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A Historical Chronology of the Electronic Systems Division 1947-1986

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October 1987

Prepared For

ELECTRONIC SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
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An Historical Chronology of the Electronic Systems Division, its predecessor organizations, its major programs in the field of Command, Control, Communications and Intelligence (C^3I), its relationship with Air Force Systems Command and the United States Air Force, and its present and past commanders and authorized and assigned strength.

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FOREWORD

The Electronic Systems Division (ESD) of Air Force Systems Command (AFSC), with headquarters at Hanscom AFB, Massachusetts, is the United States Air Force center of command, control, communications and intelligence (C^3I) expertise. The background, development, and maturity of this vitally important segment of America's armed forces is of concern and interest to all students of American military history. The following chronology traces the historical background of ESD from its earliest origins in post-World War II America up to 1986. The record of ESD's achievement in the C^3I field is a testament and tribute to the talent of all of its members, both civilian and military. It is the hope of the author that this chronology will aid the reader to develop an appreciation for the significant contributions made by ESD to the defense and welfare of the United States.

E. MICHAEL DEL PAPA
Historian

October 1987

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1947

9 December	General Hoyt S. Vandenberg, Vice Chief of Staff, United States Air Force, expressed concern over the state of the U. S. air defense system in a memo to Dr. Vannevar Bush, Chairman of the Research and Development Board.

1949

April	The Air Force Scientific Advisory Board named Dr. Louis N. Ridenour to study Air Force research and development efforts.
August	General Vandenberg called the attention of the Joint Chiefs of Staff to the need for a more effective air defense system for the United States.
21 September	The Ridenour report suggested the creation of the Air Research and Development Command with its commander to also be a member of the Air Staff in a position to be known as Deputy Chief of Staff for Research and Development.
8 November	Dr. George E. Valley of the Massachusetts Institute of Technology (MIT) proposed to Dr. Theodore von Karman, chairman of the Air Force Scientific Advisory Board, that a study of air defense requirements be made.
15 December	The Air Force Scientific Advisory Board organized the Air Defense Systems Engineering Committee with Dr. Valley as chairman.

1950

23 January	The Air Research and Development Command (ARDC) was activated (operational on 2 April 1951) and the post of Deputy Chief of Staff, Development was created in the Air Staff. However, the Ridenour recommendation for a single incumbent to head both functions was not adopted.
24 October	The development of an air defense system was proposed by the Air Defense Systems Engineering Committee.
15 December	General Vandenberg asked MIT to establish and administer an air defense laboratory.

1951

6 February	As a result of General Vandenberg's request to MIT, Project Charles was initiated. This was an intensive study of the air defense problem.

1951 (cont'd)

28 June	Major General Donald L. Putt, Acting DCS/Development, suggested "Project Lincoln," a "neutral" name, as the title for the air defense laboratory to be established and administered by MIT.
6 August	The final report of Project Charles outlined a program for Project Lincoln.
27 August	ARDC assumed responsibility for the administration of Project Lincoln on air defense. This responsibility was delegated to the Air Force Cambridge Research Center, Laurence G. Hanscom Field, Bedford, Massachusetts, on 7 September 1951.

1952

4 March	Dr. Albert G. Hill of MIT was appointed director of Project Lincoln effective 1 January 1952.
17 April	The name "Project Lincoln" for the air defense laboratory was dropped in favor of "Lincoln Laboratory, Massachusetts Institute of Technology."

1953

2 January	Lincoln Laboratory published Technical Memorandum No. 20, a proposal for air defense which it called the "Lincoln Transition System."
28 January	ARDC informed MIT and the University of Michigan that air defense programs would continue at both institutions.
5 May	ARDC announced that only the Lincoln Transition System proposal for air defense would be pursued, with the University of Michigan effort to be phased out.

1954

7 May	The Air Defense Engineering Services (ADES) Project Office was established in New York, N. Y.
10 September	The ADES Project Office became operational for actions relating to the so-called Semi-Automatic Direction Center System, later known as SAGE, or Semi-Automatic Ground Environment System, in essence, the Lincoln Transition System.

1956

11 January	A charter for the operation of Lincoln Laboratory was drawn up which superseded charters of 26 July 1951 and 2 June 1953.

1957

3 June	The Air Defense Systems Management Office (ADSMO) was established at Hanscom Field with detachments from ARDC, the Air Materiel Command (AMC), and the Air Defense Command (ADC) under the executive direction of ARDC.
17 November	General Thomas D. White, Air Force Chief of Staff, requested that the Air Force Scientific Advisory Board (AFSAB) undertake a study on the reorganization of Air Force research and development. AFSAB appointed an ad hoc committee under H. Guyford Stever.

1958

24 February	Headquarters ARDC, in anticipation of final approval, redesignated ADSMO as the Air Defense Systems Integration Division (ADSID).
3 March	Secretary of the Air Force James H. Douglas asked MIT to undertake, on an interim basis, responsibility as principal systems engineering advisor to the Air Force for the integration of that part of the air defense system for which the Air Force was responsible. MIT was also asked to sponsor the formation of a permanent successor contract organization.
7 March	A plan for the establishment of the Air Defense Systems Integration Division was presented to the Air Force Council.
13 March	The Secretary of the Air Force and the Air Force Chief of Staff "approve in principle" the mission, policy and organization proposed for ADSID.
31 March	The Air Defense Systems Integration Division (ADSID) was established with publication of Air Force Regulation 20-13.
May	Major General Kenneth P. Bergquist assumed command of ADSID and, at the same time, became deputy commander of ARDC for air defense systems integration.
20 June	The Stever-AFSAB report recommended the reorganization of ARDC, with deputy commanders in charge of all distinct functional areas of the R&D program.
10 July	In response to the Air Force request of 3 March 1958, MIT formed the MITRE Corporation.

1959

21 January	Both ARDC and AMC were asked to name representatives to a Weapon System Management Study Group (WSMSG).
25 February	An ARDC working group presentation to the ARDC council recommended a new field structure for ARDC which would include an Aerodynamic Systems Center, a Ballistic and Military Space Systems Center, and an Electronic and Support Systems Center.
13 May	Lieutenant General Bernard A. Schriever assumed command of the Air Research and Development Command.
15 May	General Schriever directed the establishment of a special task force on ARDC organization. Colonel Jewell C. Maxwell was named task force chairman.
29 May	Lieutenant General Samuel E. Anderson, AMC commander, was named to head the Weapon System Management Study Group (WSMSG).
31 July	The Maxwell report, reflecting the same basic organizational concepts developed by General Anderson's working group, proposed three ARDC development centers, Western, Central, and Eastern, the latter to be concerned with electronic systems and located in the vicinity of Boston, Mass. The report also recommended the discontinuance of ADSID and the establishment of the Air Force Research Division under ARDC.
12 September	General Schriever notified field commanders of his decision to implement the recommendations of the Maxwell report.
5-6 October	ARDC reorganizations announced, to include Air Force Research Division and three field organizations: Air Force Ballistic Missile Division (AFBMD), Wright Air Development Division (WADD), and Air Force Command and Control Development Division (AFCCDD), their designations indicating function rather than geographic location. The final disposition of ADSID was not yet determined.
2 November	Air Materiel Command's Electronic Systems Center was activated at Hanscom Field as the AMC counterpart of the Air Force Command and Control Development Division (AFCCDD) in the Hanscom complex. Major General Clyde H. Mitchell was named ESC commander.
5 November	Work began on a study of "the technical realism of the L systems" initiated at Lincoln Laboratory. This report was to be ready on or about 1 April 1961; hence this effort became known as the Winter Study.

1959 (cont'd)

16 November	AFCCDD was activated at Hanscom Field with Colonel Herschel D. Mahon as commander.
28 November	Agreement was reached among Generals Schriever, Bergquist, and Lieutenant General Dean C. Strother, DCS Operations, that the ADSID mission would be incorporated into AFCCDD, and that General Bergquist would become the AFCCDD commander.

1960

1 January	The Electronic Systems Center became operational at Hanscom Field.
12 January	General Bergquist assumed command of the Air Force Command and Control Development Division.
8 February	Mr. Gordon N. Thayer, a vice president of American Telephone and Telegraph Company, was named full-time director of Winter Study Group.
March	The Air Force letter contract with the MITRE Corporation was amended to make the corporation the principal systems advisor to AFCCDD rather than ADSID.
1 April	AFCCDD, organized along lines proposed by ARDC, became a functional reality with the assignment to it of Electronic Support System Project Offices, AFCRC, 3245th Air Base Wing, and the ARDC portion of ADSID. AFCRC Lincoln Project Office became Lincoln Laboratory Liaison Office under Director of Technology, AFCCDD.
15 April	The Winter Study Group delivered its interim report to ARDC.
2 May	Detachment 2, Headquarters ARDC, was designated and organized at Hanscom, replacing the Air Force Cambridge Research Center.
22 June	AFCCDD recommended to ARDC that the MITRE Corporation be permitted to contract with the Department of Defense and DOD agencies other than the Air Force.
1 July	The Rome Air Development Center (RADC) at Griffiss AFB, New York, was assigned to AFCCDD.
July	General Schriever agreed in principle that the MITRE Corporation should be permitted to contract with DOD and services other than the Air Force.

13 July	The Weapon System Management Study Group (WSMSG) recommended that selected weapons and support systems be planned, programmed, and implemented as complete packages under new Air Force regulations--the 375 series.
1 August	The Air Force Cambridge Research Laboratories was designated and organized at Hanscom, replacing Detachment 2, Headquarters ARDC.
29 August	The Director of Defense Research and Engineering (OSD) informed the Army, Navy, and Air Force that Lincoln Laboratory would be asked to assume technical supervision and coordination of all military efforts in support of penetration aids, target identification, and re-entry physics.
31 August	The recommendations of the WSMSG were embodied in new Air Force regulations in the 375 series, which called for a closer relationship between AMC and ARDC in systems acquisition and placed responsibility in an ARDC or AMC System Program Director in accordance with the needs of the system life cycle.
15 September	The final report was issued by the Winter Study Group.
September	Senator John F. Kennedy, Democratic nominee for President, named Senator Stuart Symington as head of a committee to survey the organization and management of the defense establishment.
1 October	The Air Defense Systems Integration Division (ADSID) was discontinued.
5 December	General Schriever objected to many of the contentions of the Winter Study and asked AFCCDD for a new plan for Air Force command and control and communications systems. Symington committee reported to President-elect Kennedy that the rigid distinctions between research/development and procurement/production organizations were no longer needed.
13 December	General Bergquist, for AFCCDD, and General Mitchell, for ESC, agreed on procedures for implementing the Air Force 375-series regulations at Hanscom.

1961

1 January	Thirteen electronic supporting system project offices (ESSPOs) at Hancom Field were reorganized as system program offices (SPOs) in accordance with the new Air Force 375-series regulations.
January	The main Ballistic Missile Early Warning System (BMEWS) installation at Thule, Greenland, (Site I) achieved full operational capability, together with the BMEWS display subsystems at the NORAD Combat Operations Center and at Strategic Air Command headquarters, Offutt AFB, Nebraska.
15 February	Detachment 8, Hq AFCCDD, was established at the Naval Engineering Experimental Station, Annapolis, Maryland, to operate the Electromagnetic Compatibility Analysis Center.
17 March	Secretary of Defense Robert S. McNamara announced that all Air Force activities concerned with the acquisition of systems, "some of which are now carried on by ARDC and some by AMC," would be consolidated in a new command to be known as the Air Force Systems Command (AFSC).
20 March	The Secretary of the Air Force announced that, effective 1 April, the Air Materiel Command would be redesignated as the Air Force Logistics Command (AFLC), and the Air Research and Development Command as the Air Force Systems Command (AFSC); and that ARDC's Air Force Research Division (AFRD) would become the Office of Aerospace Research (OAR), assigned directly to the Air Force Chief of Staff. As regards Hanscom Field, this meant that ARDC's Air Force Command and Control Development Division and AMC's Electronic Systems Center would be combined to form the Electronic Systems Division of AFSC, and that the Air Force Cambridge Research Laboratories, then assigned to AFRD, would fall under OAR.
23 March	AFCCDD organized the 477L SPO for the Nuclear Detonation Detection and Reporting System (NUDETS).
1 April	The Electronic Systems Division (ESD) was activated at L. G. Hanscom Field with Major General Kenneth P. Bergquist as Commander and Brigadier General Charles H. Terhune, Jr., as Vice Commander. In addition to its headquarters, ESD included the 3245th Air Base Wing and the Rome Air Development Center, the latter at Griffiss Air Force Base, New York. Staff elements of the former AFCCDD and ESC were combined and/or reorganized at intervals during the next three months. There was no ESD financial plan for fiscal year 1961; instead, the approved financial plans for AFCCDD and ESC remained in effect for the duration of the fiscal year.

1961 (cont'd)

May	ESD Field Office 1 (412L SPO - Air Weapons Control System) was organized at Lindsey Air Station, Germany.
1 July	The 413L SPO (Extension of Distant Early Warning Line) was discontinued, and its continuing activities and responsibilities were assumed by the 480L SPO (Air Communications System).
July	NORAD headquarters began operation of the Space Detection and Tracking System (SPADATS), comprised of the Air Force's Space Track System (496L) and the Navy's Space Surveillance System (SPASUR). The National Space Surveillance Control Center at Hanscom Field was thereupon redesignated as the Space Track Research and Development Facility.
15 September	ESD Field Office 2 (425L SPO - NORAD Combat Operations Center), was organized at Ent Air Force Base.
	ESD's European detachment, Detachment 9, was established at Wiesbaden in support of systems 412L - Air Weapons Control System, 466L - Electromagnetic Intelligence System, and 480L - Air Force Communications Support System.
30 September	BMEWS Site II at Clear, Alaska, attained full operational capability. At this point, the entire system was complete except for the Pentagon display subsystem, installation of which was delayed until 7 November, and Site III in England, which was completed two years later.
15 December	The twenty-first and last SAGE air defense sector, at Sioux City, Iowa, went into operation.
26 December	ESD organized the 481L SPO - Post-Attack Command Control System (PACCS).

1962

1 January	The Control Sciences Laboratory of the Air Force Cambridge Research Laboratories, located at Fort Dawes on Deer Island in Boston Harbor, was reassigned to ESD where it became the Emergency Mission Support Division of the Traffic Control, Approach and Landing System SPO (431L).

13 February	Rome Air Development Center was relieved from assignment to the Electronic Systems Division and assigned directly to Air Force Systems Command Headquarters and later reassigned to the Research and Technology Division of Systems Command. Continued working relationships between the two organizations were covered in a memorandum of agreement consummated early in March 1962.
16 February	Major General Kenneth P. Bergquist, who had successively commanded the Air Defense Systems Integration Division, the Air Force Command and Control Development Division, and the Electronic Systems Division, all at Hanscom Field, was reassigned as Commander of the Air Force Communications Service at Scott AFB. The ESD Vice Commander, Brigadier General Charles H. Terhune, Jr., thereupon became Commander of ESD; and Colonel William K. Kincaid, Chief of Staff, became Acting Vice Commander while retaining his former position.
15 April	The former BMEWS United Kingdom Field Office in London, which had been organized in April 1960, became ESD Detachment 7.
30 April	A communications link between Italy and Greece (Project Big Rally II, Phase I) was completed.
April-May	Construction began on four SAC Control System (465L) Combat Operations Centers at Offutt, March, Barksdale, and Westover Air Force Bases.
5 June	Air Force Systems Command issued System Development Directive 482L-1, for the Emergency Mission Support System. The former 431L SPO became the 482L/431L SPO.
June	The 425L SPO (NORAD Combat Operations Center) completed work on the integration of BMEWS and SPADATS in the existing NORAD Combat Operations Center in Colorado Springs, Colorado.
1 July	Brigadier General Otto J. Glasser became Vice Commander of ESD vice Colonel William K. Kincaid.
20 September	The MITRE Corporation dedicated its new main building, named in honor of H. Rowan Gaither, on Route 62, Bedford. The building had been completed the preceding July.
1 October	The Distant Early Warning Line extension to Iceland (DEW East) was completed, giving the Air Force an unbroken six-thousand-mile radar surveillance chain from Iceland to the Aleutians.

1962 (cont'd)

15 October	ESD Detachment 2, Wright-Patterson Air Force Base, became the ESD Interdivision Liaison Office (ASD).
22 October	President Kennedy declared a national emergency because of Soviet missile launching sites discovered in Cuba. ESD activated a full-time emergency command post, which it maintained until 28 November.
30 October	A cornerstone laying ceremony was carried out for the new ESD Headquarters building (Building 1606) at Hanscom Field.
1 December	ESD established an Electronic Data Processing (EDP) Equipment Office to evaluate all such equipment considered for purchase by the Air Force.
19 December	ESD and the MITRE Corporation signed a memorandum of agreement defining MITRE's functions and establishing a basis of cooperation.
31 December	ESD signed a new contract with the MITRE Corporation.

1963

1 January	ESD undertook work on the development of a command and control system for the United States Strike Command (STRICOM, 492L), and converted the 473L SPO (Hq USAF Command and Control System) to the 473L/492L SPO.
23 January	Beneficial occupancy date of the SAC Control System Combat Operations Center at Offutt AFB, Nebraska.
15 February	Beneficial occupancy date of the SAC Control System Combat Operations Center at Westover AFB, Massachusetts.
20 March	Beneficial occupancy date of the SAC Control System Combat Operations Center at Barksdale AFB, Louisiana.
1 April	The 425L SPO (NORAD Combat Operations Center) subelement at Ent AFB, Colorado (ESD Field Office 2), became ESD Detachment 10.
April	Major General Charles H. Terhune, Jr., Commander of ESD, was appointed by General Bernard A. Schriever, Commander of AFSC, to serve as Command Project Manager for Project Forecast.

2 May	The Deputy Secretary of Defense directed the Air Force to discontinue work on the Automated Intelligence Data System (AIDS, 438L) and transfer responsibility for further work in this area to the Defense Intelligence Agency (DIA).
28 May	Beneficial occupancy date of the SAC Control System Combat Operations Center at March AFB, California.
20 September	The new ESD headquarters building (Building 1606) at Hanscom Field was accepted from the contractor. The building was fully occupied by the middle of October.
26 September	The hardened underground SAGE center at North Bay, Ontario, was completed. This center could monitor air battles throughout the northeastern United States and most of Canada.
September	The Airborne Long Range Input (ALRI) Program was completed. This program was a seaward extension of the SAGE system supplanting and extending the coverage provided by the Texas tower radars.
1 October	The Defense Communications Agency announced that the MITRE Corporation would assist in the technical planning and design of the National Military Command System (NMCS) and in the integration of NMCS with existing command and control systems. MITRE undertook this work under its contract with ESD, one segment of the work beginning on 1 August and another segment on 31 October.
4 October	AFSC issued "AFSC Plan for Administration of Lincoln Laboratory." The laboratory continued to be supported by federal funds and staffed and managed by the Massachusetts Institute of Technology.
9 October	The Royal Canadian Air Force established a liaison office in the ESD headquarters building. This office was supplemented by RCAF representatives assigned to certain SPOs.
15 October	ESD Detachment 7 in London was discontinued. The BMEWS Site III at Fylingdales Moor in Yorkshire had attained initial operational capability on 15 September 1963.
22 November	Air Force headquarters issued System Program Directive 474L, calling, among other things, for a Sea Launched Ballistic Missile Detection and Warning System, which was subsequently designated as System 416L.

1963 (cont'd)

24 December — A communications link between Greece and Turkey (Project Big Rally II, Phase II) was completed.

31 December — The Post-Attack Command Control System (PACCS, 481L) SPO was discontinued.

1964

15 January — BMEWS Site III, near Fylingdales Moor in Yorkshire, England, attained full operational capability. The Royal Air Force accepted operation and maintenance responsibility for this installation, and the Air Defense Command accepted the entire three-site BMEWS system as essentially complete.

27 January — Engineering responsibility for the Traffic Control, Approach and Landing System (431L) was transferred to the Air Force Logistics Command.

31 January — In a letter to the Speaker of the House of Representatives, Mr. James E. Webb, National Aeronautics and Space Administrator, announced NASA's decision to build an electronics research center in the Greater Boston area. On the same day, three New York members of Congress (Senators Jacob K. Javits and Kenneth B. Keating and Representative Alexander Pirnie) proposed to the Secretary of the Air Force that, in view of this decision, ESD should move to Griffiss AFB so that NASA might occupy the ESD facilities at Hanscom Field.

1 February — The northern area sites of the Green Pine System (488L) were placed in operation.

3 February — NASA Administrator James E. Webb visited Hanscom Field, calling on the Air Force Cambridge Research Laboratories, the Lincoln Laboratory, and ESD Headquarters. He was accompanied by Major General Don R. Ostrander, Commander of the Office of Aerospace Research. Governor Endicott Peabody was also present.

14 February — The BMEWS SPO (474L) was discontinued. Some of its personnel and most of its remaining responsibilities were transferred to the Space Track SPO (496L). The SAGE Air Defense System and Back-Up Interceptor Control System (416L/M) SPO, however, assumed its responsibilities in connection with the system later designated the Sea Launched Ballistic Missile (SLBM) Detection and Warning System (416N).

3 March	Major General John K. Hester, Air Force Assistant Vice Chief of Staff, asked the AFSC to "initiate a detailed cost-effectiveness study" of the impact on the ESD mission of the proposed move of ESD to Griffiss AFB. On 6 March, AFSC assigned this task to ESD. Colonel Francis J. Hoermann, ESD Comptroller, was in charge of the preparation of the resulting "Study of Proposed Move of ESD to Griffiss AFB," 6 April 1964. Early in April, the Secretary of the Air Force decided that ESD would remain at Hanscom Field.
15 March	Five of the seven West German sites of the Air Weapons Control System (412L) attained operational status. A sixth site became operational on 15 April.
10 May	ESD established the 486L SPO for the Mediterranean Communications System and reorganized Detachment 9 at Wiesbaden as a 486L Site Activation Task Force.
10 May	ESD established the 407L SPO for the Tactical Air Control System.
30 June	The NUDETS Regional Data Processing Center covering the Washington-Baltimore area, together with its four sensor sites, was completed and in operation.
1 July	Transition of engineering responsibility for the Semi-Automatic Ground Environment (SAGE) Air Defense System (416L) to the Rome Air Materiel Area (ROAMA) began. The transition process occupied the next six months.
15 July	Major General John W. O'Neill succeeded Major General Charles H. Terhune, Jr., as Commander of the Electronic Systems Division. ESD Detachment 10, Ent AFB, Colorado, became ESD Detachment 10 (Cheyenne Mountain Complex Management Office). As CMCMO, the detachment assumed the remaining responsibilities and most of the personnel of the 425L (NORAD Combat Operations Center) SPO, which was concurrently discontinued, and also assumed certain related responsibilities in connection with BMEWS, Space Track, SAGE, and BUIC.

1964 (cont'd)

31 July	The seventh and last major installation of the Air Weapons Control System (412L) in West Germany was completed, together with the overhead facility at Giebelstadt.
1 August	The 482L (Emergency Mission Support System) SPO was discontinued and its remaining responsibilities assigned to the 482L Project Office of the Tactical Air Control System (407L) SPO.
1 October	Detachment 3, 3245th Air Base Group, at Hickam AFB, Hawaii, was discontinued and replaced by ESD Detachment 11. The new detachment continued support of Project PRESS (Pacific Range Electromagnetic Signature Studies), which had been the mission of Detachment 3.
8 October	Lincoln Laboratory's Haystack antenna on Haystack Hill, Tyngsboro, Massachusetts, was dedicated by General Bernard A. Schriever, Commander of AFSC.
6 November	The data transmission system of the SAC Control System (465L) was transitioned to the Strategic Air Command.
12 November	Major General John W. O'Neill, ESD Commander, announced that ESD had won the AFSC Research and Development Procurement Award for Fiscal Year 1964.
31 December	System engineering responsibility for the SAGE Air Defense System (416L) was transferred to AFLC in compliance with the provisions of the AFSC/AFLC Transition Agreement of 14 July 1964 and Joint AFSC/AFLC 416L System Engineering Transfer Package of 18 September 1964.

1965

20 January	The Cheyenne Mountain Complex was renamed NORAD (North American Air Defense Command) Cheyenne Mountain Complex by direction of the Joint Chiefs of Staff.
April	ESD formed the Ryukyu Air Defense System (RADS) (418L) System Program Office. This SPO also assumed responsibility for the acquisition of the Hawaiian Air Defense System (HADS), thus creating the 418L/HADS System Program Office.
16 April	The Electronic Systems Division announced a new air transportable control tower designed by Master Sergeant Henry Spiewak of ESD. The ESD air transportable traffic control system was designed to be placed in operation in a matter of hours and could direct landings, takeoffs, and enroute traffic under both instrument and visual flight conditions.

7 May — The first piece of major equipment, a Philco 212 Computer, was placed in the NORAD Combat Operations Center within Cheyenne Mountain, Colorado Springs, Colorado.

15 June — The Hq USAF Command and Control System (473L) SPO and the U. S. Strike Command Control System (492L) SPO, which had been operating as the combined 473L/492L SPO, were established as separate System Program Offices.

11-28 June — The following beneficial occupancy dates were achieved at the NORAD Combat Operations Center: 11 June, South Center Building; 17 June, North Center Building; and 28 June, Center Building.

July — ESD made a number of important contributions to the improvement of Forward Air Control operations in Fiscal Year 1966 by completing, in July 1965, an urgent procurement action for 189 AN/MRC-108 jeep-mounted communications units and, in the same month, completing a contract award for 377 AN/MRC-107s. By November 1965, 140 of the AN/MRC-108 units were in Southeast Asia; by early 1966 all of the units were in service there. The AN/MRC-107 was the first jeep-mounted communications unit built to military specifications.

15 July — Colonel Daniel E. Riley became Vice Commander of ESD vice Major General Otto J. Glasser.

6 August — The Alaskan Air Command Data Processing and Display System was declared operational at Alaskan Air Command Headquarters, Elmendorf AFB, Alaska. Through this new ESD automated electronic system, top military commanders could get an instant, computerized assessment of the situation when an air-breathing threat appeared over the more than half million square miles of the nation's largest state.

9 August — The U. S. Strike Command, Command and Control System (492L) System Program Office delivered the second of three Joint Airborne Communications Center/Command Post (JACKPOT II) units to the U. S. Strike Command.

18 August — An Arctic communications system, the longest and most powerful of its type in the Free World, was declared operational by the Electronic Systems Division. The new system was Subsystem "A" of ESD's Northern Area Communications System (489L). A frequency modulation tropospheric scatter system, the new equipment throws a two-way communications bridge between Greenland and northern Canada. Normally, tropo communications systems are effective at shorter distances; the Canada-Greenland project

required engineering approaches never before attempted. Installation of the equipment in sub-zero weather in less than two years from the contract award date established a new milestone in modern engineering.

1 September — The first BUIC II (Back-Up Interceptor Control) Center, located at North Truro, Massachusetts, achieved operational status. BUIC, with its high-speed electronic computer, could digest, calculate, and supply, in thousandths of a second, information which is vital to air defense commanders in controlling modern weapons. BUIC would remain in a backup, monitor status as long as the SAGE system was in operation. Should a SAGE site be destroyed, BUIC would utilize the same information and automatically switch from its monitor mode to operational status.

10 September — Colonel Albert R. Shiely, Jr., became Vice Commander of ESD vice Colonel Daniel E. Riley.

14 September — Subsystem B of the Northern Area Communications System (489L) was accepted by the Air Defense Command. This subsystem involved the installation of twenty-two 60-foot antennas across the DEW Line to enable the latter to meet Defense Communications Agency standards.

17 September — ESD established the Office of Assistant for Limited War (ESGL).

12 October — ESD announced the award of a $27,320,199 contract to the Douglas Aircraft Company for equipping eight C-135 aircraft to provide communications with the Apollo space capsule during crucial phases of the moon mission. The fleet of aircraft would permit voice communication from the Houston Manned Space Flight Center of the National Aeronautics and Space Administration to the capsule once the astronauts were beyond the range of ground-based or ship-borne communications. In addition, the aircraft would provide broad, general test range support to Department of Defense programs. Airborne equipment would receive, record and retransmit telemetry data as well as voice commands from spacecraft or missiles to ground stations. This cooperative DOD/NASA program, known as Apollo/Range Instrumented Aircraft (A/RIA), was placed under the direction of ESD.

1965 (cont'd)

30 December — The Electronic Systems Division began development of an advanced type of automatic radio telephone system specially adapted for military use in forward areas. Designed to be man-carried, the system would have a rugged configuration that would permit it to be air dropped and operated almost anywhere in the world under the most severe weather conditions. Each system would provide for 14 simultaneous conversations with up to 200 addresses over an area five miles in diameter.

1966

1 January — The North American Air Defense Command (NORAD) Combat Operations Center (COC) was turned over to NORAD by ESD. Construction of the COC deep in the heart of hollowed out Cheyenne Mountain, near Colorado Springs, Colorado, began in 1961 under the direction of the Electronic Systems Division. The center, now known as the Cheyenne Mountain Complex, integrated several distinct systems into a single workable unit to provide the NORAD Commander with the necessary information and control to perform his mission. The systems, in addition to the Combat Operations Center, are the Intelligence Data Handling System, the Ballistic Missile Early Warning System, the Defense Communications Agency's Continental United States network, and the Space Defense Center combining the Air Force's Space Track and the Navy's Spasur.

24 March — The Electronic Systems Division announced that an electronic device which would allow the joint use of military radar information for air traffic control had been jointly developed by ESD and the Federal Aviation Agency (FAA). Known as a "Common Digitizer," the analog-digital processor was designed to meet the combined data processing and transmission requirements of both the Continental Air Defense (CONAD) Control and Warning System and the proposed semi-automatic FAA National Airspace System for Air Traffic Control. It was expected that the common processing and transmission of radar data would result in a considerable cost savings to the government.

1 April — The last of 13 sites of the Back-Up Interceptor Control System (BUIC II, 416M) was turned over to the Air Defense Command. Of the 13 sites, nine became operational ahead of schedule and four on schedule.

3 May — ESD announced that powerful, long-range weather radars would be provided for U. S. Air Force forecasters in Southeast Asia. These radars would be positioned to form a triangle for maximum coverage of meteorological phenomena. The weather radar utilized a 12-foot parabolic reflector antenna enclosed in a fiberglass dome, and the system displayed a composite picture of the weather over a 200,000 square mile area. It was also capable of pinpointing and tracking storms up to 250 miles away, distinguishing hail and rain, and indicating the intensity of each in any storm development.

7 June — The Electronic Systems Division announced that 58 transportable weather observing and forecasting stations would be shipped to Air Force installations in the United States, Europe, and the Pacific. Designed for use by the Air Weather Service at temporary airfields such as those being constructed in Southeast Asia, the weather vans would be completely self-supporting. Highly mobile, these units could be transported by cargo aircraft, set into position by helicopter, or towed on their own dollies by truck.

10 June — ESD announced Air Force plans to acquire 100 to 160 electronic data processing (EDP) computer systems to replace existing EDP installations with advanced standardized equipment. This action, the largest single acquisition of commercially available computers ever undertaken, would greatly enhance the Air Force's capability to process accurate and timely information for more effective decision-making.

24 June — ESD Detachment 3 was discontinued at Los Angeles Air Force Station, California.

30 June — A roll-out ceremony took place at Rochester, New York, for the ESD-developed AN/MRC-107 jeep-mounted communications unit for Forward Air Controllers. A total of 377 units would be produced under a $10 million contract. The highly mobile units would help to streamline request channels for strike aircraft during close support missions, and would have particular application in areas such as Vietnam. Equipment included four different type radios to enable Forward Air Controllers to talk to both strike aircraft and other ground troops.

June — The Electronic Systems Division completed work on a new satellite tracking radar for the Air Defense Command at Clear, Alaska. The 84-foot parabolic radar dish provided horizon-to-horizon electronic tracking of missiles and satellites and complemented the giant radars of the Ballistic Missile Early Warning System.

1 July — The North American Air Defense Command (NORAD) Combat Operations Center (COC), located deep inside Cheyenne Mountain, Colorado, achieved Full Operational Capability (FOC), marking the culmination of five years of cooperative effort by ESD with other Air Force agencies, the U. S. Army, U. S. Navy, and the Royal Canadian Air Force.

19 August — A simulated bombing mission was conducted at L. G. Hanscom Field to demonstrate the capabilities of a jeep-mounted communications unit developed by ESD. The units would be used by Forward Air Control (FAC) personnel to request air support and to communicate with strike aircraft and ground troops.

23 August — The Electronic Systems Division announced the installation of a testbed facility for a system to detect sea-launched ballistic missiles (SLBM). The SLBM system would keep a protective "eye" on U. S. coastal waters and would tie in with other ESD-developed systems such as SAGE and the NORAD Combat Operations Center.

5 October — A new communications system spanning the Mediterranean from Spain to the Near East was commissioned in a ceremony held at Martina Franca, Italy. Known as the Mediterranean Communications System, or MEDCOM (486L), the 100-site network linking Spain, Sardinia, Sicily, Italy, Greece, Crete, and Turkey was built for the European-African-Middle Eastern (EAME) Communications Area of the Air Force Communications Service by ESD. The $145 million system was comprised of more than 6,000 route miles of communications consisting of giant tropospheric scatter, line-of-sight and microwave antennas, land lines, repeaters, and multiplexing equipment for the transmission of voice teletype, facsimile, and data communications.

28 October — DELTA I, one of the Electronic Systems Division's largest computer program systems, became operational. Containing some 53 individual programs and 345,000 instructions, it was acquired at a cost of approximately $5 million. DELTA I would provide the operational data processing capabilities for the NORAD COC in Cheyenne Mountain. Its specific duties included (1) maintenance of a surveillance catalog of all detected space objects; (2) detection and warning of space threats; (3) and defense against space systems.

1966 (cont'd)

November — The first aircraft modified and instrumented by Electronic Systems Division Apollo/Range Instrumented Aircraft (A/RIA) Program participated in the Gemini 12 mission. On 2 November the aircraft acquired and tracked Gemini during the 13th, 14th, and 15th orbits; two-way voice communication from the spacecraft to ground stations via A/RIA was established on the 15th orbit. On 14 November, Gemini was acquired and tracked during the 43rd, 44th, and 45th orbits; during the 44th orbit two-way voice relay via A/RIA was established between Houston, Texas, and the spacecraft. In addition to the voice relay, the aircraft also recorded telemetry data from Gemini 12 and, while still airborne, "dumped" the data to a ground station.

20 December — The third ESD-developed Joint Airborne Communications Center/Command Post (JACC/CP, or JACKPOT) was accepted by U. S. Strike Command. The JACC/CP was designed for airborne or ground-based operation; its dual mode capability permitted rapid deployment and optimum operation in areas with limited logistic support.

1967

1 February — ESD Detachment 11 was relocated from Hickam AFB to Fuchu Air Station, Tokyo, Japan.

10 February — An ESD contract was awarded to the Hoppman Corporation of Springfield, Virginia, for $111,750.00 for the installation of a Visual Display and Voice Recording System at U. S. Strike Command Headquarters, MacDill AFB, Florida. The system would update equipment used in Command briefing rooms and provide for recording and transcribing of both telephone and microphone audio signals. Project completion was scheduled for late June 1967.

15 March — Responsibility for implementation of the Airborne Warning and Control System (AWACS) was reassigned from the Aeronautical Systems Division, Wright-Patterson AFB, Ohio, to the Electronic Systems Division. The AWACS program, which had been designated Air Force Systems Command Program 49AM, was subsequently redesignated as System 411L.

17 March — ESD acquired a lightweight tactical communications facility designed for use in limited war situations. The equipment would provide transportable communications terminals in remote areas, and could be set up, aligned and put into operation by two men in less than an hour. Two hundred and twenty-two units were purchased from the Radio Corporation of America, Camden, New Jersey, under a $30 million contract.

27 March — The Electronic Systems Division awarded a $6.6 million contract to the Burroughs Corporation for a semi-automatic airspace surveillance and control system to be installed in the Ryukyu Islands. The quick response feature of the newer system will enhance the defense capabilities of the Pacific Air Forces (PACAF) by utilizing existing radar and communications equipment to the maximum extent possible.

6 April — A program for modernizing communications between England and West Germany was completed by ESD. The contract was let to the Federal Electric Corporation, Paramus, New Jersey, for $1 million. Improvements included doubling the traffic handling capability by the use of new antennas and more powerful radio equipment.

12 April — The AN/TRC-97A lightweight tactical communications facility, designed for use in limited war situations, was released for operational use on the basis of successful Category II tests. This facility, originally developed by the U. S. Marine Corps, was subjected to further development by the Electronic Systems Division to meet the requirements of the Air Force Tactical Air Control System.

3 May — ESD disclosed that it had been assigned a key role in the development of the first tactical satellite communications system for the Department of Defense. The assigned phase of the project would use a limited number of mobile terminal transceivers widely dispersed in or near the Continental United States and a solar powered payload in outer space. When completed, the system would be the forerunner of satellite communications designed for the user of highly mobile military units.

15 May — The Air Defense Command successfully completed Category III tests of ESD-installed modifications at the three forward sites of the Ballistic Missile Early Warning System (BMEWS) - Site I at Thule, Greenland, Site II at Clear, Alaska, and Site III, at Fylingdales, England. Completion of those modifications marked the end of an important improvement program which took approximately five years to finish and cost approximately $22 million. The end of the modification program (except for some minor clean-up items) represents completion of the BMEWS which was begun in 1967. The total cost of BMEWS is estimated at approximately $1.259 billion.

23 May — ESD completed the sixth and final link of SEED TREE (439L), several hundred miles of underwater cable communications around the Indo-China peninsula. This program was directed in February 1966 and completed six weeks ahead of schedule. SEED TREE represented the third ESD communications system installed in Southeast Asia on or ahead of schedule in the past four years.

9 June — The Electronic Systems Division awarded a $3.5 million contract to EG&G Incorporated, Bedford, Massachusetts, for the development and production of weather chart transmission and recording equipment for installation at USAF bases world-wide. This equipment, designed as a weather plotter transmitter (GMT-3) and receiver (GMH-3), would enable the Air Force to transmit weather maps, wind charts, and cloud charts from weather forecast centers to operating air bases five times faster than under the present system.

13 June — A "fold-away" radar which could be set up or torn down in less than 20 minutes would soon be added to the Air Force's inventory of tactical equipment. This radar, developed by the Electronic Systems Division, would be used in the Forward Air Control Post of the Tactical Air Control System (407L). The result of an extensive study, the antenna could be folded down upon itself and be ready for transport in less than 20 minutes when required by tactical conditions.

30 June — The BMEWS Project Office at ESD was terminated.

1 July — Major General John B. Bestic assumed command of Electronic Systems Division, vice Major General John W. O'Neill.

Colonel Spencer S. Hunn became Vice Commander of ESD vice Colonel Albert R. Shiely, Jr.

July — ESD completed work on FAST RACE II, a program to meet the communications requirements generated by the withdrawal of U. S. units from France. FAST RACE I was completed in February 1967.

3 August — The Electronic Systems Division announced final testing of a communications station at Hawes, California, which utilized an antenna taller than the Eiffel Tower. The station was part of the Survivable Low Frequency Communications System (487L) to be used by the Department of Defense as a general command channel and as a reserve communications system.

30 August — Air Force officials accepted the first Apollo/Range Instrumented Aircraft (A/RIA) which would support the U. S. man-to-the-moon project. A fleet of eight C-135 aircraft were being modified by Electronic Systems Division under the A/RIA program. The modified aircraft carry a seven-foot-wide dish antenna and 15 tons of communications equipment.

31 August — The Electronic Systems Division announced developmental work on an electronically steerable antenna for use with lightweight Tactical Air Navigation (TACAN) equipment. Unlike TACAN antennas presently in use, the new model would form and rotate the radiated pattern electronically rather than mechanically. Advantages of the new design included lower routine maintenance and increased reliability.

The special airlift of ESD-developed equipment to Southeast Asia reached a new high during the first eight months of 1967. In this period, Southeast Asia required more special airlift than all ESD programs in all oversea areas during the six previous years. Added to the special airlift missions, regularly scheduled Military Airlift Command flights to Southeast Asia moved a grand total of 1,323 tons of electronic and associated equipment.

8 September — Except for residual tasks, ESD completed work on SOFT TALK (484L), a secure ground/air/ground digital voice and high speed teletype communications system.

19 September — ESD announced the development of a new weather radar designated AN/FPS-77. With a range of 200 nautical miles, the AN/FPS-77 would give USAF weather forecasters more information on cloud location, depth, and height and storm intensity.

31 October — The Electronic Systems Division completed work on the Mediterranean Communications (MEDCOM) System (486L) except for residual tasks which would be accomplished on a project basis.

3 November — ESD announced the award of a $2.6 million contract to Bunker-Ramo Corporation for work on the Air Force Integrated Command and Control System (AFICCS). Five display systems utilizing modified "off-the-shelf" equipment would be installed at Headquarters USAF, and at the headquarters of Tactical Air Command, Military Airlift Command, Seventh Air Force, and the Electronic Systems Division. All would interface with AFICCS sites already operational at U. S. Air Forces, Europe, Pacific Air Forces, and the Air Defense Command.

1967 (cont'd)

13 November — The Electronic Systems Division completed work on the Airborne Long Range Input (ALRI) system in accordance with the SAGE System (416L) transition agreement.

29 November — ESD announced the award of a $7.2 million contract to Radio Corporation of America for the production of 22 tactical air traffic control towers to provide visual air traffic control in areas where fixed control facilities are inadequate or unavailable. The towers would be used with other air traffic facilities such as a search radar, an airfield lighting system, communications, and navigational aids. Once operational, this equipment would enable Air Force personnel to turn an unattended landing strip, in a matter of hours, into an instrumented airfield capable of controlling and landing all types of aircraft under all weather conditions.

20 December — The Burroughs Corporation was selected as vendor for 135 computers for use in the USAF Base Level Data Automation Standardization Program (Phase II). This purchase was, at an estimated cost of $82 million, one of the largest single acquisitions of commercially available computers ever undertaken.

22 December — The last of eight Apollo/Range Instrumented Aircraft (A/RIA) was delivered to the Air Force Eastern Test Range.

1968

1 January — The Electronic Systems Division assumed responsibility for the operation and maintenance of the Montana Large Aperture Seismic Array (LASA) from MIT's Lincoln Laboratory.

5 January — ESD announced the selection of International Business Machines Corporation (IBM) to install replacement electronic data processing (EDP) equipment at Hq Air Force Logistics Command and five Air Materiel Areas (AMAs). This new equipment would be able to operate a minimum of 21 hours a day, seven days a week, providing immediate access to stored data.

5 January — The ESD Southeast Asia Field Activities Office was activated in Bangkok, Thailand.

15 January — ESD invited 20 computer firms to submit proposals on the installation of EDP equipment at the Air Force Accounting and Finance Center, Denver, Colorado. The equipment to be installed would support the total accounting and finance center workload, which would consist of Joint Uniform Military Pay System (JUMPS) and other EDP applications.

25 January — The Electronic Systems Division announced the award of over-the-horizon radar study contracts to Sylvania Electric Products, Inc., Waltham, Massachusetts, and the General Electric Company, Syracuse, New York. These contracts would be incrementally funded and would last six months.

30 January — A Memorandum of Agreement was signed between ESD and the Air Force Logistics Command covering the establishment and operation of a joint AFSC/AFLC Integrated Logistics Support Office (ILSO) within the AWACS SPO (411L).

29 February — The Electronic Systems Division announced the award of a $15 million contract to North Electric Company to design and build tactical electronic switching centers for the Air Force's Tactical Air Control System (407L). These switching centers would be designed for world-wide deployment under any environmental conditions. Designated AN/TCC-30, they would provide up to 475 programmable four-wire line and trunk terminals and would be compatible, on an operator assistance basis, with any type telephone system and network, such as AUTOVON, commercial dial central offices and older military manually operated systems. These electronic switching centers, housed in modular shelters, could be transported by truck, helicopter, or cargo aircraft. Set-up time would be less than 90 minutes under even the most adverse terrain and environmental conditions.

26 March — ESD awarded sensor analysis study contracts to Stanford Research Institute, Menlo Park, California, and Page Communications Engineers, Inc., Washington, D. C. The purpose of these study contracts was to analyze sensor capabilities for Control and Surveillance of Friendly Forces (CASOFF) on the ground and in the air. Techniques for location of cooperating forces based on such methods as trilateration, hyperbolic and range angle measurements would be examined. In addition, improved command and control communications through the use of digital data link to replace voice communications would be studied.

8 April — The Electronic Systems Division let contract definition awards for development of Tactical Ground Control Approach (TGCA) equipment to Westinghouse Electric Corporation, Baltimore, Maryland, ITT Gilfillan, Inc., Los Angeles, California, and Raytheon Equipment Division, Wayland, Massachusetts. The proposed system would be capable of controlling present and post-1970 aircraft in both fair and adverse weather conditions. It would replace heavy AN/CPN-4 and AN/MPN-11 equipment currently in the Air Force inventory. Upon completion of the contract definition phase, ESD would award an acquisition contract for production systems.

1968 (cont'd)

16 May	Headquarters AFSC approved the Back-Up Interceptor Control (BUIC III) System Transition Agreement.
22 July	Colonel Floyd M. Trogdon became Vice Commander of ESD vice Brigadier General Spencer S. Hunn.
31 July	Major General John B. Bestic ended his tenure as Commander of ESD.
1 August	Major General Joseph J. Cody, Jr., officially assumed command of ESD.
20 September	Air Force Systems Command became responsible for the operation of the AN/FPS-85 phased array radar at Eglin AFB, Florida.
20 December	Air Force Systems Command turned over operation and maintenance responsibility for the AN/FPS-85 phased array radar at Eglin AFB to the Aerospace Defense Command.
28 December	The Kanto Plains Communications System (484N-B) achieved Full Operational Capability (FOC).

1969

26 March	The Base Air Defense Ground Environment System (BADGE) became operational.
March	Dr. John L. McLucas, president of the MITRE Corporation, was appointed Under Secretary of the Air Force.
12-25 July	ESD Tactical Satellite Communications Terminals, along with Tactical Satellite (TACSAT) I and Lincoln Experimental Satellite (LES)-6 supported Apollo 11, man's first landing on the moon. The Tactical Satellite Communications Terminals were also used to support Apollo 12, man's second lunar landing, in November 1969.
27 July	Colonel Floyd N. Trogdon ended his tenure as Vice Commander of ESD.
4 August	Colonel Paul H. Kenney assumed duties as Vice Commander of ESD.
7 September	ESD Detachment 13, Project MALLARD, was designated and organized at Fort Monmouth, New Jersey.
19 December	A Manual Patch Panel for the North American Air Defense Command (NORAD) Combat Operations Center (COC), delivered, installed, and tested early in December, was accepted by the United States Air Force more than three months ahead of schedule.

1969 (cont'd)

31 December	The fifteenth and final Back-Up Interceptor Control (BUIC III) site became operational at Fortuna AFS, North Dakota.

1970

16 January	The Air Force Engineering Responsibility (AFER) for the Air Weapons Control System (412L) was transferred from ESD to the Air Force Logistics Command.
1 February	ESD Detachment 14 was designated and organized at Eglin AFB, Florida.
10 February	The ESD Airborne Warning and Control System (AWACS) Program Office was redesignated as the Deputy for Airborne Warning and Control Systems.
24 February	Air Force Engineering Responsibility (AFER) and support responsibility for the Survivable Low Frequency Communication System (487L) was assumed by the Air Force Logistics Command.
March	The interim Space Analyst Intervention Display System (SAIDS) program was canceled and the SAIDS function was incorporated into the NORAD Cheyenne Mountain Complex Improvements Program (427M).
April	ESD was levied with a reduction of 300 civilian authorizations, 61 in the last quarter of FY 1970 and 239 in the first quarter of FY 1971. An intensive program was undertaken to reduce the impact of this reduction in civilian authorizations through optional or voluntary retirements, and by the development of a plan to preserve ESD mission-oriented and technical capabilities by identifying a number of personnel as Civilian Overage Pending Assignment (COPA). As a result of these management actions, as of 30 June 1970 only 15 employees had been separated who were not eligible for some form of retirement.
8 June	The integration of the Southern Japan Military Network, the last major task of the Kanto Plains Communications System (484N), was completed. The 484N-B System Program Office was discontinued in July 1970, and all residual tasks were completed 27 August 1970.
12 June	Headquarters AFSC approved an IOC date of 31 December 1970 for CORTS, Conversion of Range Telemetry Systems. Installation and check-out of all sites at all ranges was completed on 31 March 1970.

19 June	ESD turned over the imagery transmission system COMPASS LINK to the Air Force Communications Service (AFCS).
30 June	ESD completed all tasks and responsibilities on SEEK DAWN (416P), a semi-automatic centralized system to rapidly accept, process and display air situation and status data in Southeast Asia.
30 June	Phase I, a data gathering effort, was completed for Project SEEK STORM, an airborne weather radar project. ESD Project 6682, Test Range Meteorological Support, was transferred to the Air Force Cambridge Research Laboratories. The Aerospace Defense Command accepted the Sea-Launched Ballistic Missile (SLBM) Detection System (474N) from ESD. Some residual tasks remained with ESD.
8 July	ESD received authorization to award the contract for the Airborne Warning and Control System (AWACS) to the Boeing Company. The signed contract was forwarded to Boeing on 23 July 1970.
29 July	The satisfactory test of the Strategic Air Command Operational Planning System/Strategic Air Command Control System (SACOPS/SACCS) interface marked the completion of the ESD effort on SACOPS.
1 August	ESD completed work on the Strategic Air Command Communications-Electronics Five-Year Engineering Plan.
August	An ESD reduction of 300 civilian manpower authorizations, directed in March and April of 1970, was originally estimated to involve 15 voluntary separations and 105 forced separations. By August 1970, an extraordinary management effort had reduced to 20 the number of forced separations.
2 September	The Electronic Systems Division assumed responsibility for the public information functions of the Air Force Cambridge Research Laboratories (AFCRL). Prior to 1 July 1970, AFCRL was under the Office of Aerospace Research (OAR). On 1 July 1970, OAR was merged into Air Force Systems Command, and the laboratories of OAR were placed under the Director of Laboratories, AFSC.
17 September	The Continental United States (CONUS) Over-The-Horizon Backscatter (OTH-B) Radar SPO (414L) was organized within the Deputy for Surveillance and Control Systems.

September	Fourteen (14) tactical air navigation (TACAN) high frequency antennas, a Southeast Asia Logistics Requirement (SEALR), were deployed to Southeast Asia.
1 October	ESD released the Request for Proposal (RFP) for the World-Wide Military Command and Control System (WWMCCS).
7 October	ESD completed work on the AN/TNQ-14 Cloud Height Set, a component of the Weather Observing and Forecasting System (433L).
16 October	The Electronic Systems Division was directed to accomplish a mission analysis of Command and Control Communications of Theater Air Operations.
31 October	The formal portion of the mission analysis of Dynamic Direction and Employment of U. S. Strategic Forces was completed by ESD. The mission analysis was also known as the Management of Strategic Forces (MSF) Study. The ESD Southeast Asia Field Activities Office located in Bangkok, Thailand, was closed and deactivated.
October	ESD turned over five Weather Satellite Television Ground Stations, under Southeast Asia Operational Requirement (SEAOR) 120, to the Air Weather Service and the Air Force Communications Service.
1 November	The Electronic Systems Division initiated a Space Environment Monitoring (SEM) study. A draft final report of this study was forwarded to Air Force Systems Command and the Air Weather Service on 7 June 1971.
7 November	A fully operational Strategic Air Command Operational Planning System (SACOPS) was transitioned to the Strategic Air Command. SACOPS is an automated system which enables SAC planners to manipulate data extracted from the SAC Control System (465L) without affecting system operations.
12 November	Secretary of Defense Melvin R. Laird approved the World-Wide Military Command and Control System (WWMCCS) program.
17 November	ESD was directed to assume lead division responsibility for the Automated Armed Forces Examining and Entrance Station (AAFEES) program.
8 December	ESD was assigned overall management responsibility for Program 616A, Air Force support of the Minimum Essential Emergency Communications Network (MEECN).

1970 (cont'd)

29 December — The Phase III contract for the Emergency Rocket Communications System (494L) was awarded to the Bendix Aerospace Systems Division.

31 December — The ESD Program for Conversion of Range Telemetry Systems (CORTS) attained initial operational capability (IOC) at all sites.

Work was completed on computer programs, computer program specifications, and test plans for additional system capabilities for the Strategic Air Command Control System (SACCS) Data Management System.

31 December — The contract effort was completed on computer program development and operational analysis for the U. S. Strike Command.

The Haystack Microwave Research Facility in Tyngsboro, Massachusetts, was transferred from USAF to the Massachusetts Institute of Technology.

1971

4 January — The Electronic Systems Division was designated to manage Air Force participation in TRI-TAC, the follow-on to the MALLARD program.

Later in the month, the ESD MALLARD Project Office was renamed the Air Force TRI-TAC Project Office.

1 February — ESD published the USAF TACSATCOM (Tactical Satellite Communications) Test Program final report.

8 February — The Tactical Air Control System Improvements (485L) SPO was established in the Deputy for Tactical Systems.

17 May — ESD awarded a contract for Airborne Weather Reconnaissance System (AWRS) installation on government-furnished aircraft to Kaman Aerospace Corporation.

18 May — An AN/FPS-49 Engineering and Test Division was established in the Air Weapons Surveillance and Control SPO. An AN/FPS-49 modification contract was awarded to Radio Corporation of America (RCA) on 3 June 1971.

19 May — With support from the Electronic Systems Division, the Air Weather Service completed follow-on testing on the Aircraft Turbulence Measuring System (ATMS).

20 May — The Aerospace Defense Command signed an incremental turnover agreement for the Forward Scatter Over-The-Horizon (440L) System.

1 June — The Post-Attack Command and Control System/Airborne Data Automation (PACCS/ADA) data link was transitioned to the Strategic Air Command (SAC). Formal turnover to SAC was effected on 15 July 1971.

15 June — ESD completed work on an AFSC-directed study on the establishment of a communications systems engineering capability within the Air Force.

23 June — The Electronic Systems Division turned over the White Sands Missile Range Air Surveillance System to the U. S. Army.

30 June — ESD completed work on the Special Purpose Communications System (487M).

The Electronic Systems Division Limited War Office, established on 17 September 1965, ceased operations.

1 July — ESD assumed control of five programs formerly assigned to the Aeronautical Systems Division: the Tactical Information Processing and Interpretation System (TIPI), the Tactical Long Range Navigation (LORAN) System, the Air Traffic Control Radar Beacon System/Identification Friend or Foe/Mark XII System (AIMS), the Traffic Control and Landing System (TRACALS, 404L) and the Air Base Defense System. Relocation of these programs to ESD was completed in September 1971.

The ESD Deputy for Communications Systems (DC) assumed responsibility for LORAN, AIMS, TRACALS, and the Terminal Control Program, the latter transferred from the ESD Deputy for Tactical Systems. To reflect its new responsibilities, DC was redesignated the Deputy for Communications and Navigation Systems. The Air Base Defense and TIPI programs were assigned to the Deputy for Tactical Systems.

The ESD Limited War Office was abolished. Residual tasks were assigned to other organizations within ESD.

14 July — ESD Detachment 1 was designated and activated at Wright-Patterson AFB to help support the transfer of programs from ASD to ESD.

26 July — The contract for the Automatic Voice Network (AUTOVON) Centralized Alarm System (CAS) was awarded to the Atlantic Research Division of the Susquehanna Corporation.

16 August	Colonel Charles L. Wilson assumed the duties of Vice Commander of ESD, vice Colonel Paul H. Kenney.
30 August	The Electronic Systems Division announced the award of a contract to ITT Defense Communications Division for the design and development of microwave communications systems AN/GSQ-119/120.
August	ESD completed work on a System Definition Study for the U. S. Strike Command Communications System.
21 September	ESD announced the completion of a computerized air surveillance system at U. S. Army White Sands Missile Range.
30 September	ESD Detachment 1 was inactivated at Wright-Patterson AFB.
	ESD Detachment 13 was inactivated at Fort Monmouth, New Jersey.
8 October	The AN/GSQ-168 Command Display System, the "large panel display," was turned over to the user, the U. S. Readiness Command.
15 October	The Electronic Systems Division announced that Honeywell Information Systems would be the contractor for the computers of the World-Wide Military Command and Control System (WWMCCS).
29 October	Major General Albert R. Shiely, Jr., assumed command of ESD vice Major General Joseph J. Cody, Jr.
6 December	ESD opened a two-day briefing session to acquaint industry representatives with ESD policies, procedures, and opportunities. The decision to hold briefings was prompted by requests from industry following transfer of several programs to ESD.
15 December	A Tactical Air Force Systems Engineering Group (TAFSEG) cadre was established in the ESD Deputy for Tactical Systems.
	A Communications Systems Engineering Group (CSEG) cadre was established in the ESD Deputy for Communications and Navigation Systems.
27 December	Testing of the AN/FPS-49 radar modification was successfully completed and the system was turned over to the Aerospace Defense Command.

1972

1 January	ESD Detachment 12 was inactivated at Hickam AFB, Hawaii.
3 January	ESD awarded a contract to the Hughes Aircraft Company, Fullerton, California, for the hardware and computer program modifications required for the Tactical Air Control System (TACS)/Tactical Air Defense System (TADS) Interface.
10 January	The Advanced Airborne Command Post (AABNCP) Program Office was established in the ESD Deputy for Command and Management Systems.
27 January	ESD completed work on the WESTPACNORTH Compatibility Program, which provides for digital, voice, or teletype exchange of air defense information in the WESTPACNORTH Air Defense Region.
31 January	ESD Detachment 14 was inactivated at Eglin AFB, Florida.
1 February	Airborne Warning and Control System (AWACS) brassboard aircraft No. 1 was rolled out at the Boeing Company.
	The Directorate of Information Systems Technology was established in the ESD Deputy for Command and Management Systems to provide an initial Computer Technology Center capability.
9 March	The first World-Wide Military Command and Control System (WWMCCS) computer was installed at Headquarters Strategic Air Command.
	Lieutenant General John W. O'Neill, Vice Commander, AFSC (and former commander of ESD) presented Organizational Excellence Awards to Air Weapons Surveillance and Control Program Office, Deputy for Surveillance and Control Systems; Communications and Transmission Switching Program Office, Deputy for Communications and Navigation Systems; and Special Projects Office, Deputy for Tactical Systems.
6 April	The Electronic Systems Division announced the selection of the Control Data Corporation as contractor for 89 computer systems for the Air Force Logistics Command Data Systems and Equipment Modernization Program.
24 April	ESD implemented Project PHOENIX by assigning the USAF Dispensary, and the Personnel, Information, and History functions from the ESD staff to the 3245th Air Base Group.
1 May	Colonel Charles L. Wilson, ESD Vice Commander, assumed the rank of Brigadier General. The star pinning ceremony was conducted by General George S. Brown, Commander, AFSC, assisted by Mrs. Wilson.

15 May	The acquisition of message processors for nine sites of the North American Air Defense Command was completed and Air Force Engineering Responsibility was transferred from ESD to the Oklahoma City Air Materiel Area.
17 May	Colonel Waldo E. Bertoni assumed the duties of Vice Commander of ESD, vice Brigadier General Charles L. Wilson.
4 August	The Apollo Ground Systems Division of General Electric Company was awarded a $3.8 million contract to perform system integration and checkout for Tactical Information Processing and Interpretation System.
18 August	Logistics management responsibility for the Airborne Warning and Control System was assigned to the Sacramento Air Materiel Area.
8 September	The Airborne Warning and Control System reached an important milestone with the completion of the flight test phase of the brassboard radar program.
13 September	Dr. Sylvia Mayer, research psychologist, ESD Deputy for Command and Management Systems, was honored as the Air Force Civilian of the Year for the development of a unique, computer-based on-the-job training system.
26 October	The Philco-Ford Corporation (Western Development Laboratories) was awarded a $22,258,766 contract for improvements to the NORAD Cheyenne Mountain Complex.
10 November	The Boeing Company received a $900,000 incentive award for outstanding performance on the Airborne Warning and Control System.
15 November	The USAF Clinic was relieved of assignment to the 3245th Air Base Group and assigned to Headquarters ESD.
29 November	The Computer Sciences Corporation was awarded a $2.1 million contract to provide systems engineering and computer hardware to integrate the World-Wide Military Command and Control System computer systems with existing systems at Headquarters Strategic Air Command.
21 December	The UNIVAC Federal Systems Division of Sperry Rand Corporation was awarded a $3,471,754 firm-fixed-price contract to furnish and install automatic data processing equipment at Air Force Human Resources Laboratory, Lackland AFB, Texas.
29 December	The General Dynamics Corporation of Fort Worth, Texas, was awarded a $10,567,196 contract for improvements to Tactical Air Control Centers.

1973

19 January	The System Development Corporation was awarded a $15,850,542 contract to update satellite information processing at the NORAD Cheyenne Mountain Complex.
1 February	The Air Force Combat Theater Ground Communications (TRI-TAC) Program Office was established in the ESD Deputate for Tactical Systems.
23 February	ESD and the Federal Aviation Administration completed installation and activation of 83 Common Digitizers (radar data processing devices) to improve positive control of military and civil air traffic in the United States and Canada.
28 February	The USAF and the Electronic Systems Division announced the award of a $59 million contract to the Boeing Company for two 747B aircraft for modification to interim Airborne Command Post (E-4A) aircraft under the Advanced Airborne Command Post program (481B). The contract included an option for a third aircraft.
12 March	ESD announced the selection of COMDISCON, Inc., of Des Plaines, Illinois; Federal Data Corporation of Washington, D. C.; Telex Computer Products, Inc., of Tulsa, Oklahoma; and Tracor Data Systems, Inc., of Austin, Texas, to furnish and install automatic data processing equipment at the San Antonio Data Services Center, San Antonio, Texas.
11 April	The Airborne Warning and Control System testbed aircraft began operational test flights in Europe and the Mediterranean area.
10 May	The Advanced Airborne Command Post (AABNCP) Program Office was elevated to deputate status.
11 June	The Electronic Systems Division announced the award of a $16 million contract to the Burroughs Corporation of Paoli, Pennsylvania, to furnish and install automatic data processing equipment at the Air Force Military Personnel Center, Randolph AFB, Texas.
18 June	Major General Kendall Russell assumed the duties of ESD Vice Commander, vice Colonel Waldo E. Bertoni.
22 June	ESD awarded a $39.5 million contract to the Raytheon Company for a precision multi-object, phased-array tracking radar (COBRA DANE) to be constructed on Shemya Island, Alaska.

1973 (cont'd)

16 July	Colonel Charles G. Johnson assumed the duties of ESD Vice Commander, vice Major General Kendall Russell.
	The Air Force accepted the first Boeing 747 aircraft for the Advanced Airborne Command Post (AABNCP) program.
July	The Over-The-Horizon Radar System Program Office (440L) was formally presented the Air Force Organizational Excellence Award by AFSC Chief of Staff Major General Vernon R. Turner.
14 September	Brigadier General Phillip N. Larsen assumed the duties of ESD Vice Commander, vice Colonel Charles G. Johnson.
21 September	Air Force Engineering Responsibility for Overseas AUTOVON Switches (490L) was transitioned to the Air Force Logistics Command.
October	The ESD Deputy for Command and Management Systems and the Tactical Air Control System (407L) SPO were formally presented the Air Force Organizational Excellence Award by Lieutenant General Lawrence S. Nolan, AFSC Vice Commander.
28 December	The Electronic Systems Division exercised the production option for seven AN/TPN-19 Landing Control Central systems.

1974

February	ESD completed work on the Tactical Air Control System (407L).
29 March	In a change of command ceremony, Major General Benjamin N. Bellis assumed command of ESD, vice Major General Albert R. Shiely, Jr.
March	The Air Force Satellite Communications (AFSATCOM) Program Office was established within the ESD Deputy for Communications and Navigation Systems.
3 April	The SATIN IV Program Office was established within the ESD Deputy for Communications and Navigation Systems.
3 May	Major General Benjamin N. Bellis was awarded the Distinguished Service Medal for exceptionally meritorious service as System Program Director for the F-12/SR-71 aircraft program and Deputy for the F-15 aircraft program at the Aeronautical Systems Division.
11 June	Phase I of the AWACS System Integration Demonstration (SID) was completed.

1974 (cont'd)

28 August	ESD accepted the SAC Automated Command Control System (SACCS) Data Processing System (DPS) Update (SEED CUPS) from Computer Sciences Corporation. The system was turned over to SAC on 30 September 1974 and transitioned to AFLC on 8 November 1974.
17 September	Major General Benjamin N. Bellis, ESD Commander, was presented the Air Force Association (AFA)/AFSC Distinguished Award for Management Ability at the AFA annual convention in Washington, D. C.
1 October	The Air Force World-Wide Military Command and Control System Program Office, established on 1 August 1974, was elevated to deputy status.
11 October	Major General Wilbur L. Creech assumed command of ESD, vice Major General Benjamin N. Bellis.
12 December	The Air Force formally approved the AWACS System Integration Demonstration (SID) Flight Test Final Report, closing out the SID flight test program which began in March 1974.
23 December	The 1st Airborne Command and Control Squadron (1ACCS), Andrews AFB, Maryland, accepted E-4A No. 1.

1975

18 February	The phased array warning system known as SPARS was renamed PAVE PAWS.
17 March	The Forward Scatter OTH Radar System (440L) was terminated by direction of the Air Force Chief of Staff.
3-24 April	AWACS demonstration flights were conducted in Europe.
1 May	ESD Detachment 1 was designated and activated at Tehran, Iran.
12 May	The internationally manned NATO AWACS Program Office (NAPO), located at NATO Headquarters in Brussels, Belgium, began operations.
15 May	ESD Detachment 11 was inactivated at Yokota Air Base, Japan.
16 May	E-4A No. 2 was accepted by 1ACCS at E-Systems, Inc., Greenville, Texas.
1 July	The pre-production Solar Observing Optical Network (SOON) system, installed at Palehua, Hawaii, was declared operational by the Air Weather Service.

2 July	President Gerald L. Ford announced the elevation of the ESD Commander position to three-star rank. Major General Wilbur L. Creech was nominated to the grade of Lieutenant General with continued assignment as ESD Commander.
16 July	E-3A Production Aircraft No. 1 was rolled out.
28 July	Major General Wilbur L. Creech assumed the grade of Lieutenant General.
4 August	A 747 aircraft to be used as an advanced C^3 testbed for the E-4 program was accepted from the Boeing Company by AFPRO, Seattle, Washington. This was the first E-4 aircraft delivered with the newly developed in-flight refueling system.
11 August	The first E-3A RDT&E test aircraft, Test System (TS) No. 2, made its first test flight.
21 August	Major General David D. Bradburn assumed the duties of ESD Vice Commander, vice Brigadier General Phillip N. Larsen.
1 September	The Rome Air Development Center (RADC) was reassigned from AFSC to ESD (AFSC SO G-126, 23 September 1975).
9 September	The Directorate of Minimum Essential Emergency Communications Network (MEECN) and the Directorate of Automatic Data Processing and Advanced Plans were formed in the Deputy for E-4.
15 September	E-4A No. 3 was accepted from E-Systems, Inc. and turned over to the 1ACCS for operational use.
16 September	The E-3A program received the Theodore Von Karman Award, the Air Force Association's highest honor in the field of science and engineering.
15 October	AN/TPN-19 Landing Control Prototype Systems No. 1 and 2 (404L) were accepted by the government.
1 November	The 1ACCS was transferred from AFSC to SAC. This implemented a 23 July decision to designate a single manager of all AABNCP program resources and use of Offutt AFB, Nebraska, as the main operating base for both the SAC and NEACP missions.
14 November	The COBRA DANE phased array radar radiated for the first time on Shemya Island, Alaska.

1976

January	ESD awarded a cost plus incentive fee (CPIF) contract to the General Dynamics Corporation, Fort Worth, Texas, for development of Tactical Air Control Center (TACC) automation equipment.
1 January	Detachment 1 (Deputy for Electronic Technology), RADC, was designated and activated at Hanscom AFB from a portion of the Air Force Cambridge Research Laboratories (the Microwave Physics and Solid State Sciences Divisions).
15 January	The Air Force Cambridge Research Laboratories, minus the Microwave Physics and Solid State Sciences Divisions, was redesignated as the Air Force Geophysics Laboratory.
6 February	Brigadier General Lawrence A. Skantze, Deputy for E-3A, and Brigadier General Kenneth P. Miles, Deputy for Control and Communications Systems, were promoted to Major General.
28 May	Program management responsibility for the AN/TPN-19 Landing Control System (404L) was transferred from ESD to the Sacramento Air Logistics Center (SM-ALC).
22 June	The SEEK SKYHOOK prototype balloon (2121) was struck by lightning at midsection, exploded, and fell into three feet of salt water.
1 July	The Directorate of Automatic Data Processing Equipment Selection was redesignated the Air Force Computer Acquisition Office (AFCAO) and assigned to the Air Force Data Automation Agency with no change of station.
8 July	Factory rollout of E-4B testbed aircraft at the Boeing Aircraft Company, Everett, Washington.
16 July	Major General David D. Bradburn, ESD Vice Commander, was presented the Distinguished Service Medal by General William J. Evans, AFSC Commander.
28 July	The COBRA DANE radar on Shemya Island, Alaska, detected and tracked a Soviet missile launch for the first time.
1 August	The MITRE Corporation's Washington, D. C., operation was renamed METREK, a division of the MITRE Corporation.
1 September	Major General Henry B. Stelling, Jr., became ESD Vice Commander, vice Major General David D. Bradburn.
	Colonel John T. Buck, Deputy for Control and Communications Systems, promoted to Brigadier General.

1976 (cont'd)

8 September	Colonel John Z. Dillon, RADC Commander, was presented the Legion of Merit by Lieutenant General Wilbur L. Creech.
10 September	ESD was designated the lead division for the Pacific Radar Barrier (SEEK SAIL) (2294) program.
27 October	Ground-breaking ceremonies were held for the PAVE PAWS East Coast site at Otis AFB, Massachusetts.
1 November	On the 25th anniversary of its establishment, MIT's Lincoln Laboratory was presented the DOD Meritorious Award.
17 December	ESD accepted the COBRA DANE radar system from Raytheon Company.

1977

7 January	The first two JTIDS Class 1 terminals developed for the E-3A were delivered to the Boeing Aerospace Company by Hughes Aircraft Company.
11 February	President Jimmy Carter took an orientation flight from Andrews AFB, Maryland, to Robins AFB, Georgia, on board an E-4A.
25 February	Dr. Gerald P. Dinneen, Director of MIT Lincoln Laboratory, was nominated by President Carter to be Assistant Secretary of Defense (Communications, Command, Control and Intelligence) and later confirmed by the Senate.
23 March	The first E-3A production aircraft was delivered to TAC. On the following day, during formal ceremonies, the aircraft was turned over to the 552d Airborne Warning and Control Wing (AWACW) at Tinker AFB, Oklahoma.
14 April	Major General Henry B. Stelling, Jr., was presented the Distinguished Service Medal by Lieutenant General Wilbur L. Creech.
2 May	Lieutenant General Robert T. Marsh became ESD Commander, vice Lieutenant General Wilbur L. Creech.
29 June	ESD transferred the TACS/TADS Interface computer programs to the Tactical Air Command.

1977 (cont'd)

1 July	ESD Detachment 9 was relocated from Lindsey Air Station, Wiesbaden, Germany, to Kapaun AS, Kaiserslautern, Germany.
13 July	The COBRA DANE radar system on Shemya Island, Alaska, was transferred to ADCOM.
11 September	The rollout of the E-4B testbed aircraft took place at E-Systems, Incorporated.
15 September	Spanish Air Force (SAF) accepted operation and maintenance responsibility for the Semi-Automatic Segment (SAS) of the COMBAT GRANDE program.

1978

10 January	ESD submitted a Boeing Aerospace Company-prepared planning and budgetary package (P&B No. 4) for a standardized U. S./NATO E-3A aircraft configuration with industrial collaboration to the Air Staff for review.
11-12 January	Public meetings were held at North Truro and Sandwich, Massachusetts, to discuss any potential microwave radiation associated with ADCOM's North Truro radar station and the PAVE PAWS facility at Otis AFB.
12 January	An Air Force Systems Acquisition Review Council (AFSARC) approved the Strategic Air Command Digital Network (SACDIN) (1136) program.
17 February	ESD awarded a contract to RCA, Moorestown, New Jersey, for the Ballistic Missile Early Warning System (BMEWS) Tactical Operations Room (TOR) Upgrade program.
18 February	An international "Tiger Team" of U. S. government officials and NATO business and financial experts completed an assessment of Boeing's NATO industrial collaboration (P&B No. 4) proposal.
27 February	The PAVE PAWS System Program Office (SPO) asked the National Bureau of Standards (NBS) to submit a proposal for measuring electromagnetic field strength at the PAVE PAWS sites at Otis AFB, Massachusetts, and Beale AFB, California.
2-12 March	A site survey of the BMEWS facility at Clear, Alaska, was successfully carried out by representatives from ESD, ADCOM, and RCA.

3 March	A Memorandum of Understanding (MOU) was signed by the Air Force and the MITRE Corporation covering MITRE Performance on DOD command, control, and communications (C^3) work and non-DOD work.
7 March	The Assistant U. S. Attorney in Sacramento, California, notified ESD that Judge Philip C. Wilkins of the Sacramento Federal Court had "Dismissed with Prejudice" a lawsuit filed by the "Citizens Concerned about PAVE PAWS" against the PAVE PAWS facility at Beale AFB, California.
15 March	Lieutenant General Robert T. Marsh, ESD Commander, asked Brigadier General Howard R. Unger, Commander of the Aerospace Medical Division, Brooks AFB, Texas, to inaugurate studies to determine the biological effects of low-level radiation over extended periods of time.
15 March	The Government of Iran signed Letter of Offer and Acceptance (LOA) No. 3 for the E-3A for Iran program (PEACE SKY) covering support for an E-3A main operating base (MOB)/dispersal operating base (DOB), technical publications, maintenance, personnel, and spares.
28 March	The Government of Iran signed PEACE SKY LOA No. 4 covering Computer Program Ground Support Capability (CPGSC) operation and maintenance of the E-3A aircraft and mission simulator, depot maintenance, and support personnel required for the initial implementation of the program.
31 March	A Statement of Understanding (SOU) was signed by NATO which provided $1.9 million in funds for the initial development of a standardized U. S./NATO E-3A aircraft configuration.
3-4 April	Raytheon, prime contractor for PAVE PAWS, energized one subarray on the south face of the Otis AFB PAVE PAWS radar for one and one-half hours.
8-16 April	During BRAVE SHIELD XVII, a joint tactical exercise involving both the Air Force and the Army, the 552d AWACW, Tinker AFB, Oklahoma, demonstrated E-3A initial operational capability (IOC) by deploying three E-3As to Hill AFB, Utah.
27 April	Development, test and evaluation (DT&E) flight testing of the E-3A "B" waveform JTIDS terminals commenced.
17 May	The Air Force announced the selection of the popular name "Sentry" for the E-3A aircraft.

31 May	The first Air Force Satellite Communications (AFSATCOM) program Type 1B terminals for the B-52G/H aircraft and the first Type 3A terminals for the EC-135 ABNCP aircraft were formally accepted by the government.
3 June	DT&E flight testing of the E-3A "B" waveform JTIDS terminals was completed 11 days ahead of schedule.
9 June	Hq USAF formally announced the award of a PAVE PAWS Environmental Impact Statement (EIS) contract to Stanford Research Institute (SRI) International, Menlo Park, California.
10 June	The first DT&E flight test of the E-4B was successfully carried out at Boeing Field, Seattle, Washington.
29 June	The House Appropriations Committee approved the Air Force request to reprogram $8.5 million in FY 1978 funds into the SACDIN program. This action constituted Congressional consent for the SACDIN effort.
30 June	A combination AFSATCOM Contractor Service Center/training facility was opened at Tinker AFB, Oklahoma.
18 July	ESD awarded a contract to ARINC Corporation of Annapolis, Maryland, to carry out an aircraft integration study for the SEEK TALK system.
	The first two Singer-Kearfott JTIDS Class 2 advanced development model (ADM) terminals were delivered to the Navy.
24 July	A Team from the National Bureau of Standards began taking ambient radiation level measurements both at the PAVE PAWS site at Otis AFB and in the surrounding Cape Cod communities.
31 July	Hq USAF issued a new E-4 Program management Directive (PMD No. R-S2091(10)11312F) which affirmed the planned acquisition pattern of no E-4Bs in FY 79, four in FY 80, and one in FY 81 (0-4-1) and a new final operational capability (FOC) date of October 1983.
9-11 August	Preliminary survey of BMEWS Site I for the BMEWS Modernization (MOD) program was accomplished by a team composed of personnel from ESD, MITRE, and a Hq AFSC Program Management Assistance Group (PMAG).

11 August	A Fixed Price Incentive Contract for $19,418,474 was awarded to Ford Aerospace and Communications Corporation, Palo Alto, California, for a Low Rate Initial Procurement (LRIP) of an Automated Technical Control (ATEC) capability for the Defense Communications System (DCS). The LRIP will procure equipment for 16 sites in Europe in the initial buy.
5-15 September	Functional configuration audit (FCA) and physical configuration audit (PCA) of the SACCS Replacement Keyboard (SRK) were successfully completd at IBM, Oswego, New York.
26-27 September	Critical design review (CDR) of the hardware equipment for the BMEWS TOR Upgrade program was completed at RCA, Moorestown, New Jersey.
28 September	The instrument phase of E-4 DT&E flight testing was completed after a total of 34 separate flights.
6 October	Hq USAF issued an amendment to the 31 July 1978 E-4 PMD which changed the E-4B program acquisition schedule from 0-4-1 to 0-1-1-1-1-1 (no E-4Bs in FY 79, one each in FY 80, 81, 82, 83, and 84) and slipped the E-4 FOC date from October 1983 to November 1986.
10 October	The 552d AWAC Wing deployed two E-3As to Iceland.
14-18 October	The first Iranian PEACE SKY E-3A Program Management Review (PMR) was held in Tehran.
20-21 October	Additional power density measurement tests were conducted at the PAVE PAWS facility at Otis AFB, Massachusetts.
7 November	The first AFSATCOM Type 12 terminal, a transportable ground command post, was delivered to Offutt AFB, Nebraska.
22 November	The first JTIDS Class 1 Hughes Improved Terminal (HIT) was shipped from Fullerton, California, to the JTIDS Adaptable Surface Interface Terminal (ASIT) contractor, IBM, Oswego, New York.
30 November	A "tremendously successful AFSATCOM demonstration" was conducted at Hq SAC, Offutt AFB, Nebraska, when the Commander in Chief, SAC (CINCSAC) became the first free world commander to transmit a message, by means of the AFSATCOM Type 12 terminal, via satellite to an airborne bomber.
	SACDIN system design review (SDR) was successfully completed.

1978 (cont'd)

5 December	ESD submitted Otis AFB PAVE PAWS Power Density Measurement Reports, Nos. 1, 2, and 3 to the Environmental Protection Agency (EPA).
	The NATO Defense Planning Committee approved the NATO Airborne Early Warning (AEW) program consisting of 18 E-3A aircraft, engines, equipment, and related services.
6 December	A Multilateral Memorandum of Understanding (MMOU) on the NATO AEW program was signed by the 13 NATO nations and the United States Government.
17 December	E-4 DT&E flight testing was completed following a total of five verification tests flown between 22 November and 17 December.
18 December	Hq USAF issued a Program Management Directive (PMD No. R-P9017(1)/01012F) for the NATO Airborne Early Warning and Control (AEW&C) program.
27 December	A 45-day E-4B IOT&E effort was inaugurated at Offutt AFB, Nebraska.

1979

4 January	Lieutenant Colonel Paul T. McEachern, PAVE PAWS System Program Manager, reported that "The lawsuit against PAVE PAWS (Otis AFB) has been dismissed with prejudice b[y] ... Federal Judge [Joseph F. Tauro] in Boston."
15 January	A Letter of Intent (LOI) was signed by the General Manager of the NATO Airborne Early Warning (AEW) Program Management Agency (NAPMA) committing $55 million to the NATO AEW program.
16 January	System Performance Testing was successfully completed at the Otis AFB PAVE PAWS facility.
18 January	The Boeing Aerospace Company submitted a multi-program Engineering Change Proposal (ECP) to implement the Joint Tactical Information Distribution System (JTIDS) Hughes Improved Terminal (HIT) aboard the E-3A.
19 January	The 16th production E-3A aircraft (P-14, S. N. 0354) was delivered to the 552d Airborne Warning and Control Wing (AWACW) at Tinker AFB, Oklahoma.
22 January	A public hearing on the draft Environmental Impact Statement (EIS) for the Otis AFB PAVE PAWS facility was held at the Sandwich High School Auditorium, Sandwich, Mass., and attended by approximately 300 people.

24 January	Design, development, test and evaluation (DDT&E) and production letter contracts for the NATO AEW program were signed by the Boeing Aerospace Company.
26 January	Production acceptance testing of the SACCS Replacement Keyboard (SRK) commenced at IBM, Oswego, New York.
29 January	The 552d AWACW assumed a 24-hour-a-day alert commitment with the activation of NORAD Detachment 1 at Tinker AFB.
29-30 January	A successful hot weather self-sustained ground alert test of the E-4B was carried out at Howard AFB, Canal Zone.
2 February	Dr. Kenneth L. Jordan, Principal Deputy Assistant Secretary of the Air Force for Research and Development, granted Final Procurement Action Authorization (FPAA) for the SEEK TALK program to proceed into the Advanced Development Model (ADM) phase. A meeting was held at the Massachusetts Department of Public Health in downtown Boston to discuss the PAVE PAWS Lower Elevation Angle Limit Protection System being installed at the Otis AFB PAVE PAWS facility. Attendees included representatives from ESD, the Massachusetts Department of Public Health, and the Sandwich Citizens Rallied Against PAVE PAWS (SCRAPP).
8 February	ESD installed six high pass filters in the Cape & Islands Emergency Medical Service (EMS) system equipment to counter Electromagnetic Interference (EMI) with the EMS equipment resulting from operation of the PAVE PAWS radar at Otis AFB.
9 February	Hq USAF issued an interim revision to the E-4 Program Management Directive (PMD) which called for a total programmed force of four E-4 aircraft versus the previous force structure of six E-4s.
11 February	Initial Operational Test and Evaluation (IOT&E) of the E-4B aircraft was completed after a total of 12 flights involving 122.7 hours of flight time.
12 February	The E-4B aircraft, following the completion of IOT&E testing, was delivered to Kirtland AFB, New Mexico, to commence Electromagnetic Pulse (EMP) testing.
14 February	The request for proposal (RFP) for the Program 616A 100 KW VLF/LF airborne transmitter was released to industry.
16 February	Initial EMP testing of the E-4B aircraft began at Kirtland AFB.

1-7 March	Two E-3A aircraft from the 552d AWACS were dispatched to Kadena AB, Okinawa, and flew a total of three sorties in support of exercise Team Spirit 79.
5-7 March	The final review of the East Coast PAVE PAWS EIS was held at Hq AFSC.
6 March	The Rome Air Development Center (RADC) at Griffiss AFB, New York, awarded SEEK TALK ADM contracts to E-Systems, Electronic Communications, Inc. (ECI), St. Petersburg, Florida ($4,104,399), General Electric Company (GE), Utica, New York ($4,067,683), and Hazeltine Corporation, Greenbaum, New York ($5,454,435).
8 March - 19 April	Two E-3A Sentry aircraft were flown to Saudi Arabia to provide requested support to the government of that Middle East nation.
15 March	The Federal Communications Commission (FCC) approved the proposed rule-making for JTIDS to operate in the 960-1215 MHz band on a non-interfering basis.
16 March	The 17th production E-3A aircraft (P-15, S. N. 0355) was delivered to the 552d AWACW at Tinker AFB.
23 March	The first radio frequency transmission was made from the north side of the PAVE PAWS facility at Beale AFB, California.
30 March	The government accepted the first six SRK production units.
1 April	ESD Detachment 1, located in Tehran, Iran, and operated in support of the Deputy for Security Assistance Programs (FA), was closed largely as a consequence of the Iranian revolution and its resulting impact on U. S.-Iranian military programs.
12 April	The NAPMA General Manager signed the NATO AEW Program Acquisition Agreement. ESD accepted the PAVE PAWS site at Otis from the prime contractor, Raytheon, with only minor anomalies which Raytheon planned to close out prior to system transition and turnover to ADCOM.
17 April	The first fully 616A modem-modified site, the Hawes Radio Relay Station near Edwards AFB, California, was turned over to the Strategic Air Command.
17-18 April	A meeting was held at Stanford Research Institute (SRI) International, Menlo Park, California, to review the Candidate Environmental Impact Statement (CEIS) covering operation of the PAVE PAWS facility at Beale AFB, California.

8-10 May — A demonstration of the Digital European Backbone (DEB) reconstitution system was conducted at Headquarters Defense Communications Agency (DCA), Washington, D. C. This system, consisting of transportable vans, manpacks, and a ground erectable tower, will be used to restore communication sites damaged by sabotage or natural disaster.

22 May — The 18th production E-3A aircraft (P-16, S. N. 0356) was delivered to the 552d AWACW at Tinker AFB.

AFSATCOM Initial Operational Capability (IOC) was declared. The IOC declaration was transmitted by the SAC Commander-in-Chief, General Richard Ellis, from the Type-12 Terminal at Hq SAC, Offutt AFB, Nebraska. Other terminals participating in the demonstration included the EC-135C Airborne Command Post (while flying its Looking Glass mission), three B-52s from Minot AFB, North Dakota, and an AFSATCOM terminal at Shemya, Alaska. As stated in the message issued by General Ellis, "It opens a New Chapter in Command and Control Communications for the Strategic Forces of the United States."

24 May — Raytheon, prime contractor for PAVE PAWS, signed a contract to relocate the Cape & Islands EMS Repeater Station from Sandwich to the water tower in Bourne, Massachusetts.

25 May — While operating at full power in a test mode, the north face of the Beale AFB PAVE PAWS radar successfully tracked three satellites.

9 June — Extensive VLF/LF corona data was obtained on the ferry flight of the E-4B from Kirtland AFB, New Mexico, to the Boeing Company, Seattle, Washington.

15 June — ESD issued a change order which authorized Boeing to undertake long lead tasks for the JTIDS HIT ECP.

19 June — Refurbishment of the E-4B aircraft commenced at the Boeing plant in Seattle, Washington.

General Alton D. Slay, AFSC Commander, tasked ESD and RADC to accelerate the SEEK TALK program by at least two years.

22 June — The Cape Cod Environmental Coalition, Inc., filed an amended complaint against the PAVE PAWS facility at Otis AFB.

29 June — The request for proposal (RFP) for the E-4 production/retrofit effort was released to two competing companies, Rockwell International and the Boeing Aerospace Company.

13 July — Work was completed by Raytheon on the Cape & Islands EMS Repeater Station relocation effort.

27 July	Copies of the completed draft Beale AFB PAVE PAWS EIS were released to the California Congressional delegation and the Environmental Protection Agency.
31 July	ECI of St. Petersburg, Florida, delivered the first complete SACCS LPU production unit in a formal acceptance ceremony attended by the ESD Vice Commander, Major General Henry B. Stelling, Jr.
23 August	Formal turnover of the SACCS Replacement Keyboard to the Strategic Air Command took place at Offutt AFB.
12 September	The 19th production E-3A aircraft (P-17, S. N. 0576) was delivered to the 552d AWACW at Tinker AFB.
15 September	ESD completed Program Management Responsibility Transfer (PMRT) for the SRK portion of the SACDIN program to Sacramento Air Logistics Center (SM-ALC), McClellan AFB, California.
17 September	ESD released the request for proposal (RFP) for contractor technical services (HIT maintenance) on a sole source contract basis to the Hughes Aircraft Company.
18-19 September	JTIDS Adaptable Surface Interface Terminal (ASIT) static display attracted a great deal of attention at the Air Force Association convention in Washington, D. C.
20 September	A public hearing to review the draft EIS and answer questions regarding the PAVE PAWS system at Beale AFB was held at the Veteran's Community Center, Marysville, California.
23 September	SAC had installed and was operating 47 SRK units at 28 operational bases.
28 September	A Firm Fixed Price contract for $30,000,000 was awarded to Westinghouse Electric Corporation, Baltimore, Maryland, for Phase IV of the 616A modem program, covering production of the remaining 67% of the modem equipment.
1 October	Program management responsibility for the 616A modem effort was transferred from ESD to SM-ALC.
4 October	The E-4B began formal post-refurbishment ground tests at the Boeing Company, Seattle, Washington.
5 October	The Joint Surveillance System (JSS) program reached a major milestone when the Canadian Government approved and signed the JSS Letter of Offer and Acceptance (LOA).
5 November	ESD released the JTIDS Class 2 terminal request for proposal (RFP) to industry.

1979 (cont'd)

13 November — The Digital European Backbone (DEB) Phase I Final Operational Capability (FOC) was achieved.

14 December — A major milestone in the CONUS Over-the-Horizon Backscatter (OTH-B) Radar program was reached when the Experimental Radar System (ERS) commenced initial low power radio frequency (RF) transmission.

21 December — Program management responsibility for the Digital European Backbone (DEB) Phase I system was transferred from ESD to AFLC.

A major milestone in the E-4 program was achieved when ESD accepted the first E-4B from Boeing.

1980

7 January — A major milestone in the E-4 program was attained with the turnover of the E-4B testbed aircraft to the Strategic Air Command at Offutt AFB, Nebraska.

1 February — Headquarters USAF issued an amendment to the basic SEEK TALK Program Management Directive (PMD) directing the acceleration of the SEEK TALK program by two years to provide initial deliveries of production systems in the second quarter (January-March) of FY 1984.

15 February — ESD Detachment 2 was established in Colorado Springs, Colorado, to manage all Air Force Systems Command (AFSC) programs in the Colorado Springs area, particularly those to be integrated into the North American Air Defense Command (NORAD) Cheyenne Mountain Complex (CMC).

3 March — Brigadier General C. Truman Spangrud became Vice Commander of ESD vice Major General Henry B. Stelling, Jr.

25 April — A major milestone in the CONUS OTH-B Radar program was attained when, following the successful completion of the System Acceptance Test (SAT), ESD accepted the ERS from General Electric.

25 April — Ground-breaking for a new building, the Systems Management Engineering Facility I (SMEF-I), began, which would provide office space for ESD personnel located in buildings at the MITRE Corporation, Bedford, Massachusetts.

22 May — Operational employment of the E-4B commenced when the aircraft went on National Emergency Airborne Command Post (NEACP) alert at Andrews AFB, Maryland.

1980 (cont'd)

26 June	A Fixed Price Incentive contract in the amount of $417,890,775.00 was issued to the Boeing Aerospace Company for the retrofit of the three E-4A aircraft to the E-4B configuration.
1 October	A major milestone of the AFSATCOM program was attained with the Program Management Responsibility Transfer (PMRT) of the program to the Sacramento Air Logistics Center (SM-ALC), McClellan AFB, California.
31 October	A cornerstone-laying ceremony was held at the Systems Management Engineering Facility I (SMEF-I), officiated by Under Secretary of the Air Force Antonia Handler Chayes.
19 December	The 23rd E-3A production aircraft (P-21, S.N. 0002) was delivered to the 552d AWAC Wing, Tinker AFB, Oklahoma.

1981

16 January	The Office of the Secretary of Defense issued a Decision Memorandum Paper directing the Air Force to commence JTIDS Class 2 Full Scale Engineering Development (FSED).
30 January	ESD awarded two Firm Fixed Price (FFP) contracts to General Electric ($17,700,000) and Hazeltine ($15,700,000) for Phase I of the SEEK TALK Full Scale Engineering Development (FSED).
26 February	The Air Force announced the nomination of Bangor International Airport, Bangor, Maine, as the site of an expanded radar operations center and centralized support facility for the East Coast OTH-B Operational Radar System.
18-19 March	The first NATO E-3A aircraft (N-1) was ferried to the Dornier Company at Oberpfaffenhofen airfield, Federal Republic of Germany, for installation and checkout of the mission system.
19 March	The 24th E-3A production aircraft (P-22, S.N. 0003) was delivered to the 552d AWAC Wing at Tinker AFB.
1 April	The E-4B achieved a new operational milestone with the successful launch of a Minuteman ICBM.
2 April	A major milestone in the JTIDS program was reached when the first flight of E-3A Test System #3 (in the U.S./NATO Standard Configuration) with the JTIDS Class 1 Hughes Improved Terminal (HIT) took place.
3 April	Hq USAF directed AFSC to prepare draft Letters of Offer and Acceptance (LOAs) for the sale of five E-3As and up to eight tanker/cargo aircraft to Saudi Arabia.

15 April	Low-level radiation testing of the COBRA JUDY radar subsystem commenced on board the USNS Observation Island at Baltimore, Maryland.
24 April	The USNS Observation Island was turned over to the Military Sealift Command (MSC).
7 May	The Belgian Government announced its full participation in the NATO E-3A Programme.
14 May	COBRA JUDY radar subsystem testing commenced onboard the USNS Observation Island as it sailed out of Boston Harbor.
22 May	The JTIDS Adaptable Surface Interface Terminal (ASIT) Reliability Demonstration Test was successfully completed after 840 hours of failure-free operation.
5 June	Hq AFSC approved the ESD Commander's recommendation to terminate the Tactical Operations Room segment of the Ballistic Missile Early Warning System (BMEWS) program.
10 June	A COBRA JUDY dedication ceremony was carried out on board the USNS Observation Island at Pier 6, Boston Marine Industrial Park, Massachusetts.
15 July	The first functional test flight of the first U. S. E-3A "Standard" aircraft (US-23) was successfully flown.
29 July	COBRA JUDY environmental radiation hazard and X-ray testing were successfully accomplished.
30 September	During FY-1981, the following organizations were recipients of the Air Force Organizational Excellence Awards: the Administrative Management Office of the Deputy for Airborne Warning and Control System (YWA), the Deputy for Contracting (PK), the E-4 Systems Program Office (YS), the Engineering Division of the Air Force Satellite Communications (AFSATCOM) Program Office (DC), the Operation Application of Special Intelligence Systems (OASIS) Program Office (DCI) and the Telecommunications Directorate (DCK) of the Deputy for Communications and Information Systems (DC).
1 October	Magnavox signed a $23.7 million contract for the production of 2,400 HAVE QUICK modification kits and ancillary equipment.
1 October	The Command, Control, Communications (C^3) Countermeasures Deputate was established at ESD and designated the AFSC focal point for all C^3 Countermeasures RDT&E and acquisition activities within AFSC.

1981 (cont'd)

7 October	The first NATO E-3A aircraft (N-1) successfully completed its first Production Acceptance Test flights.
9 October	ESD issued a final environmental statement concerning the conduct of Over-the-Horizon Backscatter (OTH-B) radar operations in Maine.
28 October	Congress voted in favor of the proposed sale of E-3A and tanker/cargo aircraft to Saudi Arabia.
30 October	E-3A Test System #3 (TS-3) completed Air Force Development, Test and Evaluation (AFDT&E) and Initial Operational Test and Evaluation (IOT&E) of the U. S./NATO Standard configuration.
13 November	A major milestone of the HAVE QUICK and E-3A AWACS Programs was achieved with the first flight of an E-3A AWACS aircraft equipped with a production HAVE QUICK ship set.
23 November	The HAVE QUICK Program Office received the Air Force Organizational Excellence Award.
24 November	Major General John T. Buck, ESD Deputy for E-3A, presented the First Annual ESD Contractor Excellence Award to the Magnavox Government and Industrial Electronics Company of Fort Wayne, Indiana, for their work on the HAVE QUICK program.
1 December	A major organizational realignment arranged ESD project offices into three new major mission areas. The new divisions were entitled the Deputy for Strategic Systems (SC), Deputy for Tactical Systems (TC), and Deputy for Mission Support Systems (OC).
4 December	The 25th Production E-3A aircraft (P-23, S.N. 0137) was delivered to Tinker AFB.
27 December	The new Systems Management Engineering Facility I (SMEF-I) was inspected and accepted by the Army Corps of Engineers, New York District.

1982

29 January	The first NATO E-3A aircraft (N-1, S.N. 0442) was delivered to Geilenkirchen AB, Federal Republic of Germany, the main operating base (MOB) for the NATO airborne early warning (AEW) program.
25 February	ESD awarded a $44.7 million contract for SEEK TALK Phase II Full Scale Engineering Development to Hazeltine Corp., Greenlawn, New York.

1 April	ESD Detachment 15 was designated and activated at Hq Strategic Air Command, Offutt AFB, Nebraska, by AFSC Special Order G-1.
6 April	The 26th Production E-3A aircraft (P-24), S.N. 0138) was delivered to Tinker AFB, Oklahoma.
10 May	Hq USAF issued an updated E-3A Program Management Directive (PMD No. RP 2057(40)/27417F) which increased the size of the E-3A force from 34 to 46 aircraft.
19 May	The second NATO E-3A aircraft (N-2, S.N. 0443) was delivered to Geilenkirchen AB, Federal Republic of Germany.
30 June	The first Joint Tactical Information Distribution System (JTIDS) Class 1 TDMA terminal was delivered to the Air Force by Hughes Aircraft Company.
30 June	The Saudi Arabian Government signed the PEACE SENTINEL I Letter of Offer and Acceptance (LOA) providing for the acquisition of five E-3A AWACS aircraft and six aerial refueler tankers.
1 July	ESD awarded a contract to R&D Associates, Marina, Del Rey, California, for the Initial Connectivity Capability (ICC) phase of the Ground Wave Emergency Network (GWEN) program.
23 July	ESD and Magnavox completed negotiations on a contract price of $22,789,000 for the purchase of 3,080 additional HAVE QUICK modification kits for 3,021 aircraft and 560 kits for 459 ground systems.
23 July	The 27th Production E-3A aircraft (P-25, S.N. 0139) was delivered to Tinker AFB, Oklahoma.
30 July	The new Systems Management Engineering Facility (SMEF-I) was officially dedicated in honor of former ESD Commander, Lt. Gen. John W. O'Neill.
19 August	The third NATO E-3A aircraft (N-3, S.N. 0444) was delivered to Geilenkirchen AB, Federal Republic of Germany.
30 September	During FY-1982, the HAVE QUICK Program Office (DCY-2) of the Deputy for Communications and Information Systems (DC) received the Air Force Organizational Excellence Award.
1 October	The E-3A Program completed Program Management Responsibility Transfer from AFSC to AFLC.
18 October	The 28th E-3A production aircraft (P-26, 810004) was delivered to Tinker AFB, Oklahoma.
12 November	The 4th NATO E-3A aircraft (N-4, 790445) was delivered to Geilenkirchen AB, Federal Republic of Germany.

1983

24 January	ESD accomplished Program Management Responsibility Transfer (PMRT) for follow-on HAVE QUICK production to Warner-Robins Air Logistics Center (WR-ALC), Robins AFB, Georgia.
1 February	The Deputy for Technical Operations and Product Assurance (TO) merged with the Directorate of Electronic Logistics, Air Force Acquisition Logistics Division (AFALD/LWE) to form the Deputy for Acquisition Logistics and Technical Operations (AL).
16 February	ESD awarded Thin Line Connectivity Capability design contracts, Phase II of the Ground Wave Emergency Network (GWEN) Program, to Rockwell-Collins and Radio Corporation of America (RCA).
10 March	The 5th NATO E-3A aircraft (N-5, 790446) was delivered to Geilenkirchen AB, Federal Republic of Germany.
25 March	An ESD Resources Utilization Board was established to assess optimum use of resources.
13 April	Ground was broken for a second new Systems Management Engineering Facility (SMEF-II) to replace the old Bldg. #1223 complex.
20 April	The 29th E-3A production aircraft (P-27, 810005) was delivered to Tinker AFB, Oklahoma.
3 June	ESD released a Request for Proposal to the Raytheon Company for the PAVE PAWS Expansion Program.
5 June	The 6th NATO E-3A aircraft (N-6, 790447) was delivered to Geilenkirchen AB, Federal Republic of Germany.
17 June	Contractors broke ground for the $8 million Over-the-Horizon Backscatter (OTH-B) radar operations center at Bangor Air National Guard Base, Maine.
22 June	Hq USAF directed implementation of the Seek Score production phase.
27 June	The 7th NATO E-3A aircraft (N-7, 790448) was delivered to Geilenkirchen AB, Federal Republic of Germany.
29 July	ESD awarded a contract to Raytheon for construction and installation of a two-faced, phased array radar at Site I, Thule, Greenland, for the Ballistic Missile Early Warning System (BMEWS).
29 July	The 30th E-3A production aircraft (P-28, 820006) was delivered to Tinker AFB, Oklahoma.
19 August	The 8th NATO E-3A aircraft (N-8, 790449) was delivered to Geilenkirchen AB, Federal Republic of Germany.

September	The first JTIDS Class 1 production terminals were installed in the E-3A production aircraft.
September	A Memorandum of Understanding (MOU) was signed by the United States and the United Kingdom outlining the conditions governing the JTIDS Class 2 TDMA terminal cooperative development program.
30 September	During FY-1983, the following ESD organizations were awarded with the Air Force Organizational Excellence Award: Air Traffic Control Systems Directorate (OCN), COBRA JUDY System Program Office (OCD-1), and the North American Airspace Surveillance Systems Directorate (OCU) of the Deputy for Mission Support Systems (OC), the Joint Exploitation and Dissemination of Intelligence (JEDI) System Program Office (DCM) of the Deputy for Communications and Information Systems (DC), the Deputy for Development Plans (XR) and the Electromagnetic Compatibility Analysis Center (ECAC).
30 September	The Small Disadvantaged Business Utilization Office (BC) was the recipient of the Air Force Small and Disadvantaged Business Award during FY-1983.
30 September	The Directorate of Management Services (IM) received the FY-1983 AFSC Top Cost and Management Analysis Office Award.
30 September	The AN/TRC-170 Digital Troposcatter Radio Development and Acquisition Team (TC) received the Deputy Secretary of Defense Superior Management Award.
13-14 October	The 1983 National Security Issues Symposium on "Coalition Defense and C^3I" was co-sponsored by ESD and the MITRE Corporation.
21 October	ESD awarded a contract to RCA Government Communication Systems of Camden, New Jersey, for fabrication and deployment of the Thin Line Connectivity Capability (TLCC) phase (Phase II) of the Ground Wave Emergency Network (GWEN) Program.
25 October	Agreement was reached between U.S. and German officials to establish an integrated bi-national EIFEL System Program Office (SPO) in Bonn, Federal Republic of Germany.
10 November	ESD formally awarded the basic contract for the PAVE PAWS Expansion Program to Raytheon.
15 November	A successful Critical Design Review (CDR) of the HAVE QUICK GRC-171 Multiplexing (MUX) Network was conducted at Rockwell-Collins, Cedar Rapids, Iowa.

1983 (cont'd)

2 December	Headquarters USAF notified Air Force Systems Command of Royal Saudi Air Force (RSAF) acceptance of the PEACE SENTINEL Letter of Offer and Acceptance (LOA) option #1 for two additional KE-3A tanker/cargo aircraft.
5 December	ESD awarded a contract to Rediffusion Simulation Ltd., of Crawley, England, for an upgrade of the AWACS flight simulator located at Tinker AFB, Oklahoma.
23 December	The Air Force declared full operational capability (FOC) for the first seven Region Operations Control Centers (ROCCs) of the Joint Surveillance System (JSS).
December	The 4950th Test Wing, Wright-Patterson AFB, Ohio, was designated as the Joint STARS Responsible Test Organization (RTO).

1984

19 January	The Saudi Arabian Government (SAG) accepted PEACE SENTINEL LOA amendment No. 1 covering the installation of General Electric CFM-56 engines in lieu of the T-33 engines on all RSAF aircraft being acquired under the PEACE SENTINEL Program (five E-3A aircraft and eight KE-3A tanker/cargo aircraft).
6 February	The Air Force issued a final Environmental Impact Statement (EIS) that concluded that construction and operation of the West Coast Radar System (WCRS) of the Over-the-Horizon Backscatter (OTH-B) Radar Program would not significantly alter the environment.
22-23 February	System Design Review (SDR) for the PAVE PAWS Expansion Program was successfully conducted by Raytheon.
29 February	ESD awarded the contract for Initial HAVE QUICK Software Improvements to Magnavox, Fort Wayne, Indiana.
March	Secretary of Defense Caspar W. Weinberger approved the Air Force selection of Mountain Home AFB, Idaho, as the operations center for the WCRS of the OTH-B Radar Program, Buffalo Flat, Oregon, as the WCRS transmitter site, and Rimrock Lake, California, as the WCRS receiver site.
3 April	One of the major milestones of the Joint Tactical Information Distribution System (JTIDS) Program was achieved when the Air Force accepted the first Full Scale Engineering Development (FSED) Army Class 2 terminal from the contractor, Singer-Kearfott.

10-12 April	Detachment 9, ESD-Europe, sponsored and hosted an ESD/USAFE Command, Control, and Communications (C^3) Symposium attended by 120 people representing all NATO countries (as well as France) and several major Air Force Commands.
6 May	Lieutenant General James W. Stansberry, ESD Commander, announced the formation of an Intelligence Advisory Council to coordinate and further enhance ESD's intelligence capabilities.
11 May	General Charles A. Gabriel, USAF Chief of Staff, and General John A. Wickham, Jr., United States Army Chief of Staff, signed a Joint STARS Memorandum of Understanding (MOU).
8 June	The Full Scale Development HAVE QUICK II Improvements letter contract was issued to Magnavox.
13 June	One of the major milestones of the Joint Tactical Information Distribution System (JTIDS) Program was attained with the Air Force acceptance of the first production Adaptable Surface Interface Terminal (ASIT).
18-22 June	One of the major milestones of the Enhanced JTIDS System (EJS) Program was achieved when EJS completed a very successful Critical Design Review (CDR) at Hazeltine Corporation.
22 June	ESD issued a Request for Proposal (RFP) to private industry for the establishment of a new Federal Contract Research Center (FCRC) to provide research and development in computer software technology with special emphasis on transitioning advanced software technology into DOD Mission Critical Computer Resource Systems.
25 July	In change-of-command ceremonies held at Hanscom AFB, Lieutenant General Melvin F. Chubb, Jr., assumed command of the Electronic Systems Division from Lieutenant General James W. Stansberry, who retired on 1 August 1984.
10 August	Mr. James Ambrose, Under Secretary of the Army, approved the awarding of a contract for the Joint STARS Ground Station Module (GSM) to Motorola Corporation, Phoenix, Arizona.
15 August	ESD awarded a two-phased firm-fixed-price contract to Logicon, Inc., of San Diego, California, for the completion of a trainer that simulates the physical and functional characteristics of the operational E-3 Data Processor and Data Display equipment and computer programs.

31 August	Space Command accepted control over the new Missile Impact Predictor (MIP) computers at BMEWS Sites I (Thule, Greenland), II (Clear, Alaska), and III (Royal Air Force (RAF) Fylingdales, U.K.) and declared their initial operational capability (IOC) effective on the same date.
August	A pre-Full Scale Development (FSD) version of the Joint STARS Ground Station Module (GSM), referred to as the Development, Deployment and Demonstration (D^3) GSM, was deployed to Europe for testing.
10 September	Lieutenant General Melvin F. Chubb, Jr., ESD Commander, established the Directorate of Information Systems (SI) to serve as the single manager for ESD Information Systems.
26 September	ESD released the AF SINCGARS Request for Proposal (RFP) to industry.
30 September	During FY 1984 the Ground Based Electrical Deep Space Surveillance Program (SC) and the Physical Security Systems Directorate (OC) Received AF Force Organizational Excellence Awards.
28 September	One of the major milestones of the Joint STARS Program was attained with the release to industry of the Joint STARS Full Scale Development (FSD) Request for Proposal (RFP).
1 October	The Government of Somalia signed a $6.5 million Letter of Offer and Acceptance which initiated the PEACE CUBE program.
1 October	ESD awarded a $1,306,169,000 contract to the Massachusetts Institute of Technology (MIT) Lincoln Laboratory for continued research and development in advanced electronics.
4 October	The first production TRI-TAC Digital Troposcatter Radios, AN/TRAC-170s, were delivered, three months ahead of schedule.
29 October	An $83.6 million contract was awarded to the General Electric Company for production of Sector 3 of the OTH-B East Coast Radar System.
31 October	ESD definitized the HAVE QUICK IIA Full Scale Development (FSD) contract, worth $8.8 million, and distributed it to Magnavox, Fort Wayne, Indiana.
7 November	Installation of radar hardware at Site I, Thule, Greenland, for the Ballistic Missile Early Warning System (BMEWS) was begun.
9 November	The Strategic Defense Initiative Cadre (XR-1) was formed within the ESD Deputy for Development Plans (XR).

1984 (cont'd)

26 December	A new Program Management Directive (PMD) was issued for acquisition and deployment of the OTH-B Radar program.
28 December	A $103,068,144 contract was awarded to Carnegie-Mellon University to establish the DOD Software Engineering Institute.

1985

4 January	RCA, Camden, New Jersey, signed the restructured contract for GWEN Thin Line Connectivity Capability (TLCC). This contract covered the fabrication and deployment of the TLCC along with the option prices and was issued at $122 million.
17 January	The Assistant to Chief of Staff position was established at ESD.
21-30 January	The Joint STARS Ground Station Module (GSM) successfully participated in the Reforger 85 exercise in Europe.
31 January	The first E-3 Flight Crew Training (FCT) aircraft, a modified Boeing 707, arrived at Tinker AFB, Oklahoma.
January	The ESD Directorate of Acquisition Engineering (ESD/DE) received all GWEN lease decision authority in an effort to save time with a reduced bureaucracy.
4 February	The Senior Technical Director position was established at ESD.
25 February	A contract was awarded to The Boeing Company in the amount of $848 million for the PEACE SHIELD program. This was the single largest contract ever awarded by ESD.
28 February	ESD released the Request for Proposal for the JTIDS Class 2 Terminal Follow-on Full Scale Development to Singer-Kearfott, Little Falls, New Jersey.
5 March	ESD awarded a $6.1 million Firm-Fixed Price (FFP) contract to Magnavox for the production of 9,610 HAVE QUICK expanded memory and read only memory (ROM) clock boards.
15 March	Interface tests between the BMEWS Site I (Thule, Greenland), radar and NORAD Cheyenne Mountain Complex, Colorado Springs, Colorado, were successfully completed.
20 March	A configuration item test of the radar beam forming network at Site I was successfully accomplished; this was the first formal test of an antenna array subsystem for the BMEWS Upgrade Program.

27-29 March	The Critical Design Review (CDR) for HAVE QUICK II was held at Magnavox.
March	The Secretary of Defense approved the Air Force site selection for OTH-B West Coast Radar System.
24 April	The Systems Management Engineering Facility II (SMEF-II) was dedicated to the memory of former Air Force Systems Command (AFSC) Commander General George S. Brown.
7-9 May	Detachment 9 (ESD-Europe) co-sponsored the second conference on "C^3I Programs in Support of NATO C^2," with U.S. Air Forces in Europe.
13 May	The Request for Proposals were released to industry for the PEACE CUBE Program.
30-31 May	The first milestone in Raytheon's revised software schedule for the BMEWS Site I radar upgrade was reached when testing of the control processor configuration items was successfully performed.
31 May	Part I of the Critical Design Review (CDR) for HAVE QUICK IIA, covering the synthesizer and computer, was successfully comleted at Magnavox.
31 May	A major milestone of the HAVE QUICK program was achieved when Rockwell-Collins delivered the last HAVE QUICK-modified GRC-171(V)4 radio to the Sacramento Air Logistics Center (SM-ALC).
3 June	A Program Management Directive (PMD) was issued for development of a Central Radar System and an Alaskan Radar System for the OTH-B Radar Program.
6 June	Lorral-TerraCom, San Diego, California shipped the first TRI-TAC Troposcatter Satellite Support Radios (TSSRs).
18 June	The first JTIDS Class 2 terminal was successfully flight-tested on an F-15 at McDonnell Douglas Aircraft.
26 June	Array plate installation for the Site I, Thule, Greenland, BMEWS radar was completed.
28 June	Under the terms of an amended Joint STARS Program Management Directive (PMD 6027(14)/64770F/63770F/27581F), the scope of the Joint STARS Full Scale Development (FSD) effort was reduced from four C-18 aircraft to three C-18 aircraft.

28 June	ESD awarded a contract to IIT (Illinois Institute of Technology) Research Institute for $83,156,491 for engineering services to the Electromagnetic Compatibility Analysis Center (ECAC).
2 July	ESD awarded the $9.2 million (Fixed-Price Incentive) Full Scale Development contract for SINCGARS airborne radios to Cincinnati Electronics Corporation, Cincinnati, Ohio, and McDonnell Douglas Electronics Company, St. Charles, Missouri, in a leader-follower arrangement.
5 July	ESD awarded six contracts to industry for $12.5 million for Battle Management/Command, Control and Communications (BM/C^3) architecture studies to support the Air Force portion of the Strategic Defense Initiative (SDI).
24-25 July	Part II of the Critical Design Review (CDR) for HAVE QUICK IIA, involving the power supply and receiver, was successfully accomplished at Magnovox.
July	With integration of the radar signal processor into the upgraded BMEWS Site I radar subsystem, one complete string of hardware configuration items was available for completion of development, test and evaluation in the US.
August	GWEN Initial Connectivity Capability, or Phase I, was deployed.
12 September	ESD awarded the contract for the E-3 Facility for Interoperability Test (FIT), worth $14.1 million, to Boeing.
17 September	A formal Request for Proposal (RFP) was released for the procurement of the OTH-B West Coast Radar System.
19 September	A major milestone of the PEACE SENTINEL program was attained with the successful first flight of Saudi E-3 #1.
27 September	The Joint STARS Joint Program Office awarded the Joint STARS Full Scale Development (FSD) contract, worth $657 million to Grumman Aerospace Corporation, Bethpage, New York.
30 September	During FY-1985, the Comptroller Office (AC) was awarded the Air Force Organizational Excellence Award and the USAF Clinic (SG) received the Air Force Outstanding Unit Award.
11 October	The E-3 Airborne Warning and Control System (AWACS) Flight Simulator Improvement Program (FSIP) was completed with the delivery of the simulator to Tinker AFB, Oklahoma.

1985 (cont'd)

7 November	The Joint Tactical Information Distribution System (JTIDS) Class 2 Bilingual Terminal was successfully flight tested in a T-39 aircraft at the McDonnell Douglas Aircraft Company (McAir).
27 November	ESD released the competitive Request for Proposal (RFP) for the OTH-B West Coast Radar System (WCRS).
6 December	The Deputy Commander for Tactical Systems (TC) was reorganized to include the Deputy for AWACS (YW) and renamed the Deputy Commander for Tactical Systems, JTIDS and AWACS.
6 December	The Joint STARS Program Office (TCG) became a separate deputate, the Deputy Commander for Joint STARS (JS).
24 December	ESD awarded a contract, worth $70,010,831, to System Development Corporation for the Royal Thai Air Defense System (RTADS).
31 December	ESD awarded a 27-month JTIDS Class 2M Terminal Full Scale Development (FSD) contract, worth $23,706,981, to Singer-Kearfott.

1986

6 January	Development Test and Evaluation (DT&E) of HAVE QUICK II began at Eglin AFB, Florida.
17 January	General Lawrence A. Skantze levied a quota of 168 as the ESD share of HQ AFSC-directed civilian manpower reductions.
27 January	Major General Thomas C. Brandt assumed duty as Vice Commander of ESD.
3 February	System DT&E testing commenced at the Southeast PAVE PAWS Site.
17-21 February	Initial tests were inaugurated on the first Joint STARS FSD Ground Station Module (GSM).
18 February	Headquarters USAF assigned an Air Force Special Emphasis Precedence Rating of 1-1 to all Air Force SDI programs.
February	A contract worth $9,670,900 for construction of a new System Management Engineering Facility (SMEF III) was awarded to the P. J. Stella Company.
15 March	The Deputy for Acquisition Logistics and Technical Operations (AL) was reorganized as the Deputy for Product Assurance and Acquisition Logistics (PL).

27 March	A contract worth $16.1 million for a Joint STARS Downsized Ground Station Module (DGSM) was awarded to Motorola.
13 April	The E-3 AWACS Flight Crew Training System (FCTS) and Data Display Training Set (DDTS) completed Installation and Checkout (I&CO) at Riyadh Air Base, Saudi Arabia, and was formally accepted by the Royal Saudi Air Force.
14 April	ESD was designated as the lead agency in establishing the SDI National Test Bed (NTB) Joint Program Office.
28 April-2 May	The MILSTAR Terminal Program Office successfully completed its first software Preliminary Qualification Test (PQT).
19 May	The Directorate of Acquisition Engineering (DE) became a deputate, the Deputy Commander for Acquisition Civil Engineering (DE).
3 June	ESD released the Ballistic Missile Early Warning System (BMEWS) Site III Upgrade RFP to the Raytheon Equipment Division.
5 June	System DT&E testing was successfully completed at the Southeast PAVE PAWS Site.
8 June	A major milestone of the BMEWS Modernization Program was achieved when the Upgraded BMEWS Site I Radar at Thule, Greenland, tracked its first satellite.
11 June	Headquarters USAF notified the AFSC Vice Commander that the Mission Design Series (MDS) for the Joint STARS platform was changed from the EC-18C aircraft to the E-8A aircraft.
25 June	Lieutenant General James A. Abrahamson, SDIO Director, announced the selection of Falcon Air Force Station, Colorado, as the preferred site for the SDI National Test Facility, the heart of the NTB.
27 June	A ground-breaking ceremony for the OTH-B WCRS operations center was held at Mountain Home AFB, Idaho.
29 June	Saudi AWACS E-3 #3 became the first E-3 AWACS aircraft delivered to Saudi Arabia under the PEACE SENTINEL program.
10 July	TAC accepted turnover of the JTIDS ASIT for the Continental United States (CONUS).

23 July	Headquarters AFSC issued an AFSC Program Direction (Form 56) tasking ESD to act as the Responsible Test Organization (RTO) for the Joint STARS Program.
25 July	Martin Marietta and Rockwell were selected from the four Phase I NTB contractors to continue the Phase II preliminary NTB design.
25-28 July	Formal Qualification Testing (FQT) of the BMEWS Mission software was successfully accomplished.
8 August	A new intelligence deputate, the Deputy Commander for Intelligence and C^3CM Systems (IC), evolved from the Deputy Commander for Intelligence, C^3CM and Support Systems (OC).
8 August	Elements of the Deputy Commander for Intelligence, C^3CM and Support Systems (OC) were combined with the Deputy Commander for Development Plans (XR) to form the Deputy Commander for Development Plans and Support Systems (XR).
15 August	System DT&E testing commenced at the Southwest PAVE PAWS Site.
29 August	ESD awarded a contract worth $32.4 million to Hughes Aircraft for the FY 1985 Buy of JTIDS Class 1 Time Division Multiple Access (TDMA) terminals.

ESD COMMANDERS

Officer	Tenure
Major General Kenneth P. Bergquist	1 April 1961 - 16 February 1962
Brigadier/Major General Charles H. Terhune, Jr.	16 February 1962 - 15 July 1964
Major General John W. O'Neill	15 July 1964 - 1 July 1967
Major General John B. Bestic	1 July 1967 - 31 July 1968
Major General Joseph J. Cody, Jr.	1 August 1968 - 29 October 1971
Major General Albert R. Shiely, Jr.	29 October 1971 - 29 March 1974
Major General Benjamin N. Bellis	29 March 1974 - 11 October 1974
Major/Lieutenant General Wilbur L. Creech	11 October 1974 - 2 May 1977
Lieutenant General Robert T. Marsh	2 May 1977 - 28 January 1981
Major/Lieutenant General James W. Stansberry	28 January 1981 - 25 July 1984
Lieutenant General Melvin F. Chubb, Jr.	25 July 1984 -

ESD AUTHORIZED AND ASSIGNED STRENGTH (Military and Civilian)

Date	Manpower	
	Authorized	Assigned
1 Sep 61	1617	1506
5 Jan 62	1549	1520
1 Jul 62	1581	1510
1 Jan 63	1633	1608
1 Jul 63	2252	2202
1 Jan 64	2300	2217
31 Jul 64	2094	2070
31 Dec 64	2136	2138
31 Jan 65	2168	2146
1 Dec 65	2233	2121
1 Jan 66	2248	2073
1 Dec 66	2066	2009
1 Jan 67	2153	2045
1 Jul 67	2091	1991
1 Jan 68	2126	1956
1 Jul 68	2036	1904
31 Dec 68	1998	1887
31 May 69	1987	1890
30 Nov 69	1963	1870
1 Jan 70	2044	1883
1 Jul 70	2070	2002
1 Jan 71	1978	1969

Date	Authorized	Assigned
30 Jun 71	2238	2156
31 Dec 71	2363	2256
30 Jun 72	2036	2033
31 Dec 72	2160	2118
30 Jun 73	2150	2039
31 Dec 73	2213	2064
30 Jun 74	2216	2126
31 Dec 74	2271	*
30 Jun 75	2496	*
1 Jan 76**	3964	*
30 Jun 76	3958	3857
31 Dec 76	3930	3699
30 Jun 77	3912	3670
31 Dec 77	3843	3609
30 Jun 78	3857	*
31 Dec 78	3954	*
30 Sep 79	3798	3551
30 Sep 80	3769	3483
30 Sep 81	3742	3618
30 Sep 82	3853	3557
30 Sep 83	3924	3631
30 Sep 84	3939	3716
30 Sep 85	4162	3812
30 Sep 86	4019	3685

*Not Available
**RADC assigned to ESD 1 Sep 1975

GLOSSARY

AABNCP	Advanced Airborne Command Post
AAFEES	Automated Armed Forces Examining and Entrance Station
1ACCS	1st Airborne Command and Control Squadron
ADC	Air Defense Command Aerospace Defense Command
ADES	Air Defense Engineering Services
ADM	Advanced Development Model
ADSID	Air Defense Systems Integration Division
ADSMO	Air Defense Systems Management Office
AEW	Airborne Early Warning
AEW&C	Airborne Early Warning and Control
AFA	Air Force Association
AFALD	Air Force Air Logistics Division
AFBMD	Air Force Ballistic Missile Division
AFCAO	Air Force Computer Acquisition Office
AFCCDD	Air Force Command and Control Development Division
AFCRC	Air Force Cambridge Research Center
AFCRL	Air Force Cambridge Research Laboratories
AFCS	Air Force Communications Service
AFDT&E	Air Force Development, Test and Evaluation
AFER	Air Force Engineering Responsibility
AFICCS	Air Force Integrated Command and Control System
AFLC	Air Force Logistics Command
AFRD	Air Force Research Division
AFSAB	Air Force Scientific Advisory Board

AFSARC	Air Force Systems Acquisition Review Council
AFSATCOM	Air Force Satellite Communications
AFSC	Air Force Systems Command
AIDS	Automated Intelligence Data System
AIMS	Air Traffic Control Radar Beacon System/Identification Friend or Foe/Mark XII System
ALRI	Airborne Long Range Input
AMA	Air Materiel Area
AMC	Air Materiel Command
ARDC	Air Research and Development Command
A/RIA	Apollo/Range Instrumented Aircraft
ARS	Alaskan Radar System
ASIT	Adaptable Surface Interface Terminal
ATEC	Automated Technical Control
ATMS	Aircraft Turbulence Measuring System
AUTOVON	Automatic Voice Network
AWACS	Airborne Warning and Control System
AWACW	Airborne Warning and Control Wing
AWRS	Airborne Weather Reconnaissance System
BADGE	Base Air Defense Ground Environment
BM/C^3	Battle Management/Command, Control and Communications
BMEWS	Ballistic Missile Early Warning System
BUIC	Back-Up Interceptor Control
C^3	Command, Control and Communications
C^3I	Command, Control, Communications and Intelligence
CAS	Centralized Alarm System

CASOFF	Control and Surveillance of Friendly Forces
CDR	Critical Design Review
CEIS	Candidate Environmental Impact Statement
CINCSAC	Commander-in-Chief, SAC
CMCMO	Cheyenne Mountain Complex Management Office
COC	Combat Operations Center
CONAD	Continental Air Defense
CONUS	Continental United States
COPA	Civilian Overage Pending Assignment
CORTS	Conversion of Range Telemetry Systems
CPGSC	Computer Program Ground Support Capability
CPIF	Cost Plus Incentive Fee
CRS	Central Radar System
CSEG	Communications Systems Engineering Group
DCA	Defense Communications Agency
DCS	Defense Communications System
D^3	Development, Deployment and Demonstration
DDT&E	Design, Development, Test and Evaluation
DDTS	Data Display Training Set
DEB	Digital European Backbone
DEW	Distant Early Warning
DGSM	Downsized Ground Station Module
DOB	Dispersal Operating Base
DOD	Department of Defense
DPS	Data Processing System
DT&E	Development, Test and Evaluation

EAME	European-African-Middle Eastern
ECAC	Electromagnetic Compatibility Research Center
ECI	Electronic Communications, Inc.
ECP	Engineering Change Proposal
ECRS	East Coast Radar System
EDP	Electronic Data Processing
EIS	Environmental Impact Statement
EJS	Enhanced JTIDS System
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EMS	Emergency Medical Service
EPA	Environmental Protection Agency
ERS	Experimental Radar System
ESC	Electronic Systems Center
ESD	Electronic Systems Division
ESSPO	Electronic Supporting System Project Office
FAA	Federal Aviation Agency
FAC	Forward Air Control
FCA	Functional Configuration Audit
FCC	Federal Communications Commission
FCRS	Federal Contract Research Center
FCT	Flight Crew Training
FCTS	Fligh Crew Training System
FFP	Firm Fixed Price
FIT	Facility for Interoperability Test
FOC	Final Operational Capability Full Operational Capability

FPAA	Final Procurement Action Authorization
FQT	Formal Qualification Testing
FSD	Full Scale Development
FSED	Full Scale Engineering Development
FSIP	Flight Simulator Improvement Program
GE	General Electric Company
GSM	Ground Station Module
GWEN	Ground Wave Emergency Network
HADS	Hawaiian Air Defense System
HIT	Hughes Improved Terminal
IBM	International Business Machines Corporation
ICBM	Intercontinental Ballistic Missile
ICC	Initial Connectivity Capability
I&CO	Installation and Checkout
ILSO	Integrated Logistics Support Office
IOC	Initial Operational Capability
IIT	Illinois Institute of Technology
IOT&E	Initial Operational Test and Evaluation
JACC/CP, JACKPOT	Joint Airborne Communications Center/Command Post
JPO	Joint Program Office
JSS	Joint Surveillance System
Joint STARS	Joint Surveillance Target Attack Radar System
JTIDS	Joint Tactical Information Distribution System
JUMPS	Joint Uniform Military Pay System
LASA	Large Aperture Seismic Array

LES	Lincoln Experimental Satellite
LOA	Letter of Offer and Acceptance
LORAN	Long Range Navigation
LRIP	Low Rate Initial Procurement
McAir	McDonnell Douglas Aircraft Company
MDS	Mission Design Series
MEDCOM	Mediterranean Communications
MEECN	Minimum Essential Emergency Communications Network
MIP	Missile Impact Predictor
MIT	Massachusetts Institute of Technology
MMOU	Multilateral Memorandum of Understanding
MOB	Main Operating Base
MOD	Modernization
MOU	Memorandum of Understanding
MUX	Multiplexing
MSC	Military Sealift Command
MSF	Management of Strategic Forces
NAPMA	NATO Airborne Early Warning Program Management Agency
NAPO	NATO AWACS Program Office
NASA	National Aeronautics and Space Administration
NBS	National Bureau of Standards
NEACP	National Emergency Airborne Command Post
NMCS	National Military Command System
NORAD	North American Air Defense Command
NTB	National Test Bed
NUDETS	Nuclear Detonation Detection and Reporting System

OAR	Office of Aerospace Research
OSD	Office of Secretary of Defense
OTH-B	Over-the-Horizon Backscatter
PACCS	Post-Attack Command and Control System
PACCS/ADA	Post-Attack Command and Control System/Airborne Data Automation
PCA	Physical Configuration Audit
PMAG	Program Management Assistance Group
PMD	Program Management Directive
PMR	Program Management Review
PMRT	Program Management Responsibility Transfer
PQT	Preliminary Qualification Test
PRESS	Pacific Range Electromagnetic Signature Studies
RADC	Rome Air Development Center
RADS	Ryukyu Air Defense System
RAF	Royal Air Force
RCA	Radio Corporation of America
RCAF	Royal Canadian Air Force
RDT&E	Research, Development, Test and Evaluation
RF	Radio Frequency
RFP	Request for Proposal
ROAMA	Rome Air Materiel Area
ROCCs	Regional Operations Control Centers
ROM	Read Only Memory
RSAF	Royal Saudi Air Force
RTADS	Royal Thai Air Defense System

RTO	Responsible Test Organization
SAC	Strategic Air Command
SACCS	SAC Automated Command Control System
SACDIN	Strategic Air Command Digital Network
SACOPS/SACCS	Strategic Air Command Operational Planning System/Strategic Air Command Control System
SAF	Spanish Air Force
SAG	Saudi Arabian Government
SAGE	Semi-Automatic Ground Environment
SAIDS	Space Analyst Intervention Display System
SAS	Semi-Automatic Segment
SAT	System Acceptance Test
SCRAPP	Sandwich Citizens Rallied Against PAVE PAWS
SDI	Strategic Defense Initiative
SDR	System Design Review
SEALR	Southeast Asia Logistics Requirement
SEAOR	Southeast Asia Operational Requirement
SEM	Space Environment Monitoring
SID	System Integration Demonstration
SLBM	Sea Launched Ballistic Missile
SM-ALC	Sacramento Air Logistics Center
SMEF	Systems Management Engineering Facility
SOON	Solar Observing Optical Network
SOU	Statement of Understanding
SPADATS	Space Detection and Tracking System
SPASUR	Space Surveillance System

SPO	System Program Office
SRI	Stanford Research Institute
SRK	SACCS Replacement Keyboard
STRICOM	Strike Command
TAC	Tactical Air Command
TACAN	Tactical Air Navigation
TACS	Tactical Air Control System
TACSAT	Tactical Satellite
TACSATCOM	Tactical Satellite Communications
TADS	Tactical Air Defense System
TAFSEG	Tactical Air Force Systems Engineering Group
TDMA	Time Division Multiple Access
TGCA	Tactical Ground Control Approach
TIPI	Tactical Information Processing and Interpretation
TLCC	Thin Line Connectivity Capability
TOR	Tactical Operations Room
TRACALS	Traffic Control and Landing System
TSSRs	Troposcatter Satellite Support Radios
USAFE	United States Air Forces Europe
WCRS	West Coast Radar System
WR-ALC	Warner-Robins Air Logistics Center
WSMSG	Weapon System Management Study Group
WWMCCS	World-Wide Military Command and Control System

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