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REPUBLIC AVIATION CORPORATION

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The data herein has been collected from USAFE F-105 Tactical Fighter Wing records and the report has been reviewed by both the 36th and 49th Tactical Fighter Wing Commanders and the Commander in Chief, USAFE. They have no objection to the facts as set forth and concur that the report is an accurate reflection of F-105 operations in USAFE.

REPUBLIC AVIATION CORPORATION

21 November 1962

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F-105D OPERATIONS IN EUROPE

The F-105 Weapon System, and the people who command, operate and maintain the system, have established a notable record of performance during the sixteen (16) months since the first aircraft arrived in Europe. The record shows a rapid and continuing increase in combat capability to a degree which is truly remarkable considering the integration of this sophisticated and highly complex weapon system into the active inventory was effected relatively early in its life cycle time period. A realistic appreciation of the magnitude of USAFE's achievements with the weapon system requires an understanding of several significant factors.

First, it should be realized that tactical unit conversion from what was essentially a day fighter capability with the F-100 to all-weather capability with the F-105D had a tremendous impact on all phases of command, operations and maintenance within the USAFE. It was not comparable to say, unit conversion from F-101 to F-106 within air defense forces where a broad base of experience and knowledge in complex electronics systems had been developed over a number of years. From the standpoint of complexity difference,

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it would be somewhat analogous to a SAC unit conversion from B-24's to B-47's. With F-105 conversion, the tactical units had not only a tremendous individual training job for pilots and maintenance men, but an equally difficult task in evolving radically different operational and maintenance concepts for the most effective utilization of the weapon system. Much of the success which USAFE has experienced with the F-105D to date is due to the high level of professional competence, vision and understanding which was devoted to the establishment of these concepts by the managers at all echelons within the command. They have found the means for making the system work.

Second, due to the operational commitments of the tactical units, they have imposed certain unique operational constraints upon themselves with respect to their daily training schedules. To provide the highest degree of assurance in emergency reaction capability, no F-105 aircraft is flown on a training mission within the theatre unless every operating system in the aircraft is operationally ready. The daily temptation to accrue flying time on the basis of expediency is very great, but implicit understanding of operational necessity and rigid control throughout the units assures that no aircraft is launched unless every

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operating system is working properly. Thus in looking at the nearly 20,000 sorties and 33,000 flying hours recorded in the first sixteen (16) months by the 36th and 49th Tactical Fighter Wings in Europe, we can see a true measure of actual mission effectiveness and observe a corresponding capability to support logistically an in-being readiness posture. These units are not "just boring holes in the sky"; they do not have bombing airplanes, strafing airplanes, navigation airplanes, etc., either at the home base or at Wheelus; they have sufficient aircraft, fully operationally ready to execute their primary commitment. They keep them that way and fly them that way, every day.

Third, the personnel resources authorized the F-105 unit maintenance activity are comparable to the number authorized an F-100 unit. Thus, it should be understood that the high level of maintenance performance within the 36th and 49th Tactical Fighter Wings was not achieved at the expense of the USAF manpower ceiling. Actually, the tactical units are only approximately 85% manned in the maintenance area, with the 49th TFW experiencing over the past months a severe shortage of F-105 jet aircraft mechanics when they were only 62% manned. That unit has, however, in the past few months closely approached or exceeded their unit flying hour

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capability based on manhour availability. It is also worthy of mention that the flying hour achievements of these units and the level of operating system readiness maintained were not a consequence of excessive maintenance overtime. For example, the average net overtime per maintenance man during a recent month of average flying was only 7.4 hours for the month.

Fourth, one should understand that for a pilot to become combat ready in the F-105D he must meet unit training standard requirements on seven (7) of the eleven (11) Thunderstick System weapon delivery modes. The existing requirements for circular error accuracy in certain of these modes exceed the USAF design specification for the F-105 Weapon System by nearly 12%. Thus, the pilot must not only exceed the weapon system "spec", but must do it three (3) times in a row to become qualified. It is a real tribute to the people who operate and maintain the weapon system, and a tribute to the system itself, that upwards of 95% of the pilots are combat ready, and further that weapon qualification required on the average of only 55-60 hours of F-105 total flying time per pilot.

Fifth, for the first time, the tactical air forces have in being

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a fully combat ready, all-weather weapon delivery system. They now have an actual 24 hour, around the clock strike capability - an increase of two-thirds over the previous dawn to dusk coverage. High calibre maintenance as well as pilot confidence and proficiency have resulted in the present ability of both wings to demonstrate a circular error average in the blind bombing modes which exceeds the established USAF proficiency requirement by as much as 40%. This weapon delivery accuracy, together with a proven average mean time between failure (air) for the avionics systems in excess of the normal F-105 emergency war plan combat mission, indicates that true all-weather tactical capability is a reality.

Sixth, availability of operationally ready aircraft in USAFE for the daily flying training schedule is effectively reduced by the number of aircraft actually on Victor Alert plus two additional - one going on and one coming off alert. Thus, the operational commitment of the F-105 units in the theatre to this alert posture, together with the normal daily maintenance requirements and Wheelus rotation, leaves approximately 30 aircraft or less available for the daily flying schedule at the main base.

Having reviewed some of the more pertinent factors concerning

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integration of the F-105's into the active inventory within USAFE, an examination of the substantial achievements of the operating units takes on a heightened perspective. There really is no magic in the following list of achievements; no half-truths or distorted statistics. They are the results of vision and professional competence; of a "can-do" attitude and high motivation; and above all a whole hell of a lot of hard work.

During the first nine months of 1962 the aircraft utilization rate for the two wings ranged from a low of 15.1 hours to a high of 28.1 hours per aircraft in a single month. The average utilization rate for both wings during the period was approximately 18 hours per month per aircraft with an average of 68.2 aircraft possessed.

During a 27 day period at Wheelus AFB, 18 aircraft from the 49th TFW flew a total of 800 hours - or 44 1/2 hours per aircraft. Every aircraft launched had all operating systems operationally ready. The weapon delivery results during this period served to effectively reduce the wing CEA. This is not an isolated example.

Upwards of 95% of the pilots require less than fifteen sorties at Wheelus to maintain weapon delivery qualification.

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Weapon delivery qualification scores as reflected in the wing CEA's are exceeding the USAF proficiency requirement in every event except one visual mode where the bomb from the F-105 is subjected to considerably more wind effect due to height of toss than for example, are F-100 releases. The degree to which one tactical unit exceeds the USAF proficiency requirement in various nuclear delivery events is given below to provide an appreciation of the proven delivery capability of the weapon system.

Lay down (visual)	+ 36.5%
VTIP (labs)	- 9.4%
Blind lay down	+ 39.5%
Blind TIP	+ 49.5%
Blind IP	+ 50.5%

Experienced pilots as well as younger pilots state unequivocally that the F-105 has the best flight characteristics of any aircraft they have ever flown and that it is the most stable and effective weapons platform that they have ever operated.

It is the opinion of the pilots and commanders that the F-105 has established a notable safety record within the theatre and is,

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in fact, the safest tactical aircraft operating in USAFE. The expressed confidence of the operators is justified in view of the fact that sixteen months of operation and an accumulation of more than 33,000 flying hours, under extremes of weather and altitude in a wide range of operating regimes, has resulted in the loss of a single pilot.

Avionics systems reliability has increased in proportion to the experience gained by the maintenance people with the system. For example, the actual mean time between failure (air) for the entire avionics system during the past five months at Spangdahlem AB was 2.57 flight hours between actual systems malfunction. During this period the 49th TFW flew a total of 7038 hours in 4164 sorties. An average of 30% of the sorties flown were without a single avionics system malfunction. The computed mean time between failure (air) for these systems during the cited period were as follows:

Radar	10.1	hours of flight
Instruments	12.3	" " "
Communications	14.6	" " "
Doppler	17.8	" " "
Autopilot	23.2	" " "
Toss Bomb Computer	34.0	" " "
Sight	57.7	" " "

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The launch success rate for scheduled sorties at Bitburg AB in the past five months was 92% or only 286 aborts against 3553 sorties flown. The launch success rate for avionics systems alone at Spangdahlem AB during the past five months was 93% or only 288 avionics aborts against 4164 sorties flown.

Due primarily to facility space limitations the USAFE F-105 units are operating the A & E shops with only approximately one-half of the total authorized test bench equipment set up. Even with this limitation, the units are effectively supporting the weapon system and demonstrating a highly creditable NRTS rate ... 7.8% at Bitburg AB in September is a representative figure.

Experience within the Wings has proven that approximately one-half of the aircraft which return from a sortie with avionics system write-ups, are available for relaunch within five hours, since only minor maintenance or adjustment is required to return the aircraft to operational status.

The direct labor requirements in maintenance manhours per hour of flight have experienced a fairly consistent decrease during the past nine months. The six months average in both wings for maintenance manhours per flight is approximately 42 direct

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labor hours to support one flying hour. This maintenance man-hour figure includes the direct labor expenditures for performance of wing-base technical order compliance (TOC) within the units. Generally speaking, labor requirements for TOC are not a minor consideration on any new aircraft and the F-105 is no exception. USAFE wings have averaged approximately 7-8% of the fleet out for this type of work.

In discussions with maintenance personnel at all levels, one is struck by the fact that these people are not dismayed by the often discussed "complexity and sophistication" of the F-105, but have complete assurance in their proven ability to maintain effectively the weapon system. Although less than one percent of the maintenance force had previous F-105 experience, they have developed within a relatively short time a level of unit and individual maintenance capability which is exemplified by the positive attitude to the task which is seen in every area. This is not to say that they do not have problems of varying degree, but rather that they have the ability to recognize the problem and are justifiably confident of their individual abilities in its solution.