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S. H. Hill
(Dr. High)

To: B. R. Rich

26 May 1976

From: E. F. Martin, Jr.

7-4550

Subject: COMMENTS ON XST MAY 19th ARPA REVIEW

The attendees were:

DARPA/USAF

Ken Perko
Bill Elsner
Major Jack Twigg
Larry Boyd
John Griffin
Dr. Carl Mentzer
Dr. Nick Damaskos (consultant)

Hughes

Dr. Dave Green
Charles Strider

Lockheed

Ben Rich
Ed Martin
Norm Nelson
Dick Scherrer
Alan Brown
Dick Cantrell
Bill Taylor
Mel George
Denys Overholser
Ed Lovick
Leo Celniker
Dick Parsell

Item #1: Bill Elsner and Jack Twigg asked several questions relating to management and tracking on the XST project. They stated that they had no intention of applying Air Force techniques to the XST such as CSCS but they wish to be allowed to track the project - particularly with regard to expenditure rates. Dick Parsell stated that he and Jack Twigg would share the same information that we used here to track ourselves. This was agreed to by Major Twigg.

Item #2: There is concern that we have not yet designed our flight test program and many of the details of how a stealth flight test can be accomplished. Is there to be a beacon on the XST? The Air Force will insist on a chase plane. How do we hide it from the threat radars? The Air Force wishes to have an Air Force pilot trained and flying in parallel with our test pilot - this will require XST simulator time. They wish all flight test to be accomplished at the Ranch and want proposals from us in that regard. On-board recording is to be used in lieu of telemetering. We must have a record of where the XST is at all times in reference to threat radars.

Item #3: Bill Elsner requires a white paper describing in simple details the method of scaling radar cross section from our full scale tests at RATSCAT to larger aircraft. We should consider operating at 35 GHz during our next RATSCAT test series in order to get more scaling information.

Item #4: Fred Rall is to be assigned to the EIRT; the Flight Test Review team from Wright Field.

Item #5: General Stafford of the Flight Test Center is to be cleared on the program and will be responsible for assigning the Air Force test pilot to the XST.

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Declassified Under Authority of the Interagency Security Classification Appeals Panel, E.O. 13526, sec. 5.3(b)(3)
ISCAP Appeal No. 2019-010, document 1
Declassification Date: May 2, 2022

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- Item #6: The XST project is to be assigned an Air Force Priority of 2 - 3 which makes it the fourth most important Air Force program in the country. This establishes the XST in a higher priority ranking than either the F-15 or F-16. For purposes of purchased items - a DX priority will also be obtained for the XST project.
- Item #7: Our XST effective contract data is established as April 26, 1976.
- Item #8: Dr. Dave Green and Charles Strider of Hughes Aircraft were present to describe their stealthy radar to the XST project personnel. We now have their report on this subject and are to assist them in developing application methods and radomes for using this radar on the XST and other stealth aircraft. A Hughes report is in-house and being studied by Ed Lovick and Denys Overholser.
- Item #9: It was stated that five months were required from start of design to delivery of a full scale RCS model to RATSCAT for final radar tests of the XST.
- Item #10: The vertical fin gaps now on the XST fins necessitated by using all movable rudders must be tested during the week of June 1st at Gray Butte. This possible radar problem is viewed very seriously by ARPA and Wright Field.
- Item #11: The tail aspect of radar cross section at low frequencies may not be as important as other aspects and thus may be traded off during our radar cross section development tests during attempts to optimize both high and low frequencies.
- Item #12: John Griffin - The weight statement is thought to be conservative in that there is 200# included in it for acoustic treatment which is not needed (?). The weight statement also contains the complete weight for the 3-battery emergency power system. Since it is becoming apparent that we are going to retain this emergency power availability in the aircraft during most of its test life we must examine the means for reducing this weight; perhaps by combining the power requirements with the normal aircraft battery systems.
- Item #13: John Griffin - A question was raised with regard to gear-up landing possibilities of the XST. If the landing gear sticks up - is a gear-up landing feasible or must the pilot bail out? The B-1 bomber is considered to be an aircraft that cannot land with its gear up. We should obtain our in-house Lockheed data on the T-33 landing gear reliability as part of the answer to this question. Jack Bradford (7-2939) in Bldg. 360 has all Lockheed T-33 landing gear data - prints, service reports, reliability, etc.
- Item #14: Ken Perko - The most serious XST problem that we have is with regard to the combination of being able to retain low radar cross section for both high and low frequency transmission. It was stated that we are approaching this problem in an "artistic" manner versus the hard technical line that we have pursued on this project to date. We were asked about using rounded edges on the wing tips and fins. We were asked why the edge absorber and the elevon isn't terminated in a more logical manner with the skin gradations or by an internal chine method.
- Item #15: Major Jack Twigg - Most concerned about our test planning data for flight test, what are our detailed flight test plans and, the time span allotted for the flight test program looks to ambitious in order to get all of our work done.
- Item #16: Carl Mentzer - The G.E. material that we plan to use in the exhaust system must be examined carefully. The Air Force would like us to examine this in detail and advise them as to our progress.

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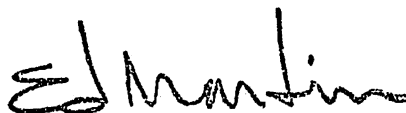
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Item #17: Bill Elsner - The discussions of visual signatures and the use of SCIPAR or IRT methods led to the conclusion that the SCIPAR system appeared to be impractical. As a result of this Alan Brown is to visit Wright Field on Friday to establish the next step in the development of a visual signature reduction system.

Item #18: Larry Boyd - Reviewed XST mission analyses data and made very constructive inputs to our analysis which are to be incorporated prior to sending to ARPA and Wright Field.



E. F. Martin, Jr.

Distribution:

Lockheed Attendees
G. Dreiling
R. Miller
R. Passon

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