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OX CART
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BYE-2703-64
28 April 1964
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MEMORANDUM FOR: Director of Central Intelligence

SUBJECT: Establishment of World Record of Aircraft Speed
by the A-11

1. This memorandum is for the information of the Director of Central Intelligence.

2. In his press conference on 11 April in a prepared preambulatory statement on the above subject, the President said:

"The world record for aircraft speed, currently held by the Soviets, has been repeatedly broken in secrecy by the United States aircraft A-11. The President has instructed the Department of Defense to demonstrate this capability with the procedure which, according to international rules, will permit the result of the test to be entered as a new world record.

"The Soviet record is 1,665 miles an hour. The A-11 has already flown in excess of 2,000 miles an hour!"

3. Since that time discussions have been held with Mr. Clarence L. Johnson, designer of the aircraft, separately by the undersigned and Col. Leo P. Geary, USAF, Director, Program D, the responsible officer for the A-11 portion of the OXCART effort. Col. Geary has reported his findings to Dr. Brockway McMillan, DNRO. Setting the world speed record with the aircraft presents numerous problems, some of which are listed below.

a. Such a record must be set under the auspices of the Federation Aeronautique Internationale (FAI), with headquarters in Paris. Formal application to establish such a record must be filed with the FAI in advance of any such attempt. A representative of this organization is then instructed to work with the appropriate

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military and/or manufacturer's representatives to lay out the course for such a run, and to supervise the installation of appropriate flight recording instruments in the test aircraft. Once these instruments are installed, the test aircraft must be sealed until after the run at which time the FAI representative must be present when the seals are broken and the instruments are removed. Were this the only problem it is felt that under proper security safeguards such an installation of test equipment could be accomplished.

b. Current rules of the FAI provide that a course will be laid out on the ground 30 kilometers in length and, further, that the test aircraft must make a total of 6 speed runs up-wind and down-wind on this measured course. The speed record then consists of the average speed attained on the total number of runs undertaken. This portion of the rules, of course, is archaic as far as travelling at this mach number is concerned since the affect of the wind would be negligible. However, the requirement for a total of 6 speed runs becomes meaningful when we look at such factors as the amount of time that must be spent at 3.2 in order to accomplish these runs.

(1) The narrowest turning radius of the aircraft at mach 3.2 with the maximum 32° angle of bank, and 1.175 G forces is 82 nautical miles. Applying such a bank angle at this speed, it takes 8.25 minutes to complete a 180° turn. Such a turn would be required at each end of the elliptical race course needed for the speed record. Assuming that the minimum of 30 kms., in addition to the basic 30 kms. closed course, would be required for the aircraft to come out of its turn and straighten up, it would take a total of 22.5 minutes to complete one circuit of the ellipse. Even if a liberal interpretation of the rules permitted the establishment of the up or down wind portion of the run on the back leg of the ellipse, it would take a minimum of 67.5 minutes to complete the speed tests, all of which would have to be flown at 3.2 or thereabouts. In view of the present maximum sustained speed of 3.2 for 10 minutes, it appears that we are some distance away from being able to fly that fast for such a long time.

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c. At the present time the interceptor aircraft are restricted to 2.35 mach, since they have not been retro-fitted with the new "onion slicer" in-let configuration to counter the engine-out problem, and the fastest any A-11 has gone to date is 2.24 mach at 65,300 ft. The optimum altitude for establishing 3.2 mach in sustained flight is in the altitude bracket between 74,000 and 88,000 ft. Until the engineering modifications to the air frame are completed, and until the installation in July of the larger 32.5K engine (31.5K engines now installed) the high mach numbers at high altitudes are beyond the reach of the A-11 which, of course, is an aircraft more encumbered with drag because of its configuration than is the A-12.

4. In view of the kind of facts which are sketched above, the DNRO decided several weeks ago that no attempt should be made by the A-11 to set a record of at least 2,000 miles per hour until July 1964 or later, at the earliest. Col. Geary, acting for Dr. McMillan, so advised Mr. Johnson who reported this fact to us last week.

5. Parenthetically, Mr. Johnson himself feels that the 30 kms. course, when flown by an aircraft at at least 74,000 ft. represents a well nigh impossible equation, and his own preference would be to see if FAI could not be persuaded to lengthen the course by something like a factor of four. He states that in view of the restriction of the FAI rule requiring the entire record to be set at a given altitude, plus or minus only 250 feet, that it would be almost impossible to control the aircraft with this degree of accuracy through as many turns as would be needed to make a total of 6 runs. He is also concerned about the adequacy of FAI instrumentation which he describes as "modestly archaic, i. e. 1914 vintage", since a whole new set of sophisticated instruments have had to be developed in order to keep track of this aircraft in the upper altitude ranges in the areas of 70,000 ft. It is our view that the whole subject of setting the world speed record with this aircraft, in the manner suggested by the President, requires additional thought and time on the part of both the Department of Defense and the manufacturer of the weapons system, Mr. Johnson.


JAMES A. CUNNINGHAM, JR.
Deputy Assistant Director
(Special Activities)

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