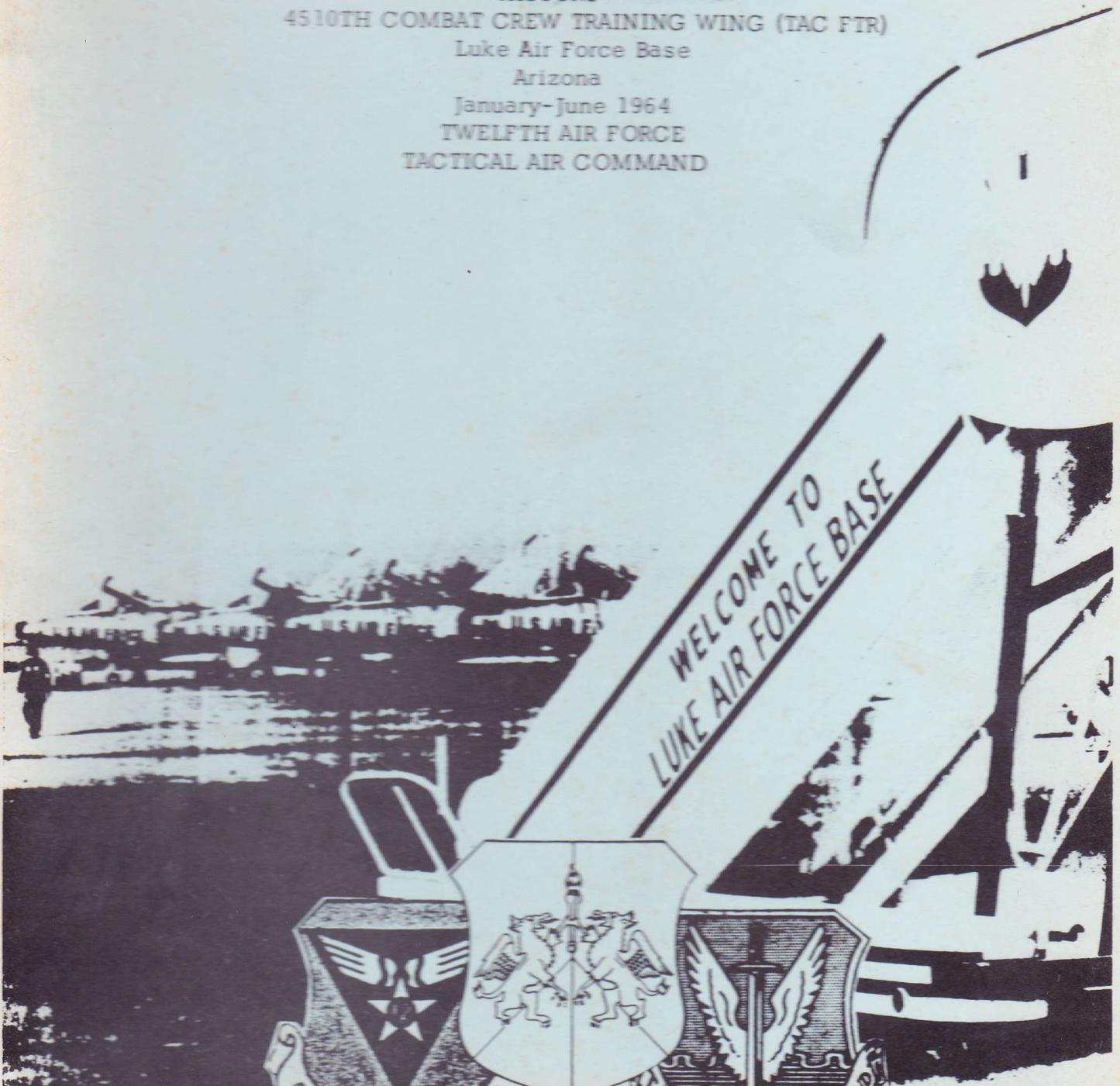


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HISTORY
4510TH COMBAT CREW TRAINING WING (TAC FTR)
Luke Air Force Base
Arizona
January-June 1964
TWELFTH AIR FORCE
TACTICAL AIR COMMAND



"WORLD'S FIRST ALL SUPERSONIC AIR FORCE"

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HISTORY
of the
4510TH COMBAT CREW TRAINING WING (TACTICAL FIGHTER)
Twelfth Air Force, Tactical Air Command
United States Air Force
1 January - 30 June 1964

AUGUSTUS M. HENDRY, Jr.
Colonel, USAF
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Chapter V

UNITED STATES AIR FORCE - GERMAN AIR FORCE F-104G FLYING TRAINING

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Chapter V

UNITED STATES AIR FORCE - GERMAN AIR FORCE F-104G FLYING TRAINING

MISSION

The mission of the 4540th Combat Crew Training Group of the 4510th Combat Crew Training Wing (Tactical Fighter) at Luke Air Force Base, Arizona, was to train German Air Force student pilots in Course 111102G- USAF Advanced Flying School Fighter Course, MAP, F-104.

The 4540th CCTG (Tac Ftr) mission was twofold. The group was tasked to produce combat capable F-104G trained pilots for the Federal Republic of Germany. In turn the group was to administer F-104G instructor pilot training to relatively in experienced pilots of various military assistance program countries which were being provided with F-104G aircraft including; the Federal Republic of Germany, the Netherlands, Belgium, Norway, Greece, Turkey, Japan and the Republic of China.

To accomplish the F-104G combat crew training mission it was necessary for the 4540th CCTG (Tac Ftr) to generate and maintain the capability of giving F-104G academic training, flight simulator training and flight training to allied student pilots of varying degrees of experience. (1)

The special training was authorized on 4 April 1963 when the Federal Republic of Germany signed two contracts with the United States Government. The first contract for undergraduate training for German students in the T-37/T-38 type aircraft was activated in August 1963 at Williams Air Force

(1) UNCLASSIFIED, Col James Jabara, Comdr 4540 CCTGp (Tac Ftr), F-104G Training Briefing, No Date.

Base, Arizona. The second contract provided for advanced pilot training in the F/TF-104G to be given by the 4540th CCTG (Tac Ftr) at Luke AFB beginning in October 1964.

The F-104G Starfighter aircraft was rated by many as the best jet fighter aircraft of the day. It represented a considerably improved and sophisticated version of the earlier model F-104 jet fighter aircraft with an improved engine, better communications facilities and a greatly improved navigational system. The fire control system was of the latest engineering design and provided the pilot with a complete all weather intercept and fighter-bomber capability.

Flying training support in the F-104G was to be accomplished through an aircraft maintenance contract with the aircraft manufacturer, the Lockheed Aircraft Corporation, through a subsidiary corporation the Lockheed Aircraft Service. In turn the LAS was supported by subcontracts with the Autonetics, General Electric and Litton Corporations. The contractors had the total maintenance responsibility for the F-104G in support of the allied combat crew training programs. (2)

Initial official F-104G flying training began at Luke AFB on 1 April 1964 with the first instructor upgrading flight flown in accomplishing training in Course I-111502G- Instructor Pilot F-104G. The 4540th CCTG (Tac Ftr) received excellent support from the contractors and was able to fly on the average of ten sorties a day for the first two weeks of combat crew training operations. (3)

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- (2) UNCLASSIFIED, Col J.D. Collingsworth, Comdr 4540 CCTGp (Tac Ftr), F-104G Training Operations Briefing, 9 Apr 1964.
(3) UNCLASSIFIED, Interview, Col J.D. Collingsworth, Comdr 4510 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 15 Apr 1964.

ORGANIZATION

The German Air Force F-104G Advanced Flying Training originally was to be conducted under an Assistant Deputy Commander for Operations of the 4510th CCTW (Tac Ftr). The wing was notified on 27 January 1964 that the responsibility for the GAF training was to be redesignated to the Director of German Air Force Training.⁽⁴⁾

The designation of the responsibility as Director of German Air Force Training by Headquarters Tactical Air Command was not concurred in by the Twelfth Air Force. The terminology was objectionable in that placing the responsibility for the important function at the directorate level in the deputy commander for operation's office, 4510th CCTW (Tac Ftr) did not fulfill the TAC Commander's stated desire to have a senior officer unencumbered by other responsibilities solely responsible for the success of the German F-104 training program.

The preparation of the order on the officer assigned by the Deputy Commander for Operations of the 4510th CCTW (Tac Ftr) carried with it the connotation of the responsibility for the program. In addition, it appeared very difficult to avoid the Director of German Air Force Training becoming involved in the operational matters of the 4510th CCTW (Tac Ftr) during TDY, leave and other absences of the deputy commander for operations. As a director on the staff of the deputy commander for operations of the 4510th CCTW (Tac Ftr) the officer would undoubtedly encounter difficulty in effectively securing the necessary collateral support required from base activities outside the normal operations channels. Further, the continued

(4) UNCLASSIFIED, TWX DPSO 01 4036, TAC to 4510 CCTWg (Tac Ftr), 27 Jan 1964.

utilization of a colonel as a director could cause the grade to be suspect for withdrawal.

In view of the many factors, it was the considered opinion of the Commander of the Twelfth Air Force, that a combat crew training group should have been established at Luke AFB for the F-104G German Training Program. A briefing was held at the staff meeting of the 4510th CCTW (6) (Tac Ftr), and a letter was sent to 12 AF on a proposed organization. It was endorsed by the commander, 12 AF to TAC with the recommendation (7) that a group report directly to the wing commander.

The 4518th Combat Crew Training Squadron was designated by headquarters TAC on 16 January 1964 and activated on 1 March 1964 as a (8) squadron of the 4510th CCTW (Tac Ftr). It was programmed as a squadron to conduct flying training for German Air Force student pilots in the F-104G. In response to the recommendation of the commander, 12 AF, the 4540th CCTG (Tac Ftr) on 20 February 1964 was designated and organized at Luke AFB by headquarters TAC effective 1 April 1964. At the same time the 4518th CCTS was relieved from assignment to headquarters 4510 CCTW (Tac Ftr) and was assigned to headquarters 4540th CCTG (Tac Ftr effective (9) 1 April 1964.

The organization of the 4540th CCTG (Tac Ftr), as established on 1 April 1964, was not complete and a series of modifications and additions

(6) UNCLASSIFIED, TWX DP 020076, 12 AF, Waco Tex to TAC, Info 4510 CCTW (Tac Ftr), 6 Feb 1964.

(7) UNCLASSIFIED, Minutes Wg Staff Meet, 4510th CCTW (Tac Ftr), 12 Feb 1964.

(8) UNCLASSIFIED, SO G-6, Hq TAC, Langley AFB, Va, 16 Jan 1964.

(9) UNCLASSIFIED, SO G-22, Hq TAC, Langley AFB, Va, 20 Feb 1964.

expanded the organization. The 4443rd Combat Crew Training Squadron was transferred from George Air Force Base, Calif., to Luke AFB shortly after the end of the historical period, in mid July 1964. (10)

In connection with the F-104G Advanced Pilot Training for the German Air Force a reference was made to the USAF agreement to the assignment of a small cadre of GAF personnel at Luke AFB for GAF personnel administration and military training. The GAF desired to send a staff of eight for that purpose; two officers and six enlisted personnel. The GAF further requested that the senior officer be a pilot on flying status and that he be authorized to maintain flying proficiency at Luke AFB. (11)

The 4540th CCTG (Tac Ftr) had a materiel division which did not maintain aircraft, but maintained a liaison with the primary contractor the Lockheed Aircraft Corporation of Burbank, Calif., to insure a quality support of the F-104G flying training program. The contract for F-104G aircraft support contained a clause which required the contractor to establish and maintain a quality assurance program that would insure high quality maintenance. The quality provisions of the prime contract were extended into all levels of subcontracting. The contractor was obligated to deliver the number of flying hours in the F-104G aircraft each month as indicated by the program aircraft and flying hours schedule delivered weekly to the contractor, in a quality aircraft equal to that maintained by the USAF maintenance organizations.

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- (10) UNCLASSIFIED, TWX 010 1056, TAC to OSAF, Info 4510 CCTW (Tac Ftr), 7 May 1964.
(11) UNCLASSIFIED, TWX MGAFFTR 1-2678, CHMAAG, Bonn, Ger to CSAF, Info Luke AFB, 7 Jul 1964.

The major subcontractors, working on the base in connection with the Lockheed Aircraft Corporation in coordination with the Lockheed Aircraft Service Corporation maintaining the F-104G contract were: (1) Autonetics, a division of North American Aviation which built and maintained the radar system; (2) Litton Systems which produced and maintained the inertial navigation system; and (3) General Electric Company which built and maintained the J-79 jet engines used to power the F-104G aircraft.

The Sacramento Air Materiel Area was the procuring activity for the
(12)
GAF F-104G program.

It was the desire of Colonel Augustus M. Hendry, Jr., the Commander of the 4510th CCTW (Tac Ftr), that the Wing, Group, Squadrons and maintenance contractors, accomplishing the GAF F-104G Advanced Training Program, function as a single organization accomplishing a common mission. For that reason Colonel Hendry pointed out that it was very important that the contractors be kept informed of what was happening in every area of the base. Activities such as Exercise Desert Strike placed a heavy overload on Luke AFB which in turn cut down on the assistance which the contractors had been receiving. It was necessary that the contractors know and
(13)
understand the reason why the action was necessary.

CONTRACT FUNDING

The cost of the F-104G advanced pilot training at Luke AFB for the German student pilots was paid by the German Air Force for accomplishing a Military Assistance Sales Contract. The F-104G training to start in

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- (12) UNCLASSIFIED, Col J.D. Collingsworth, Comdr 4540 CCTG (Tac Ftr), F-104G Training Operations Briefing, 9 Apr 1964.
(13) UNCLASSIFIED, Minutes Wg Staff Meet, Hq 4510 CCTW (Tac Ftr), 19 Mar 1964.

October 1964 at Luke AFB was contracted with the GAF for 83 students with a tuition rate of \$190,000 for a total of \$15,800,000.

The rate was developed without the benefit of USAF experience in the F-104G aircraft, the location of the training, the contractor or the contract cost. It was accepted by the GAF with the provision that the rate could be revised upward or downward. Transportation, per diem and living allowances for all GAF personnel involved were not included in the tuition. They remained a direct responsibility of the GAF. The estimated tuition rate included:

- (a) Operating costs of the flying training.
- (b) Contract maintenance costs.
- (c) Depot maintenance costs.
- (d) Contractor expenses.
- (e) Other expenses generated specifically by the training.

The initial contract was for the period 1 January 1964 through 30 June 1965, and was renewable on an annual basis. The Sacramento Air Materiel Area Depot at McClellan Air Force Base, Calif., negotiated the initial contract with the Lockheed Aircraft Corporation and the subcontractors and retained the responsibility for the administration of the F-104G maintenance contract. A secondary Administrative Contracting Officer was established at Luke AFB to exercise the base manager function for SMAMA since all the financial aspects of the contractual maintenance
(14)
were generated on the base.

(14) UNCLASSIFIED, Ltr: Subj: Info Implementation F-104G Pt for GAF on Contract, USAF Res Auditor to Luke AFB, 13 Sep 1963.

The initial contracts covering the F/TF-104G German Pilot Training project were:

<u>Contract Number</u>	<u>Contractor</u>	<u>Contract For</u>
AFO4(606)-12907	Lockheed	F/TF-104G Aircraft Maintenance
AF33(657)-12920	Lockheed	Facilities for Above Contract
AF33(657)-5101	Lockheed	Basic Agreement
AFO4(606)-B-197	Lockheed	Bailment Agreement
	<u>Other Contracts</u>	
AFO4(606)-12484	Lockheed	Modification of F/TF-104G Aircraft
AFO4(606)-12598	Lockheed	AGE and Spares
AFO4(606)-12616	Autonetics	AGE and Spares
AFO4(606)-12600	Litton	AGE and Spares
AFO4(657)-7844	G.E.	AGE and Spares

<u>Contract Number</u>	<u>Contractor</u>	<u>Contract For</u>
AF33(657)-10862	Canadian Commercial Corp.	Installation of Flight Simulators
AF42(600)-27448	Canadian Commercial Corp. (15)	Maintenance of Flight Simulators

The Comptroller, headquarters TAC on 10 January 1964 requested Luke AFB to include a budget item for the F-104G program in the revision of the financial plan. The monies required to operate the Administrative Contracting Officer function were to be included. (16)

The Comptroller of the 4510th Cbt Supt Gp (TAC) had a limited advisory responsibility in the administration of the GAF F-104G advance fighter training contract funds which were administered by SMAMA. The Administrative Contracting Officer certified the obligations in making the payments for the fulfillment of the contract and the payments were made to the contractor by the Phoenix Contract Management Region. (17)

KEY PERSONNEL

The average personnel strength authorized for the 4540th CCTG (Tac Ftr) was: 64 officers, 37 airmen and 12 civilians. The group totals were included in the wing totals, but the wing totals did not include the contractor personnel. When the contract maintenance became stable it was anticipated the contractor and sub contractor would employ 740 people.

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- (15) UNCLASSIFIED, F/TF-104G Project (German Pilot Training) Contract Status, 6 Apr 1964.
 (16) UNCLASSIFIED, TWX DMPR 01 1155, TAC to 4510 CCTWg (Tac Ftr), 10 Jan 1964.
 (17) UNCLASSIFIED, Interview, Mr. F.O. Valles, Asst Bgt Off, 4510 Cbt Supt Gp (TAC), by Mr. Jean Provence, Historian, 6 Jul 1964.

The initial commander assigned with the activation of the 4540th CCTG (Tac Ftr) on 1 April 1964 was Colonel J.D. Collingsworth. Born in Dublin, Tex., in 1919, Colonel Collingsworth was a graduate of flying training at Luke Field in World War II. He flew combat missions throughout the North African Campaign. During the action in Korea he served in Alaska with the 449th Fighter Interceptor Squadron, and in 1959 he was assigned to headquarters MAAG, Taipei, Taiwan.

Colonel Collingsworth was replaced as Commander 4540th CCTG (Tac Ftr) on 15 June 1964 by Colonel James Jabara. Colonel Jabara was the first jet ace, and he was one of ten Air Force pilots who led work on the F-104 Starfighter when it was first designed in 1958. A native of Muskogee, Okla., he flew P-51 Mustangs in England during World War II where he flew 403 combat hours in 108 missions and received credit for shooting down 9½ enemy aircraft. In November 1950 Colonel Jabara flew to Korea, and seven months later he became the first American ace of the jet age. The Air Force Association awarded him the AFA Flight Award in 1951, and picked him as one of the 25 men in the United States who had done the most for aviation when the 50th anniversary of flight was celebrated in 1957.

Mr. Carl R. Ball was the Administrative Contracting Officer at Luke AFB representing the Air Force and the Sacramento Air Materiel Area Depot in maintaining the quality of the maintenance support delivered by Lockheed Aircraft Service and the subcontractors to the 4540th CCTG (Tac Ftr).

(18) UNCLASSIFIED, SO G-1, Hq 4540 CCTGp (Tac Ftr), 3 Jun 1964.

(19) UNCLASSIFIED, Biography Col J.D. Collingsworth, No Date.

(20) UNCLASSIFIED, SO G-4, Hq 4540 CCTGp (Tac Ftr), 15 Jun 1964.

(21) UNCLASSIFIED, "Ace Who Fought Nazi To Train German Pilots At Luke", Phoenix Gazette, Phoenix, Ariz, 23 Jun 1964, Pg 17.

Mr. D.M. Veirs was the Base Manager of the Lockheed Aircraft Service Co., the local specialized F-104G contract maintenance organization of the Lockheed Aircraft Corporation. He had the overall responsibility for the contract maintenance which supported the flying training mission of the 4540th CCTG (Tac Ftr), and he was the Luke AFB representative of the prime contractor. Serving under the Base Manager was Mr. M.A. De Smet, the General Foreman of the Maintenance Department of LAS.

The Base Manager for General Electric was Mr. W.A. Todd, and the head of the Luke AFB operations of Autonetics was Mr. H.J. Goulet. The Base Manager for Litton Industries was Mr. Laird Moody. (22)

As early as January 1964 the Lockheed Aircraft Service began assembling an F-104G maintenance team at Luke AFB in anticipation of the beginning of flight operations on 1 April 1964. Only small key support teams were brought from the Lockheed Aircraft Corporation plant in California to serve as the nucleus for the development of the many specialized key departments in the developing F-104G maintenance organization.

The LAS was fortunate in being able to employ personnel at Luke AFB who had maintenance experience in the century series of aircraft. No one brought to Luke AFB from California was familiar with the Air Force way of operation, and the new employees who were former aircraft mechanics in the AF contributed badly needed AF operational knowhow to the formation of LAS maintenance teams. The morale of the contract maintenance personnel went high when they began to accomplish the F-104G mission. (23)

(22) UNCLASSIFIED, Release 1-19-64, OIS 4510 Cbt Supt Gp (TAC), 23 Jan 1964.
(23) UNCLASSIFIED, Interview, Mr. Ray Greenhouse, Staff Asst go Gen Foreman LAS, by Mr. Jean Provence, Historian, 8 Jul 1964.

COURSE 111102G- USAF/GAF OPERATIONAL TRAINING COURSE (F-104G)

Training Objective

Course 111102G- USAF/GAF Operational Training Course (F-104G) was designed to qualify the graduates in the application of the jet fighter as a weapons system and as a combat capable pilot in the F-104G aircraft.⁽²⁴⁾

The German Air Force operational training at Luke AFB was designed to produce an all around fighter pilot who would be actually proficient though not combat ready. With the number of hours authorized for the program it was anticipated that the training would produce a highly proficient pilot who was trained in air-to-ground gunnery, the air-to-air dart and radar navigation.⁽²⁵⁾

The GAF program called for the student pilot to receive 140 flying hours in 135 training days and Luke AFB was programmed to produce 80 qualified pilots per year. Because the GAF was faced with the necessity of training more than 80 students a year, Luke AFB was authorized to train the overload by adjusting the curriculum for Course 111102G. The available flying training hours were to be distributed among the GAF students assigned to Luke AFB to accomplish balanced training. An effort was to be made to produce a sound pilot compared to the USAF pilot trained in Course 111105B. Emphasis was not to be placed on Phase III training which was to be accomplished in Germany where the air-to-ground and

(24) UNCLASSIFIED, AFM 50-5, USAF Training Prospectus, 1 Apr 1964.

(25) UNCLASSIFIED, Interview, Capt R.E. Messerli, TA&D Off, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, 30 Jun 1964.

conventional weapons training facilities of the Luke Gila Bend Gunnery
(26)
Range were not available.

Syllabus Development

The syllabus for Course 111102G- USAF-GAF Operational Training Course (F-104G) went through an unstable period during the spring of 1964 when the structure of the course of instruction was being formed. Originally, based on the instruction given in Course 111502D- Advanced Fighter Course (MAP) F-104 accomplished at George AFB, a syllabus for Course 111102G was prepared. Immediately, a process of modification and revision was initiated ending with a conference in Germany between representatives of the USAF and the GAF for the consideration of major curricular changes
(27)
recommended by the GAF.

As early as January 1964, the 12 AF pointed out that the GAF students, arriving at Luke AFB for entry in Course 111102G, would be recent graduates of 250 hours of jet training in the Air Training Command, and they would be able to train at a more rapid pace than the MAP students in Course 111502D at George AFB, who came from their own countries less proficient
(28)
in jet fighter aircraft.

Representatives of Luke AFB were asked to attend an F-104G Training Program Conference with representatives of TAC in the Pentagon, Washington, D.C., on 3 April 1964. All officers were asked to be prepared to support

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- (26) UNCLASSIFIED, Interview, Maj C.L. Counts, Chief Op Tng 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 29 Jul 1964.
(27) UNCLASSIFIED, Interview, Capt M.G. Filliman, Dir TAND Br, DCO, 4510 CCTWg (Tac Ftr), by Mr. Jean Provence, 7 Jul 1964.
(28) UNCLASSIFIED, TWX DOOS-T 010470, 12 AF, Waco, Tex to TAC, Info 4510 CCTWg (Tac Ftr), 27 Jan 1964.

Chart XIX
PROPOSED SYLLABUS COURSE 111102G

Course Statistics	F-104G Training Program Data			
Course Length	135 Training Days (approx. 32 weeks)			
Total Flying Hours	140:00 per Student			
Student Production	80 per Year			
Student Load	53 (5 Classes)			
Aircraft Required	TF - 30 F - 50			
Average Flying Hours per Month Required	1600			
Instructor Pilot Upgrading Started	1 April 1964			
Student Training Starts	12 October 1964 Class 64-A			
First Student Class Graduates	7 June 1965			
	TRAINING PHASE ANALYSIS			Student
Phase	Dual Sorties	Solo Sorties	Total Sorties	Flying Hours
Transition	6	6	12	14:00
Formation	1	6	7	8:00
Inst/Navigation	16	-	16	24:00
Air/Grnd (Recce)	2	20	22	27:30
Transition (Night)	1	1	2	2:20
Formation (Night)	1	-	1	1:00
Air Combat Man	1	4	5	5:00
Air/Air Radar				
Gun Mode	3	-	3	4:00
Missile Mode	2	-	2	2:40
Rocket Mode	3	-	3	4:00
Air/Air Visual	1	3	4	4:00
Radar Navigation				
Terrain Avoidance	2	-	2	3:00
Contour Map	2	-	2	3:00
Ground Map	4	-	4	6:00
Bomb Delivery (Fam)	4	-	4	5:00
Combat Profile Mission (CPM)				
High-Low-High	1	2	3	4:30
CPM (High-Low-Low)	-	3	3	4:30
CPM (Low-Low-High)	1	3	4	6:00
CPM (Low-Low-Low)	1	2	3	4:30
CPM (High-Low-High - Max Range)	-	2	2	4:00
Night Navigation	-	2	2	3:00
TOTALS	52	54	106	140:00(29)

(29) UNCLASSIFIED, Course Statistics F-104G Training Program Data, No Date.

the command position on: (a) any changes in the aircraft "mix" to support the proposed course, (b) the impact of the simulator requirements, (c) munitions requirements and (d) the use of German Air Force Instructors. (30)

In response to recommendations made for changes in the curriculum for Course 111102G by the GAF, comments made by the training personnel of the 4510th CCTW (Tac Ftr) indicated considerable differences in training concepts. In recognition of the differences, and in view of the relatively short period of time before the commencement of the F-104G course, the Chief of Staff USAF proposed a conference between the USAF and GAF.

The purpose of the conference was threefold: (a) to resolve the syllabus for the F-104G course, (b) to reach an agreement on the reassignment of GAF instructor personnel to the F-104G course and (c) to discuss how the USAF could train an additional twenty GAF students per year in the existing course. It was recommended to MAAG Germany to conduct the conference concurrently with a USAF team visit to Germany on 29 June 1964.

Representatives designated to attend the conference were to address the points: (a) the rationale and background on the proposed USAF training program and (b) the method of providing radar predication training. Based upon the provisions of the USAF/GAF agreement, the Chief of Staff USAF prepared to authorize the GAF to provide a total of eight F-104G qualified pilots as instructors in the course. Five of the instructor pilots were to report to Luke AFB for upgrading on 5 October 1964 and the remaining three

(30) UNCLASSIFIED, TWX DORF-FTS 04 0431, TAC to 12 AF, Waco, Tex, Info 4510 CCTWg (Tac Ftr), 3 Apr 1964.

pilots would report on 4 January 1965. The GAF was to be advised that all instructor personnel had to be equal in rank to the USAF instructor pilots.

The Chief of Staff USAF requested TAC to reevaluate the previous position and present valid and justifiable reasons why the USAF could not accept eight flight instructors. The reevaluation was to consider the possible increase in student load to produce 100 students annually. Selective inputs of GAF students into the projected training program had resulted in a potential overload for the F-104G course. As a means of resolving the problem TAC was requested to examine alternatives to an increased annual student production. The examination was to consider increasing the utilization rate of the assigned aircraft, which was then (31) 22.3 hours per month, to 25 hours.

TAC completed an evaluation of the proposed GAF training course, and indicated that there were several areas in the proposed training program that TAC did not agree with. Primarily the differences were associated with the number of sorties in each phase of training and the sequence of scheduling the events within a phase. It was the USAF's desire to design and conduct a course which was suitable to the GAF. However, course training standards and flight safety could not be compromised in order to do so. (32)

Transition, navigation acrobatics and night flying for the proposed course were generally considered adequate, however, a total of 16 instead

(31) UNCLASSIFIED, TWX AFXOPL 873668, CSAF to TAC Info 4510 CCTWg (Tac Ftr), No Date.

(32) UNCLASSIFIED, TWX AFXOPLW 86796, CSAF to AF Sec MAAG Germany, Info 4510 CCTWg (Tac Ftr), 18 Jun 1964.

of 12 sorties was recommended. Luke AFB did not have terminal GCA for night flying. Four formation sorties were considered inadequate, and four instrument sorties were entirely inadequate for the skill level of the potential students. Eight sorties in air-to-air radar were recommended instead of thirteen; five air combat maneuvers sorties and three air-to-air gunnery against dart plus one live AIM-9B (GAR-8) firing. Twelve sorties were not considered sufficient to qualify all pilots in air-to-ground. The USAF proposed to discuss the thirty degree dive-bombing and rocket procedures in lieu of the existing procedures. Strange field landings were impractical because of maintenance and logistic aspects. Alert scrambles were also considered impractical because of the airspace saturation and flight restrictions in the Phoenix area. Evaluation flights per se were not required since the pilot was under constant supervision by an instructor pilot. Navigation and combat profile missions could be combined into twenty-six sorties. (33)

TAC nominated three representatives to attend the F-104G training syllabus conference which was held in Bonn, Germany on 29 June 1964; Major C.L. Counts, 4510 CCTW (Tac Ftr); Major D.E. Graybill, Hq TAC DI; and Captain W.J. Seaman, Hq TAC DRF. A pre USAF/GAF conference meeting was held in Washington on 19 June 1964 at the office of the Chief of Staff USAF where the problems were discussed concerning an increased student load and radar predication training for the GAF F-104G course at Luke AFB in finalizing the USAF position. (34)

(33) UNCLASSIFIED, TWX AFSMSB 89897, CSAF to MAAG, Bonn, Ger, Info 4510 CCTWg (Tac Ftr), No Date.

(34) UNCLASSIFIED, TWX DORF 06 3559, TAC to CSAF, Info 4510 CCTWg (Tac Ftr), 19 Jun 1964.

The buildup for the F-104G training syllabus meeting in Bonn, Germany was gradual in its development. The GAF wanted more advanced training given the students which was beyond their capabilities by USAF safety standards and could not be safely given in the Luke AFB training situation. Since the program was being designed to meet the requirements of the GAF, the USAF training personnel made a concerted effort to meet the GAF demands, but there was a limit to which the training could be advanced without violating the standardization and safety concepts of the USAF which had to be met in training all USAF students. At the USAF/GAF conference in Germany on 29 June 1964 the two concepts of what the GAF desired in the F-104G advanced fighter training course and what the USAF could accomplish within its training complex of facilities and training standards came into direct impact and were successfully resolved through understanding and cooperation.⁽³⁵⁾

At the conference Colonel Krupinski of the GAF training staff, indicated he was primarily interested in radar/navigation/bomb training for his student pilots and all other requirements were secondary. If the USAF could qualify GAF students in nuclear weapons delivery according to NATO standards he would be satisfied, and qualification in other weapons delivery phases was not required. He suggested that Luke AFB could eliminate the instrument raining entirely since the students would receive the training in the European environment after finishing the F-104G course.

In turn, the USAF position was stated by Major Counts who pointed out the proposed GAF training course was unworkable and unsound. It's most

(35) UNCLASSIFIED, Interview, Maj C.L. Counts, Chief Operational Training, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 29 Jul 1964.

serious defect was in its attempt to take low experience level pilots, just out of Undergraduate Pilot Training, and make Phase III, completely combat capable and combat ready tactical and air defense pilots out of the students in only 140 hours. Course 111105B, which was comparable to the GAF Course 111102G, had been revised to accomplish only Phase I and Phase II training, and left Phase III training to be accomplished later in the tactical unit of assignment. It was recommended that the objections be delivered to the GAF in writing, and that the GAF be asked to assume the full responsibility for the results of their insisting upon such an ill-advised program.

It was finally agreed that, as soon as possible, the Luke AFB representatives would outline a minimum syllabus within the minimum number of hours in each phase to produce: (a) a satisfactorily trained pilot; (b) who would be qualified in accordance with NATO nuclear weapons delivery standards; (c) who would not necessarily be qualified in other weapons delivery phases, but (d) who would have received them on a "familiarization" basis. The production of the syllabus would indicate the minimum number of hours required by a student pilot, and would give a basis for determining the maximum number of GAF students who could be trained on the minimally satisfactory basis per year.

On the second day of the conference, Colonel Krupinski announced that, after consideration, the GAF representatives had decided to reverse their stand on the subject of the syllabus. They were prepared to agree that the USAF was expert in the subject of combat crew fighter training, and that the GAF was willing to leave the whole question of specific syllabus

content in the hands of those actually doing the training of the GAF students at Luke AFB. They were prepared to accept the proposed Luke syllabus as the standard for the course. Their over-riding requirement was to train numbers of students rather than students in accordance with an optimum syllabus. They requested that the USAF train the extra students resulting from overprogramming against an expected attrition by cutting, at Luke's option, selectively from the standard Luke AFB syllabus in order to provide the additional time required per student to provide the training. It was requested prior consideration be given to cutting from the instrument training phase. After preliminary calculations it was shown that a reduction of the instrument phase from 16 to six sorties would provide the additional time required.

In summing the decisions accomplished, Luke AFB was given a liberal charter of operation for the GAF Course 111102G which gave the base the authority to adjust the course to meet the requirements.

Before leaving the meeting, the personnel from Luke AFB concluded that an important step had been made in building international good will between the German and United States Air Forces. The decision of the GAF to leave the details of the F-104G advanced fighter training in the hands of the USAF was very significant. The decision indicated that the GAF not only had extreme confidence in the USAF ability and, more significantly, that the GAF also had extreme confidence in continued American good will and good intentions on their behalf.

(36) UNCLASSIFIED, Notes, USAF/GAF F-104G Training Syllabus Conference, Bonn, Germany, 29 Jun 1964.

The conference between the representatives of the Chief of Staff USAF, TAC, MAAG and the GAF resulted in a revised syllabus for the F-104G Course 111102G. The revised syllabus requiring approximately 96 sorties in 125 flying hours made possible an annual entry of approximately 90
(37)
GAF students.

The 140 hour syllabus remained the basic training guide for the GAF F-104G advanced fighter training to be given in Course 111102G, but the full course was not to be given to the student pilots when the number of students in training was greater than that originally programmed. The training was to be cut to that which would train the number of students entered within the number of hours programmed. If necessary, the number of hours given to a GAF student pilot in Course 111102G could be reduced to 125 hours. If there were 10 students in a class they would receive 140 hours of fighter training, but if there were 13 students in the class
(38)
they would receive only 125 hours of training.

The syllabus for Course 111102G was completely redesigned to make possible minor adjustments to balance the fleet utilization and the number of students assigned for training to get the optimum utilization of the
(39)
F-104G fleet at Luke AFB.

Academic Training

The academic instruction for Course 111102G- USAF/GAF Operational Training Course (F-104G) was based on the academic training experience

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- (37) UNCLASSIFIED, TWX AFXOPL 95104, CSAF to TAC, Info 4510 CCTWg (Tac Ftr), 13 Jul 1964.
 (38) UNCLASSIFIED, Interview, Capt R.E. Messerli, TA&D Off, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 30 Jun 1964.
 (39) UNCLASSIFIED, Interview, Maj C.L. Counts, Chief Operational Training, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 29 Jul 1964.

gained in the USAF and MAP F-104G courses conducted at George AFB. With the 4540th CCTG (Tac Ftr) designed as a self contained organization a separate academic training section for the group was organized. The F-104G academic instructors were transferred from the 4516th CCTS(Acd) to the 4540th CCTG (Tac Ftr) to staff the F-104G academic training section. Only classroom space was to be supplied to the new F-104G academic training section in the 4516th CCTS(Acd).⁽⁴⁰⁾

The academic instructors were also to be instructor pilots and were, therefore, required to perform flight instruction while conducting ground training to support the F-104G flight line instruction. The requirement enabled the academic instructors to keep abreast of the student flying problems and insure the standardization of the instruction between the classroom and the flight line. Each of the pilots selected to instruct in the academic training section of the 4510th CCTG (Tac Ftr) was a college graduate and had attended several periods in USAF schools in preparation for teaching F-104G subjects at Luke AFB. One of the instructors had 40 semester hours of college instruction at the graduate level in modern learning theory and programming. The average instructing experience of the F-104G academic training instructors was approximately two years.

The F-104G instructional methods included: (1) conventional classroom lectures; (2) applicable movies; (3) utilization of modern programmed learning techniques; (4) mockups developed by the instructors and produced by the wing training aids shops; (5) utilization of the F-104G simulator; and (6) flight line tours.

(40) UNCLASSIFIED, Interview, Lt Col E.R. Mathis, Comdr 4516th CCTS(Acd), by Mr. Jean Provence, Historian, 26 May 1964.

An extensive program was established to develop standardized training material for the academic training section and the flight line squadrons of the 4540th CCTG (Tac Ftr) so that a continuity of training would be established throughout all phases of the F-104G advanced fighter training for the GAF student pilots. The training material was being designed to fit the training program and keep up with it as it progressed. (41)

The development of the F-104G training materials was handicapped by a lack of space and resources in the Training Aids Section of the 4510th CCTW (Tac Ftr). During a previously slack period the training aids shop authorizations had been cut, and its resources looted for other shops with a higher priority so that much of the fine work on the rush orders for the F-104G training aids had to be done by hand. The shop was badly in need of the required authorizations for space, men, equipment and materials needed to accomplish the many training aids requirements placed on the shop by the flood of orders to support the new F-4, F-5, F-104 and 105 programs being developed in the area. (42)

The training aids shop of the 4510th CCTW (Tac Ftr) was fabricating a series of gunnery, GCA and TACAN training panels to support the GAF F-104G advanced fighter training program. Training aids included:

- 6- F-104G cockpit instrument panels.
- 6- Inertial navigation panels (LN-3).
- 6- Armament panels.
- 6- Radar scope panels.

(41) UNCLASSIFIED, Interview, Capt C.F. Funk, Curr Mat Off, 4510 CCTW (Tac Ftr), by Mr. Jean Provence, Historian, 7 Jul 1964.

(42) UNCLASSIFIED, Interview, Lt John Patterson, Tng Aids Off, 4516 CCTS (Acad), by Mr. Jean Provence, Historian, 15 Jun 1964.

- 6- Autopilot panels.
- 18- Gunnery panels mounted on briefing boards.
- 18- GCA panels mounted on briefing boards.
- 18- Normal landing panels.
- 18- Cockpit photos mounted on briefing panels.
- 6- Student briefing consoles.

The training aids shop had previously constructed a simulated F-104G cockpit for George AFB, and it was anticipated that the cockpit would be returned to Luke AFB with the consolidation of the training in the F-104G at Luke AFB. (43)

The GAF student pilots were to receive 30 hours of classroom instruction on the F-104G prior to the beginning of any actual flying in the F-104G training aircraft. In addition they were expected to study at least two hours for every one hour of classroom work. The engineering phase of the academic training included instruction on the J-79 engine as well as instruction on the hydraulic, electrical, pressurization, fuel, flight controls and emergency escape systems. In general, the academic training was given to the study of those F-104G aircraft systems which were essential for safe flight, navigation and weapons delivery.

One of the best training devices at Luke AFB were the F-104G aircraft themselves on the flight line. Preflight inspections were taught on the flight line utilizing the aircraft. The entire course was taught from a pilot's point of view and emphasis was placed on operating procedures. (44)

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- (43) UNCLASSIFIED, Interview, TSgt J. Rael, NCOIC Tng Aids, 4516 CCTS(Acd), by Mr. Jean Provence, Historian, 15 Jun 1964.
 - (44) UNCLASSIFIED, Col J.D. Collingsworth, Comdr 4540 CCTGp (Tac Ftr), F-104G Training Operations Briefing, 9 Apr 1964.

Aircraft

The first F-104G Super Starfighter arrived at Luke AFB on 12 February 1964, and it was delivered from the Lockheed Aircraft Corporation plant at Palmdale, Calif., by Captain Charles E. Ball. A month later Luke AFB had six F-104G aircraft.

The F-104G Starfighter was considered one of the best of the century series of jet fighter aircraft. The operational speed and altitude of the aircraft were considerably greater than that of previous fighter aircraft. Notable features of the aircraft were extremely thin flight surfaces, short straight wings with negative dihedral, irreversible controls and a horizontal stabilizer mounted at the top of the vertical stabilizer.

Powered by one General Electric J-79 turbojet engine, equipped with an afterburner, the F-104G had a thrust of 15,000 pounds. The maximum speed was Mach 2 plus with a maximum altitude range of 100,000 plus feet. In flight refueling provisions gave virtually a round the world range of flight. Standard wing tip tanks could be supplemented by pylon tanks and gunbay fuel storage. The F-104G was 13 feet six inches high, 54 feet nine inches long and had a wing span of 21 feet 11 inches. The tricycle type landing gear retracted into the fuselage and was equipped with larger main landing gear tires and an improved liquid spring strut.

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- (45) UNCLASSIFIED, "Luke Base Gets First 'Star' Jet", Phoenix Gazette, Phoenix, Ariz., 13 Feb 1964, P. Sec II, 21.
- (46) UNCLASSIFIED, Minutes Wg Staff Meet, Hq 4510 CCTWg (Tac Ftr), 18 Mar 1964.
- (47) UNCLASSIFIED, Transition, Operational Supplement, Course I-111102G, Luke AFB, No Date.
- (48) UNCLASSIFIED, World Wide F-104 Program Press Book, Lockheed-California Company, No Date, Doc V, 1.

"Project Columbus" was established to modify and update the German 104G aircraft with a series of modifications which would enhance the safety and reliability of the German aircraft. Although all the proposed modifications had merit, the safety of flight items; such as the main fuel shutoff valve, main gear aft door stretch rod, boundary layer control duct clamps, oil pressure transmitter line and hydraulic dump valve; were considered especially important. The aircraft assigned to the project were in a wide variety of modifications, and included forty which were from the first ninety-six F-104G model aircraft produced on license in Europe.

Misunderstanding existed as to the procedures to be used for the modification of the Luke AFB assigned F-104G German aircraft. The final approval of the modifications rested with SMAMA. The Lockheed Aircraft Corporation had contracted to perform services which included furnishing flying hours which would satisfactorily comply with the German training syllabus. That included the loading and expenditure of preplanned amounts of ammunition, bombs, rockets, darts and missiles. It was to be expected, that during the course of training, certain operational requirements would evolve that would require modification of the aircraft. It was suggested that all possible modifications be brought to the attention of the German program director so that they could be incorporated into the overall F-104G modification program.

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- (49) UNCLASSIFIED, TWX DM 02 0658, TAC to SMAMA, Info 4510 CCTWg (Tac Ftr), 6 Feb 1964.
(50) UNCLASSIFIED, TWX AMG 17052, SMAMA, McClellan AFB, Cal to TAC, Info 4510 CCTWg (Tac Ftr), Feb 1964.
(51) UNCLASSIFIED, TWX D MEM 02 4484, TAC to 4510 CCTWg (Tac Ftr), 26 Feb 1964.

With the many modifications on the F-104 aircraft the 4510th CCTWg (Tac Ftr) experienced difficulty in securing an initial delivery of flight manuals to meet the local need for the support of the first class in the instructor upgrading course. When they were not available for delivery with the aircraft they had to be procured from Lockheed with German funds. (52) The German Air Materiel Office in Washington instructed Lockheed to deliver a series of seven different manuals to Luke AFB. (53)

One of the major difficulties attendant to the F-104G GAF pilot training program was a lack of maintenance manual that fell within the USAF standards. The full magnitude of the problem was not fully recognized, because the problem was inherent in the nature of the program. The F-104G commercial aircraft and associated equipment were not entirely USAF controlled. It was indicated that immediate action was required to update and standardize the publications used in the German program to an acceptable level. (54)

The problem of maintenance and technical manuals was recognized by SMAMA in support of the Luke AFB program, and a series of the manuals developed by Lockheed were upgraded and sent to the printing plant for publication. The major problem existed in the complexity of the aircraft with its many systems which required a specific individual manual to cover its operation and maintenance. (55)

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- (52) UNCLASSIFIED, TWX SMNAO 13530, SMAMA, McClellan AFB, Cal to MAAG, Bonn, Ger, Info 4510 CCTWg (Tac Ftr), 31 Jan 1964.
- (53) UNCLASSIFIED, TWX MSGNR 2625, Ger Mat Off, Wash to Lockheed, Cal, Info Luke AFB, 31 Jan 1964.
- (54) UNCLASSIFIED, TWX DMEM 04 1837, SMAMA McClellan AFB, Cal to AFLC, Info 4540 CCTGp (Tac Ftr), 10 Apr 1964.
- (55) UNCLASSIFIED, TWX SMNA 36445, SMAMA, McClellan AFB, Cal to TAC, Info 4540 CCTGp (Tac Ftr), 18 Apr 1964.

F-104G Flight Simulator

Soon after the installation of the initial F-104G Flight Simulator at Luke AFB a program was established to move another simulator to the base to support the F-104G advanced fighter training programs. The second simulator acquired from Canadian Aviation Electronics required a building identical to that of the first installed at Luke AFB and provisions had to be made for its installation. Since storage space was available at Luke AFB it was requested that the simulator be shipped to the base to be ready when the facilities for its installation were completed. The simulator was made ready at the contractor's plant on 4 May 1964, and TAC issued instructions for it to be transported to Luke AFB.

The training devices building was expanded at Luke AFB to house the first F-104G simulator, and it had to be modified and expanded farther to house the second simulator. The installation of the first simulator was started in November 1963, and was completed in January 1964. The operation of the F-104G flight simulator started immediately after its installation, and it was exceptionally valuable in training the first F-104G pilots at Luke AFB. It was something of a miracle aircraft in that the F-104G flight simulator did everything that the actual aircraft could do as revealed in the instruments without leaving the ground.

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- (56) UNCLASSIFIED, TWX MCSM 17131, AFLC to TAC, Info Luke AFB, 5 Feb 1964.
(57) UNCLASSIFIED, TWX MCSM 20399, AFLC to TAC, Info Luke AFB, 20 Feb 1964.
(58) UNCLASSIFIED, TWX MCSM 20777, AFLC to CSAF, Info Luke AFB, 21 Feb 1964.
(59) UNCLASSIFIED, TWX AFSMSF 71533, CSAF to AFLC, Info 4510 CCTWg (Tac Ftr), 22 Apr 1964.
(60) UNCLASSIFIED, Interview, CMSgt D.A. Hillerman, NCOIC Tng Devices, 4516 CCTSq(Acd), by Mr. Jean Provence, Historian, 19 Jun 1964.

It was anticipated that the F-104G flight simulator would play an important part in the training of the pilots in the GAF Course 111102G since the simulator could give the student extensive safe training in the F-104G before he got into the aircraft and took off the ground. With the first simulator already installed at the end of June 1964 the instrument training squadron was preparing training material to be utilized in the F-104G instruction given the student pilots in the simulator.

The second simulator was scheduled to be installed by the middle of July 1964, but the installation was not to be expected until 20 August
(61)
1964.

The F-104G flight simulator was considered to be one of the best training devices ever designed and constructed. It was capable of training the student how to operate the F-104G aircraft from the ground. It was a safe way to introduce the student pilot to the F-104G aircraft and a great time saver. Three types of missions could be simulated in the trainer: radar, air-to-ground and air-to-air which made possible the accomplishment of as many as ten of the first basic missions in learning to fly an F-104G
(62)
aircraft.

The F-104G flight simulator was programmed for 16 hours and 30 minutes of instruction per student in Course 111102G, and would cover most of the training phases the student would go through in the aircraft. From the instructor's console he could monitor flying training in instruments and

(61) UNCLASSIFIED, Interview, Capt M.J. Herman, F-104G Simulator Off, 4516 CCTSq(Acd), by Mr. Jean Provence, Historian, 22 Jul 1964.

(62) UNCLASSIFIED, Interview, Maj J.A. Hamilton, Comdr 4514 CCTSq, by Mr. Jean Provence, Historian, 17 Jul 1964.

Students

Student pilots entering Course 111102G- USAF/GAF Operational Training Course (F-104G) were required to be rated pilots currently on flying status and currently proficient in piloting jet aircraft with at least 500 flying hours, or be a graduate of the ATC undergraduate pilot training program within the preceding 60 days. The prerequisites were the same for Course 111102G as for Course 111105B, and the bulk of the students were programmed to train through the same ATC program of primary and basic flying training as the USAF student pilots.

The federal armed forces of Germany had under consideration a proposal to return to a three year training period (general military, technical and flying training) for all officer candidates of the services. During the buildup interval of the armed forces, the period had been reduced to two years. If the proposal were adopted, officer candidates would not be commissioned until the completion of a three year training period.

The first class in Course 111102G was Class 64H which was scheduled for entry into training at Luke AFB on 9 October 1964. How many students would arrive for entry continued to be uncertain as the training program continued to be in a state of adjustment at the end of the historical period on 30 June 1964. The number of students per class was expected to depend on the number of GAF pilots who graduated from ATC training. Not as many GAF students were washing out as had been programmed.

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- (63) UNCLASSIFIED, Col J.D. Collingsworth, Comdr 4540 CCTGp (Tac Ftr), F-104G Training Operations Briefing, 9 Apr 1964.
(64) UNCLASSIFIED, AFM 50-51, USAF Training Prospectus, Apr 1964.
(65) UNCLASSIFIED, TWX MGAFOT-1-2229, MAAG, Ger to CSAF, Wash, D.C., Info Luke AFB, 8 Jun 1964.
(66) UNCLASSIFIED, Interview, Capt J.V. Cebe-Habersky, Plan & Prog Off, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 30 Jun 1964.

A tentative class entry program was sent the 4510th CCTWg (Tac Ftr) on 9 June 1964 which called for the entry of two additional students during the first four classes programmed for Course 111102G.

Chart XX
PROJECTED STUDENT ENTRY COURSE 111102G

CLASS	NUMBER STUDENTS PER CLASS	ADDITIONAL STUDENTS	ADDITIONAL EFFECT ON STUDENT LOAD
64H	10	2	12
65A	11	2	25
65B	10	2	37
65C	11	2	50 (67)

The proposed overload of students on the originally proposed student program presented some logistic problems for the 4510th CCTW (Tac Ftr) at Luke AFB. If the input of the GAF students into F-104G Course 111102G was increased from 83 students to 105 students per year, the student load would increase from 53 to 65 students in training. For the 53 student load the 4510th CCTW (Tac Ftr) was authorized a 22.2 hour per month aircraft utilization on 27 TF-104G and 46 F-104G operating aircraft. If the 22.2 hour per month utilization was to be retained, then the aircraft would be increased to 33 TF-104G and 56 F-104G operating aircraft. The problem, as previously discussed, was solved by making the syllabus of Course 111102G flexible, and equally distributing the total available flying time for the class among the students entered.

(67) UNCLASSIFIED, TWX DORF-FTS 06 1377, TAC to CSAF, Info Luke AFB, 9 Jun 1964.

(68) FOR OFFICIAL USE ONLY, TWX DORF-FTS 06 3434, TAC to CSAF, Info 4510 CCTWg (Tac Ftr), 18 Jun 1964.

COURSE I-111102G- INSTRUCTOR PILOT

Before it was possible for the 4540th Combat Crew Training Group to start training students in Course 111102G it was necessary for the group to generate a staff of instructor pilots to accomplish the F-104G training mission. The instructor training started on 1 April 1964 with the beginning of F-104G training in Course I-111102G at Luke AFB under the guidance of a small group of instructor pilots who had been trained in the 104G program at George AFB. (69)

The first class in Course I-111102G followed a syllabus which was adapted from the syllabus used at George AFB in Course I-111502D. The syllabus at George AFB called for 35 hours in the F-104 which was not sufficient time in the aircraft to train an instructor pilot for Course 111102G which was to be given at Luke AFB. The instructor course at Luke AFB was modeled after the proposed syllabus for Course 111102G and the number of hours was expanded to 60 hours and 40 minutes of F-104G flying time and 80 hours of academic ground training. (70)

The students originally selected for upgrading in Course I-111102G to initiate the GAF advanced F-104G training at Luke AFB were selected on their potential effectiveness as an instructor pilot in the new training program. Since so many pilots were eager to fly the F-104G at Luke AFB only the most highly qualified and professional pilots were selected. (71)

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- (69) UNCLASSIFIED, Interview, Maj C.L. Counts, Chief Ops & Tng, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 22 Apr 1964.
(70) UNCLASSIFIED, Interview, Capt M.G. Filliman, Dir TA&D, DCO, 4510 CCTWg (Tac Ftr), by Mr. Jean Provence, Historian, 1 Jun 1964.
(71) UNCLASSIFIED, Interview, Capt R.E. Messerli, Ops Off, 4518 CCTSq, by Mr. Jean Provence, Historian, 4 May 1964.

Chart XXI
COURSE I-111102G- F-104G INSTRUCTOR PILOT SYLLABUS

Purpose: To qualify selected pilots as instructors in the F-104G.

Location: Luke Air Force Base, Arizona.

Duration: Sixty (60) training days.

Status Upon Graduation: After completing this course and required Stan/Eval checks, the graduate will be qualified to brief, lead and critique student flights in all phases of instruction required in Course Number 111102G. In addition, he will be qualified to perform such other duties in support of the training mission as are required (e.g., Mobile Control Officer, Range Control Officer, etc.).

PHASES OF TRAINING

Flying

<u>Flying</u>	<u>Sorties</u>	<u>Hours</u>
Training	11	12:25
Formation	3	3:30
Instruments	5	7:30
A/A Radar	4	5:20
Air Combat Maneuvers	2	2:00
Dart	2	2:00
Radar/NAV/Bomb	7	11:00
Air-to-Ground Gunnery	9	11:15
Night Navigation	2	3:00
Stan/Eval	2	2:40
	<u>47</u>	<u>60:40</u>

Academic Training

	<u>Hours</u>
Survival	1:00
Aircraft General	30:00
Weapons Systems Operation	10:00
F-15 Radar	25:00
Navigation	12:00
Techniques of Instruction	2:00
	<u>80:00 (72)</u>

(72) UNCLASSIFIED, 12 AF Syllabus, Course 111102G- Instructor Pilot F-104G, TAC, March 1964.

The instructor pilots assigned for training were selected from a wide variety of sources and they were not all drawn from Luke AFB. Some were taken directly from the discontinued F-84 course. From George AFB, which had conducted the original F-104 course, were assigned some instructors. (73) Others came from a wide series of organizations in TAC. The quality of the students in the initial class in Course I-111102G was an asset since the instructors who taught the course had a minimum of instruction in the (74) F-104G and the syllabus of instruction was new and untried.

The initial class of eight student pilot instructors entered training in Course I-111102G on 1 April 1964 and graduated on 11 June 1964.

The morale of the student instructors in Course I-111102G was high, and every pilot had a high respect for the F-104G as a highly satisfactory aircraft. Everybody had a good attitude so that the entire program was operated with a businesslike progression from one mission to the next. The only criticism of the program was that it was too short. Once the program was completed, it gave the experienced and highly trained pilot the feeling that he had only been given a checkout in the F-104G aircraft. In comparison with the instructor upgrading in the F-84 and F-100 given at Luke AFB, the instruction in Course I-111102G was adequate, but the graduates all felt that they needed more time in the F-104G before they (75) would really know the aircraft.

(73) UNCLASSIFIED, Interview, Lt Col R.C. Meppen, Ops Off F-104G Prog, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 30 Jun 1964.

(74) UNCLASSIFIED, Interview, Capt R.E. Messerli, Dir TA&D Br, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 30 Jun 1964.

(75) UNCLASSIFIED, Interview, Maj J.A. Hamilton, Comdr 4518 CCTSq, by Mr. Jean Provence, Historian, 17 Jun 1964.

COURSE 111502D- USAF ADVANCED FIGHTER COURSE (MAP) F-104.

Luke AFB was alerted on 18 March 1964 that training in Course 111502D- USAF Advanced Fighter Course (MAP) F-104 was to be moved to the base to be coordinated with the conduct of Course 111102G. TAC announced on 7 May 1964 that the 4443rd Combat Crew Training Squadron, then stationed at George AFB, Calif., was to move to Luke AFB in July 1964 to make room for a new wing of TAC's supersonic McDonnell F-4C fighters at George.

The move involved 15 Lockheed F-104G aircraft and some 20 specialists. In addition, approximately 17 F-104G instructor airmen were to be reassigned to the contractual administrative office at Luke AFB. No other maintenance personnel were to be involved in the move since the support was to be provided by service contract at Luke AFB.

The entire program was scheduled to be moved intact from George AFB to Luke AFB, and the training was to continue practically uninterrupted. The unit was instructed to move on about 15 July 1964 at a total strength of 14 officers and 22 airmen for a permanent change of station. The equipment in possession and authorized to the 4443rd CCTS which would be required at the new location was to be moved as a unit. Five F-104G instructor pilots were authorized by name to be transferred to Luke AFB along with five airmen. As a whole, the F-104G airmen were not moved to Luke AFB, but were retained at George AFB for retraining in the F-4C.

(76) UNCLASSIFIED, Minutes Wg Staff Meet, 4510 CCTWg (Tac Ftr), 18 Mar 1964.

(77) UNCLASSIFIED, TWX OIO 05 1056, TAC to CSAF, Info 4510 CCTWg (Tac Ftr), 7 May 1964.

(78) UNCLASSIFIED, Interview, Capt G.H. Hecker, OIC Prog Sec, DCO, 4510 CCTWg (Tac Ftr), by Mr. Jean Provence, Historian, 6 May 1964.

(79) UNCLASSIFIED, TWX AFOAPDC 74515, CSAF to TAC, Info Luke AFB, 1 May 1964.

(80) UNCLASSIFIED, TWX DPAP-A 05 1283, TAC to 831 Air Div, George AFB, Cal, Info 4510 CCTWg (Tac Ftr), 7 May 1964.

Course 111502D programmed to be moved to Luke AFB was not another German F-104G advanced fighter course, but an international advanced F-104G fighter training program designed to train student pilots from a wide variety of allied nations. The course transferred from George AFB was a course which was parallel to that of the GAF F-104G course at Luke AFB, but it was shorter with fewer flying hours because it was designed for experienced pilots. Previously, while in operation at George AFB, the 4443rd CCTS trained students in Course 111502D from Japan, Germany, Norway, Belgium, Italy, Turkey, Greece, Denmark, and China. The first class of 10 students was programmed to begin training at Luke AFB on 10 August 1964.

The 831st Air Division at George AFB was instructed on 3 July 1964 that the division could start the movement of the F-104G aircraft to Luke AFB on 6 July 1964 instead of 15 July 1964. The earlier movement had to be approved by the Lockheed Aircraft Corporation as the aircraft were programmed to be maintained by the AF until 15 July 1964. The movement was not approved, and on 15 July 1964, a flight of six F-104G Super Starfighters was flown from George AFB to Luke AFB. The 15 aircraft transferred to Luke AFB were of the USAF configuration which differed from that of the GAF.

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- (81) UNCLASSIFIED, Interview, Maj A.D. Herring, Ast Ops Off, 4512 CCTSq, by Mr. Jean Provence, Historian, 5 May 1964.
- (82) UNCLASSIFIED, Interview, Capt R.E. Messerli, TA&D Off, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 30 Jul 1964.
- (83) UNCLASSIFIED, PIO Release, 5-282-64, Luke AFB, 15 May 1964.
- (84) UNCLASSIFIED, TWX DMPR 07 0533, TAC to 4510 CCTWg (Tac Ftr), 3 Jul 1964.
- (85) UNCLASSIFIED, "Jet Unit Arrives," Arizona Republic, Phoenix, Ariz, 16 Jul 1964, P. 36.

The Air Force Logistics Command took steps on 1 May 1964 to contract with the Lockheed Aircraft Corporation for the maintenance of the 15 additional F-104G aircraft which were transferred from George AFB to Luke AFB. The services were to include all levels of maintenance and supply support management, added to and conducted in the same manner as the 80 GAF aircraft already on contract. The contractor was authorized to initiate immediate procurement action contingent on receiving FY65 funds of approximately \$1.9 million dollars not later than 15 July 1964. Inventory management and accounting was to be conducted by SMAMA on the combined use of assets and facilities. (86) Since funding for the contract was to be through AFLC channels, no financial impact was expected on the TAC units in the contract area. (87)

The 4443rd CCTS was assigned to the 4540th CCTG (Tac Ftr) of the 4510th CCTW (Tac Ftr). The primary responsibility for the reception and integration of the unit was assigned to the commander 4540th CCTG (Tac Ftr). The expansion of the existing civilian aircraft maintenance contract to provide maintenance for the additional aircraft and equipment presented many problems which had to be met. An additional squadron operations building, office and flight room facilities to house the new squadron had to be designated. The aircraft maintenance contractor required additional warehouse facilities, hangar and ramp space, fuel facilities, engine shop docks, calibration range, trim pad, harmonization butts and AGE space. (88)

(86) UNCLASSIFIED, TWX MCS 36245, AFLC to SMAMA, McClellan AFB, Cal, Info, 4510 CCTWg (Tac Ftr), 1 May 1964.

(87) UNCLASSIFIED, TWX DCRB-OM 05 3187, TAC to 831st Air Div, George AFB, Cal, Info 4540 CCTGp (Tac Ftr), Luke AFB, 16 May 1964.

(88) UNCLASSIFIED, Prog Plan 126, Hq 4510 CCTWg (Tac Ftr), 15 Jun 1964.

F-104G CHECKOUTS

In view of the increased number of requests from foreign and domestic personnel for orientation flights in the F-104G at Luke AFB, it was necessary for TAC to establish a policy with respect to the use of the aircraft. The primary mission of the GAF/MAP aircraft was to provide GAF/MAP student flying training and the necessary instructor flying to include direct and indirect support. If the requests for orientation flights in the TF-104G aircraft could be accommodated without degrading either the student flying or the instructor support flying, headquarters TAC interposed no objection to the flights.

It was to be noted that the entire cost of upgrading the initial group of instructors for the GAF course was being born by the USAF. It was therefore necessary for TAC to exercise close management of the resources allocated for the support of the GAF/MAP F-TF-104G flying (89) training program. The importance of close supervision and management of the flying hours in the GAF F-104G course could not be over emphasized. Every effort was made to absorb orientation flights in the training program wherever possible. All requests for orientation flights requiring (90) additional sorties had to be forwarded to headquarters TAC for approval.

TAC granted approval to fly two TF-104G orientation flights for two (91) members of General Aldingers's staff on his visit to Luke AFB. The 4510th CCTW (Tac Ftr) was authorized to train three pilots to be used in the SATS

(89) UNCLASSIFIED, TWX AFXOPD 76555, CSAF to TAC, Info 4510 CCTWg (Tac Ftr), No Date.

(90) UNCLASSIFIED, TWX DORF 05 2883, TAC to 4510 CCTWg (Tac Ftr), 14 May 1964.

(91) UNCLASSIFIED, TWX DORF-FTS 05 1731, TAC to 4510 CCTWg (Tac Ftr), 9 May 1964.

program. Since Lockheed had the contract for training the three pilots and the F-104G maintenance at Luke AFB, headquarters TAC imposed no objection as to which aircraft was used in the training or the time period in which the training was conducted as long as Lockheed was able to meet the flying hours program at Luke AFB. (92)

A Category D Checkout was given to three additional people during the upgrading in the F-104G instructor training program. Major Hans Wolf, the GAF liaison officer, was entered in the instructor upgrading program and proved to be an effective pilot. (93)

CONTRACT MAINTENANCE SUPPORT

Maintenance Complex

The Lockheed Aircraft Corporation, the prime contractor, with Autonetics, General Electric and Litton as major subcontractors, had the total maintenance responsibilities for the F-104G aircraft required to support the GAF advanced flying training in Course 111102G. The Lockheed organization, required for the accomplishment of the F-104G maintenance responsibility, had the two-fold purpose of meeting the requirements of Air Force Regulation 66-1, as well as, the complete administrative and materiel functions. Accounting, contract administration, quality control and materiel were important functions over and above those which were normally directly included in an AF maintenance organization.

A complete maintenance complex had been assigned to Lockheed for its use in accomplishing the F-104G contract maintenance. Hangars, shop

(92) UNCLASSIFIED, TWX DMPR 06 1633, TAC to BUWEPS, Wash, D.C., Info 4510 CCTWg (Tac Ftr), 9 Jun 1964.

(93) UNCLASSIFIED, Interview, Maj J.A. Hamilton, Comdr 4510 CCTSq, by Mr. Jean Provence, Historian, 17 Jul 1964.

buildings, administrative areas and warehouse space were closely grouped together at the north end of the Luke AFB flight line, adjacent to the ramp area used for the F-104G aircraft.

Logistical support for a program of the magnitude of the F-104G maintenance contract was one of the contractor's major responsibilities. In excess of 40,000 line items of equipment was required to support the maintenance. The principle sources of materiel were the AF and the four contractors directly involved in the program. Receiving, storing and cataloguing the parts and equipment involved was done in two major warehouse areas with a total floor space of 11,000 square feet. The receiving organization was equipped to receive and store over 1,000 line items per day. An electronic data processing system was installed in the contractor's facility to maintain inventory control of all spares and repair parts.

The contractor's flight line maintenance organization had the responsibility of providing operationally ready aircraft for all scheduled sorties preplanned by the scheduling organization of the 4540th CCTG (Tac Ftr). Each pilot was briefed prior to his mission by the crew chief, and again, after the sortie was completed, the pilot was debriefed by the crew chief. Every effort was made to return an aircraft to an operationally ready status without having removed the aircraft from the flight line so that the preplanned maintenance program could be followed with the minimum deviations. Radio contact was maintained with the flight line supervisor so that specialists could be dispatched immediately to an aircraft if specialists were required to accomplish some unscheduled maintenance on an aircraft system.

A maintenance control room was established to record the complete status of all F-104G aircraft utilized in the support of the training in Course 111102G. The locator board in the maintenance control center gave the controller a visual reference to all aircraft and ground support equipment. Status of the assigned F-104G aircraft was relayed from the maintenance control room to the Luke AFB command post. From that control point, the overall operations plan was monitored and modified to insure the actual aircraft ready status.

The overall maintenance organization of the Lockheed Aircraft Corporation at Luke AFB closely matched that of the Deputy Commander for Operations of the 4510th CCTW (Tac Ftr), and applied the provisions of AFM (94) 66-1 to provide effective and efficient maintenance.

Quality Assurance Program

The 4510th CCTW (Tac Ftr) did not control the maintenance of the F-104G under the contract with the Lockheed Aircraft Corporation as it did the F-100 through the Deputy Commander for Operations, but the commander did exercise a control over the quality of the aircraft delivered to the flight line for the support of the student pilot training in Course 111102G.

The AF maintained an administrative contracting officer at Luke AFB who had the responsibility to see that the contract with the Lockheed Aircraft Corporation was fulfilled, and that all the provisions were complied with in supplying the F-104G aircraft required to support the GAF training. (95)

(94) UNCLASSIFIED, Col J.D. Collingsworth, Comdr 4540 CCTGp (Tac Ftr), F-104G Training Operations Briefing, 9 Apr 1964.

(95) UNCLASSIFIED, Interview, Mr. J.P. Barron, Asst to ACO, by Mr. Jean Provence, Historian, 30 Jun 1964.

The contract for the F-104G maintenance indicated what parts of AFM 66-1 that the contractor was to comply with as well as the technical orders which were to be followed in maintaining the aircraft. To insure this, the AF established and maintained a Quality Assurance Program which kept the administrative contracting officer informed on the quality of the aircraft delivered to the flight line to accomplish the scheduled sorties. The Lockheed Aircraft Service Company maintained a counterpart of the AF Quality Assurance Program which supervised the aircraft maintenance of the corporation and insured that the company maintenance personnel, in doing their jobs met with the AF specifications and quality standards. (96)

The F-104G aircraft arriving at Luke AFB for the support of the GAF advanced flying training program were in new condition and had few maintenance problems to overcome in meeting the aircraft sortie schedules. Scheduling for the first three months had few interruptions due to aircraft aborts and aborts were as often due to AF causes as well as maintenance. No pattern was followed in the aborts, and maintenance interruptions were experienced in the communications area, the rocket pods would not fire, the tip tanks would not feed and the radar would not function. The F-104G maintenance difficulties were roughly parallel to those experienced with the F-100 maintained by the Luke AF maintenance organization. The LAS quality control section had the same responsibilities as the quality control section of the 4510th CCTW (Tac Ftr); to make inspections of the aircraft and insure that the aircraft were operationally

(96) UNCLASSIFIED, Interview, Capt R.E. Williams, Quality Cont Off, 4510 CCTWg (Tac Ftr), by Mr. Jean Provence, Historian, 21 Apr 1964.

(97)
effective.

The F-104G was a highly sophisticated aircraft with many complex systems which could go wrong, and it took close supervision of the LAS organization to insure the highest quality of maintenance on the aircraft. The maintenance control center was the nerve center of the LAS maintenance organization. The personnel attempted to anticipate all possible aircraft difficulties before they occurred, and be ready with the proper correction when a difficulty did occur. A meeting was held each morning to discuss the problems of the previous day and correct them during the day's operations.

The LAS was going through a shakedown period following the beginning of operations on 1 April 1964 to support the upgrading of the student instructor pilots in Course I-111102G. It was a new contract and a new program to both the AF and the Lockheed Aircraft Corporation. It was a joint project which had never been attempted on such a large scale, and the knowhow to accomplish the coordination had to be developed day by day as new problems developed. The Lockheed Aircraft Corporation had contracted to supply F-104G to a military organization and follow many AF regulations in accomplishing the F-104G aircraft maintenance. (98)

The Quality Control Department of LAS, in view of the newness of the contract and the procedures for accomplishing the F-104G contract, became an important department in the contract maintenance organization. Discrepancies were indicated and corrective action taken. Inspections were conducted by Quality Control in compliance with Chapter 7, AFM 66-1. (99)

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- (97) UNCLASSIFIED, Interview, CMSgt G. McGary, NCOIC Quality Cont F-104G, by Mr. Jean Provence, Historian, 30 Jun 1964.
(98) UNCLASSIFIED, Interview, Mr. Ray Greenhouse, Staff Ast to Gen Foreman, LAS, by Mr. Jean Provence, Historian, 8 Jul 1964.
(99) UNCLASSIFIED, SPI No. 26-14, Quality Control Inspection & Routing Procedures, LAS Co, 13 Apr 1964.

The Quality Control procedures of the LAS were established in a Quality Control Manual, issued by the contractor, outlining the general organization of the Quality Control Department, the key functions and the responsibilities of the individuals within the department. It was the responsibility of the Quality Control Manager to establish and administer adequate inspections of all maintenance organizations to insure conformance with the contract, specifications, AFM 66-1, Tech Order oo-20A-1, and technical orders governing the F-104G specifications. (100)

Maintenance Achievement

The F-104G aircraft required to support the training in Course 111102G were scheduled in the same manner as the F-100 aircraft required to support Course 111105D, with the exception, that the aircraft were delivered by the LAS instead of the USAF maintenance organization. Once the training goals were established the aircraft required to support the training F-104G goals were scheduled on a monthly basis and the schedule delivered to the LAS for compliance. (101)

The LAS followed the schedule as closely as possible in order to maintain a continuity of aircraft in compliance with AFM 66-1. While LAS was exempt from compliance with part of AFM 66-1, the contract maintenance organization did follow the provisions for operations, scheduling and reporting. The LAS was a new organization and the methods untried, but the maintenance organization started off smoothly. (102)

(100) UNCLASSIFIED, LAS Quality Control Manual, Luke AFB, 3 Apr 1964, Doc V, 2.

(101) UNCLASSIFIED, Interview, Capt G.H. Hecker, OIC Prog Sec, DCO, 4510 CCTWg (Tac Ftr), by Mr. Jean Provence, Historian, 6 May 1964.

(102) UNCLASSIFIED, Interview, Capt M.G. Fisher, Plan & Prog Off, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 17 Apr 1964.

Chart XXII
F-104G MAINTENANCE ACHIEVEMENT

ACCOMPLISHMENT	APR	MAY	JUN
<u>Flying Hour Accomplishment F/TW-104G</u>			
COMPUTED MAINTENANCE CAPABILITY	300	482	563
HOURS REQUIRED	212	241	312
HOURS FLOWN	273	275	362
AVERAGE POSSESSED AIRCRAFT	15.9	24.9	32.0
AVERAGE FLEET TIME	177.5	167.7	157.9
AVERAGE UTILIZATION	17.0	11.0	11.3(103)

The average fleet time of the F-104G aircraft maintained by the LAS was 157.9 hours available per aircraft as of the end of June 1964. The utilization met the flying hour requirements in that the 4540th CCTG (Tac Ftr) flew 362 hours, or 50 hours more than the training requirements of 312. The accomplishment could not have been achieved without the full cooperation of the personnel of the 4510th CCTW (Tac Ftr) at Luke AFB. The LAS received invaluable assistance in putting together a maintenance organization in compliance with many of the provisions of AFM 66-1 which were unknown to the civilian supervisors and workers brought to Luke AFB by the Lockheed Aircraft Corporation. Invaluable aid was rendered to the LAS by the Chief of Maintenance who loaned badly needed ground equipment (104) which was required to get the F-104G aircraft into the air.

- (103) UNCLASSIFIED, RCS: TAC K-18, Monthly Maintenance Data Analysis Report, Hq 4540 CCTGp (Tac Ftr), 18 Jul 1964.
- (104) UNCLASSIFIED, Interview, Mr. L.A. DeSmet, Gen Foreman LAS, by Mr. Jean Provence, historian, June 1964.

When the instructor upgrading training operations started on 1 April 1964 at Luke AFB the program received good support from the maintenance contractor. As of 14 April 1964 the instructor upgrading class had flown 83 sorties which was something of an achievement. The Lockheed Aircraft Service Company did better than could have been expected with a new organization supporting a new program.

The support on the F-104G aircraft was very good as there were few aborts to interrupt the instructor upgrading. The aircraft itself was faster than the F-100 and gave a better performance with superior flying characteristics. The LAS continued to follow the schedule throughout the end of the period. The F-104G support was highly satisfactory as the LAS came up with almost everything that was asked of the contractor. Wherever the LAS did not meet the requirement it was because the contractor was operating with borrowed equipment or was short supplies.

DISTINGUISHED VISITORS

Lieutenant General Werner Panitski, Chief of Staff of the West German Air Force visited Luke AFB on 10 April 1964.

He was greeted by Colonel Augustus M. Hendry, Jr., and Colonel John D. Wayne, Chief of Staff of the TAC 12 AF, who served as the personal representative of Major General John C. Meyer, Commander 12 AF.

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- (105) UNCLASSIFIED, Interview, Col J.D. Collingsworth, Comdr 4514 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 15 Apr 1964.
(106) UNCLASSIFIED, Interview, Maj C.L. Counts, Ops & Tng Off, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 22 Apr 1964.
(107) UNCLASSIFIED, Interview, Capt C.E. Ball, IP, 4518 CCTSq, by Mr. Jean Provence, Historian, 4 May 1964.
(108) UNCLASSIFIED, Interview, Lt Col R.C. Meppen, Ops Off 104 Prog, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 30 Jun 1964.
(109) UNCLASSIFIED, Interview, Maj J.A. Hamilton, Co 4518 CCTSq, by Mr. Jean Provence, Historian, 17 Jul 1964.

After a luncheon at the officer's open mess, General Panitzki received a briefing on the F-104G Super Starfighter advanced flying training program for the GAF which was being initiated at Luke AFB. The briefing was conducted by Colonel J.D. Collingsworth, Commander, 4540th CCTG (Tac Ftr) and his Chief of Materiel, Captain Richard E. Williams. Colonel Collingsworth's briefing revealed to General Panitzki the type of training the GAF student pilots would receive while in training at Luke AFB in Course 111102G.

Following the briefing on the F-104G training, General Panitzki inspected the F-104G flight simulator, and toured the Lockheed Air Service Company area where the F-104G were parked on the flight line.

Continuing the tour, General Panitzki went to the 4512th CCTS where he met all the West German students who were in training at Luke AFB and Williams AFB. Major Hans Wolfe, the German Liaison Officer at Luke AFB, gave General Panitzki a briefing on the 4512th CCTS and the student instructor relationship.

An evening reception for General Panitzki was held in the officer's open mess attended by over 30 individuals including the ranking Luke AFB staff members and the key officials from the LAS.

On the morning of 11 April 1964, General Panitzki departed Luke AFB at 9:30 enroute to Burbank, California to visit the plant of the Lockheed Aircraft Corporation where the F-104G aircraft were manufactured. (110)

Colonel J. D. Collingsworth, Commander of the 4540th CCTG (Tac Ftr) had a successful meeting with General Panitzki who expressed great pleasure

with the progress of the GAF F-104G advanced student training program at Luke AFB, and expressed his approval of the training operations at Luke AFB. (111)

The Air Staff personnel were much impressed by a sample of the F-104G briefing prepared by the 4540th CCTG (Tac Ftr) at Luke AFB for General Panitzki. The Chief of Staff requested that duplicate copies of the briefing and the accompanying color slides be sent to the headquarters for use by briefing officers within the air staff. (112)

Major General Hermann Aldinger, Chief of Training of the West German Air Force, visited Luke AFB on 7 May 1964 to inspect and observe the F-104G advanced training program.

Colonel Augustus M. Hendry gave General Aldinger a reception at the officer's open mess on the evening of his arrival. The following day General Aldinger was given a briefing on the F-104G advanced flying training program for GAF students, and visited the F-104G flight simulator and the LAS flight line and maintenance facilities for the F-104G aircraft.

On the afternoon of 8 May 1964, General Aldinger flew to the Gila Bend Gunnery Range where he observed F-104G gunnery practice being flown by the instructor pilot students in Course I-111102G. On returning to Luke AFB, General Aldinger met with the students in the F-84F combat crew training program. On 10 May 1964, General Aldinger flew to Williams AFB where he inspected the ATC undergraduate training of GAF students. (113)

(111) UNCLASSIFIED, Interview, Col J.D. Collingsworth, Comdr, 4540 CCTGp (Tac Ftr), by Mr. Jean Provence, Historian, 15 Apr 1964.

(112) UNCLASSIFIED, TWX AFSMSBB 76 553, CSAF to TAC, Info 4510 CCTWg (Tac Ftr), 8 May 1964.

(113) UNCLASSIFIED, OI Release No. 5-270-64, 4510 CCTWg (Tac Ftr), 7 May 1964.