perchlorate oxidizers was detected for the first time. (~~CONFIDENTIAL~~)(U)

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In the field of liquid propellants, telemetry and special collection sources have strongly suggested a departure from the liquid oxygen-kerosene propellant system conventionally ascribed to the Soviet intercontinental ballistic missile. This has warranted consideration by ATIC that the USSR may be using amine or kerosene-amine fuels. ~~(SECRET)~~ (U)

In the field of high energy fuels, timely support by a boron-fuels estimate enabled these materials to satisfy the requirements imposed by the special guided-missile study /

Additionally, an apparent resurgence of Soviet interest in boron raw material was detected. ~~(SECRET)~~ (U)

The existence of a new Soviet jet fuel, designated as T-5, has been discovered. This fuel, produced for the first time in operational quantities during 1959, was found to be the first Soviet effort to meet the thermal stability problem encountered by supersonic jet aircraft. This may also indicate that the Soviets intend to use T-5 as a rocket fuel. ~~(SECRET)~~ (U)

ATIC has detected Soviet efforts to develop fuels, lubricants and hydraulic fluids which will be resistant to nuclear radiation. Unlike related US efforts, the USSR scientists have chosen a scientific rather than an engineering approach to this problem. Thus the Soviets are studying among other things the effects of nuclear radiation upon individual or pure hydrocarbons rather than the damage done by this radiation upon mixtures such as fuels. Their course of experimentation will reveal the mechanism or kinetics of molecular alteration whereas the US studies reveal the quantitative aspects of molecular alteration.

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CHAPTER 9

ELECTRONICS

SYSTEMS ELECTRONICS:

During this period ATIC representatives attended the AFCIN conducted CANUKUS Conference on Air Defense Systems and Space Electronics. Mutual problems were discussed with Canadian and United Kingdom counterparts and of particular interest is the present and future estimate of Soviet AICEM systems. Considerable effort and priority is being placed on this subject, especially since the obvious need for this capability has been acknowledged by the Soviets. (~~SECRET~~) (U)

On 1 February 1960 several tasks were transferred within ATIC, from the deactivated Air Sciences Division to the Electronics Division. These deal with the scientific aspects of Soviet missile and space tracking and are designed to support systems estimates. (~~CONFIDENTIAL~~) (U)

ELECTRONIC COMPONENTS, INFRARED, AND ECM:

During this period, organizational changes resulted in additional responsibility for Soviet-Sino capabilities in the fields of Electronic Components, Infrared, and ECM. The contractual assistance programs in these areas, as well as in that of Ground and Airborne Radar has been, and continues to be, most encouraging. Highly satisfactory results have been obtained from these programs. (~~CONFIDENTIAL~~) (U)

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Considerable effort was put forth in supporting the various ATIC Team endeavors, and in gearing policy to cope with the pertinent aspects of Soviet capabilities relative to satellite and space equipment. (~~CONFIDENTIAL~~)(C)

NAVIGATION:

In the early part of 1960, ATIC completed an analysis of the Soviet Neptune navigational radar, the first modern Soviet radar ever subjected to complete laboratory analysis in the West. The analysis, which was performed with the aid of I.T.T. Laboratories, confirms the Soviet capability to design, develop, and produce modern radar components. The set was subsequently released to the Office of Naval Intelligence where an operational check of the equipment is planned.

(~~CONFIDENTIAL~~)(C)

A special study was made at the request of CONAD and with the aid of the Stanford Research Institute to determine the Soviet low level aircraft navigational capability. The completed study which indicated that the Soviets have a visual and radar navigational capability below 2000 feet, was submitted to interested operational commands. Also, in the navigational field ATIC had a renewed interest in the Soviet "MOON" hyperbolic navigational system. Special interest, resulting in specific collection efforts, came about following the analysis of technical material on an airborne navigational receiver which indicated a Soviet capability for improved accuracies, extended range, and improved operational use, as well as other data which indicated a new chain of EAST-WEST stations. (~~SECRET~~)(C)

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GUIDANCE:

A complete review of guidance and control systems for every missile estimated in the Soviet inventory was made in connection with the publication of a semi-annual missile report. A report on each missile included a review and a summary of the intelligence factors, a discussion of the technical intelligence implications and an estimate of the technical parameters. For the first time, the technical estimate for each system included a block diagram of the guidance and control system, and estimated sizes and weights of the major components. A similar study is now under way for the space vehicle guidance, control, navigation and instrumentation systems estimated for past and future Soviet space ventures. ~~(CONFIDENTIAL)~~(u)

A major portion of the work in guidance for defensive missiles was in a detailed analysis of surface-to-air guidance systems primarily to produce data required by the Strategic Air Command. In a special exercise, an attempt was made to evaluate the effect of specific jamming and chaff countermeasures applied against the guidance radar. To provide a complete analysis, an expensive computer simulation would be required; however, preliminary data was gained by contractual aid and by the cooperation of other analysts in the intelligence community.

~~(CONFIDENTIAL)~~(u)

COMMUNICATIONS:

The RCA report, "Soviet-bloc Air Communications," was delivered to ATIC 30 June 1960. The purpose of this study is to indicate the communication facilities available to or used by all echelons of Soviet bloc air defenses, air offenses and space entities, and through technical

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analysis, assess the capabilities and limitations of these communication facilities to support Soviet bloc aerospace operations.

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The results of the Radiation, Inc., FY -60 efforts in the field of telemetry have been accepted and will be combined with the RCA effort to produce the ATIC - "Air Communication Study."

(UNCLASSIFIED)

Analysis of intercept data in the 600-625 mcs/sec range, and photo showing 10-element yagi antennas adjacent to heavy ground GCI radars, has given strong indications that these antennas are associated with a video data transmission link. The video information is sufficient to reconstruct the radar presentation at a remote point.

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CHAPTER 10

AIR WARFARE AND WEAPON SYSTEMS

ARDC SUPPORT:

ATIC directed considerable support to ARDC projects during the first half of 1960. Procedures were finalized for providing intelligence to Study Requirements, and contributions were made to SR's on Inter-continental Glide Missiles, Ballistic Missile Defense Systems, Missile Warning Systems, and Advanced Defense Concepts. Liaison was maintained with various ARDC Project Offices, e.g., BMEWS, F-101, B-70, B-52, GAM-77, and WS-138A WSPO. (~~CONFIDENTIAL~~) (U)

OFFENSIVE AIR-WARFARE SYSTEMS:

The Center completed study on the technical effectiveness of the Soviet Air Warfare System in general war. Lockheed Aircraft Corporation (BURBANK) finished a study of technical requirements for Soviet Offensive Weapon Systems. Before this contract was completed, technical requirements for Soviet Bombers, missiles, and space systems were generated in-house as inputs to weapon-system estimates within ATIC.

(~~CONFIDENTIAL~~) (U)

DEFENSIVE AIR-WARFARE SYSTEMS:

A study was completed in June on the technical effectiveness of the Soviet defensive air-warfare system. A contract with NORAIR Division of the Northrop Corporation, on the requirements for and preferred technical characteristics of Soviet air defense weapon

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systems, was cancelled in accordance with the decision of the Commander. (~~CONFIDENTIAL~~)(U)

CURRENT INTELLIGENCE BOARD:

In February, the Current Intelligence Board began regularly scheduled meetings. This advisory group, composed of representatives from various Divisions in ATIC, considers and recommends action on current intelligence items reported in Technical Briefs. The permanent chairman of the CIB is the Chief, Estimates Division.

(UNCLASSIFIED)

MATHEMATICAL SIMULATION:

Active development work of air defense related mathematical models by the Applied Physics Laboratory of John Hopkins University was completed. All models have been delivered and several were exercised during early 1960. (~~CONFIDENTIAL~~)(U)

CONTRIBUTIONS TO NATIONAL INTELLIGENCE:

Contributions to the National Intelligence program included NIE's on trends in Soviet science through 1970, Soviet offensive and defensive capabilities, Communist China capabilities, and "Fourth Country" problems. Contributions were made to the National Intelligence Surveys on Communist China, the Soviet Union, Yugoslavia, and Denmark.

(~~CONFIDENTIAL~~)(U)

SUPPORT TO OTHER AFCIN ELEMENTS:

Contributions were made to other ACS/I organizations on various subjects, e.g., the Soviet threat in 1965-1975, hardened Soviet ICBM launch sites, Soviet capabilities in anti-submarine warfare and Free World Air Intelligence Studies. Direct support was given to the 1965 War Game held in Washington. (~~SECRET~~)(U)

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AIRCRAFT WEAPON SYSTEMS:

ATIC directed major effort in connection with Aircraft Weapon Systems toward studies on COOT, CLEAT, BEAR, FISHBED A & B/, FACEPLATE. These studies were distributed to all interested agencies. Also, revised Handbook Sheets were published on BADGER, BISON A, BISON B, CLEAT, and HOG.

MISSILES AND SPACE:

ATIC initiated a program to correlate all intelligence data, pertinent to missiles and space, to provide a more comprehensive intelligence picture. End products emanating from this program are semi-annual studies encompassing three subject areas - Offensive Missiles, Defensive Missiles and Space Systems. ~~(CONFIDENTIAL)~~ (U)

The deactivation of SMITIG and the assumption of its responsibilities by the Supplemental Research Division necessitated continued publication of much of the intelligence that was previously published in the SMITIG Quarterly. This intelligence data will be incorporated in the ATIC Weekly Missile and Space Systems Intelligence Reports and the semi-annual studies. ~~(CONFIDENTIAL)~~ (U)

In addition to frequent briefings and contributions to the National Intelligence Estimates, studies have been published on Soviet Offensive and Defensive Missile capabilities and Soviet Astronautics. ~~(CONFIDENTIAL)~~ (U)

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CHAPTER 11

AERIAL PHENOMENA

SIGHTINGS:

During this reporting period the Aerial Phenomena Group received 173 reports of sightings of unidentified aerial phenomena. Analysis of 139 cases was completed with an unidentified percentage of 0.72%. The 34 remaining cases are still being investigated or are under analysis by another agency or group. (UNCLASSIFIED)

There were several instances of information being requested from ATIC concerning UFO sightings which were reported in accordance with JANAP-146d and of which ATIC had no information. The reason the information was not available is because ATIC is not an addressee listed in the JANAP. Action has been initiated to add ATIC as an addressee to JANAP-146d. (UNCLASSIFIED)

Congressional interest was increased during this period due principally to extensive efforts by the National Investigation Committee on Aerial Phenomena and the failure of an Air Force base to investigate and report an UFO sighting. Subsequent contact with the base determined the reason for their lack of action was due to the fact that the individual making the report was a chronic believer that unidentified aerial phenomena are space craft. The case was belatedly investigated and determined as a probable hoax. (UNCLASSIFIED)

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UFO BOOKS:

Several writers visited ATIC on USAF orders during this period. These visits are approved in an effort to better the USAF's public relations as it pertains to the Unidentified Aerial Phenomena Program. At least one of these visits has resulted in unhealthy circumstances due to misrepresentation by the visitors and their close association with the National Investigation Committee on Aerial Phenomena. (UNCLASSIFIED)

The draft of a book on the subject of UFO's written by an Air Force officer assigned to SAFOL-3d was unfavorably reviewed. The ATIC position is that the book should be disallowed, principally because the officer's position would lend a ring of officialdom to the book. (UNCLASSIFIED)

AIR FORCE PROGRAM:

Extensive efforts were made to reassign the Aerial Phenomena Program within the Air Force structure. The ATIC stand is that 13 years of experience indicates that unidentified aerial phenomena in no way constitute a threat, and the program is therefore improperly placed in intelligence. It is further believed that any Air Force benefit from the program will result from exploitation of its scientific potential. All efforts to transfer the program met with failure. (UNCLASSIFIED)

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GLOSSARY

AFCRC	Air Force Cambridge Research Center
AID	Air Intelligence Division (Library of Congress)
AMC	Air Materiel Command
ARDC	Air Research and Development Command
ASTAR	Air Scientific and Technical Review
CAIRS	Continuing Air Intelligence Requirements
CIA	Central Intelligence Agency
CIB	Current Intelligence Board (ATIC)
ECM	Electronic Countermeasures
FY	Fiscal Year
OSD	Office of the Secretary of Defense
PAIRS	Priority Air Intelligence Requirements
PGE	Project Gold Eagle
RADC	Rome Air Development Center
STAIRS	Short-Term Air Intelligence Requirements
TIPS	Technical Information Processing System
WADD	Wright Air Development Division

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HEADQUARTERS  
1125TH USAF FIELD ACTIVITIES GROUP (ATIC) (HQ COMD USAF)  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

GENERAL ORDER)  
NUMBER 15)

16 August 1960

STAFF ASSIGNMENT

BRIGADIER GENERAL ARTHUR J. PIERCE, 1509A, this Headquarters, is assigned as Special Assistant to the Commander, effective 15 August 60.

FOR THE COMMANDER:

JOHN C. KENNEL  
Captain, USAF  
Asst Administrative Officer



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