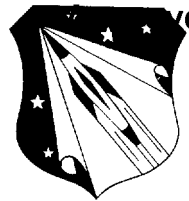


1083-270

SECRET

Approved For Release 2001/03/01 : CIA-RDP33-02415A000100430035-4



**HEADQUARTERS
AIR RESEARCH AND DEVELOPMENT COMMAND**

UNITED STATES AIR FORCE
Post Office Box 1395
Baltimore 3, Maryland

ADDRESS REPLY TO
COMMANDER, ARDC; ATTN:

SUBJECT: (U) Minutes of Passive ECM Committee

TO: Dr. Frank Rodgers
Lincoln Laboratory
Lexington, Massachusetts

1. Inclosed is a copy of the "Minutes of the First Meeting of the Joint USAF-USN-Lincoln Laboratory Committee on Passive ECM." Because of the sensitive nature of the subject, recipients are advised to not disseminate the information contained in the minutes to persons other than committee members or alternates.

2. For your information, there is also inclosed a complete listing of all persons associated with the committee and the mailing address of each.

- 2 Incls
 - 1. Minutes of Meeting
 - 2. Mailing List

Norman C. Appold
 NORMAN C. APPOLD
 Colonel, USAF
 Chief, Special Project Office
 Assistant for Aircraft Systems

IF INCLOSURE NO. 1 IS WITHDRAWN (OR NOT ATTACHED), THE CLASSIFICATION OF THIS CORRESPONDENCE WILL BE DOWNGRADED TO CONFIDENTIAL IN ACCORDANCE WITH AFR 205-1.

USAF Declassification/Release Instructions On File

SECRET

Approved For Release 2001/03/01 : CIA-RDP33-02415A000100430035-4

67-115863 7

SECRET

Minutes of the First Meeting of the Joint USAF-USN-
Lincoln Laboratory Committee on Passive ECM

1. The first meeting was held in Room 5C1040, the Pentagon Building, at 1330 on 6 September 1957. Present were:

- Dr. G. E. Valley, Chairman
- Colonel N. C. Appold, USAF Member
- Colonel R. J. Nunziato, USAF Member
- Colonel C. H. Lewis, USAF Alternate
- Commander N. E. Petersen, USN Member
- Dr. R. W. Wright, USN Alternate
- Dr. F. A. Rodgers, Lincoln Laboratory Member
- Mr. R. C. Butman, Lincoln Laboratory Member
- Mr. T. C. Bazemore, Lincoln Laboratory Alternate
- Major G. H. White, Recorder
- Lt Colonel R. J. Thompson, Guest Speaker

2. The following are items which were to be covered at the meeting:

- a. Review of the USAF radar camouflage program.
- b. Review of the USN radar camouflage program.
- c. Review of the Lincoln Laboratory effort on RAINBOW (Confidential Title) including these specific points: (1) the model testing program at Westinghouse; (2) the assistance Lincoln is getting from the Polaroid Corporation; (3) progress at Lockheed Aircraft Corporation with RAINBOW (Confidential Title) material.
- d. Agreement on the general statement of work for the Lincoln Laboratory.

3. Lt Colonel Robert J. Thompson, Chief of the Electronics Warfare Laboratory, Rome Air Development Center, gave a presentation of the Air Research and Development Command's efforts in the field of radar camouflage. The presentation covered the following:

- a. Dr. Gaetano Latmiral, University of Naples, Italy. A study of the electrical properties required for a material providing 20 db power attenuation at X-Band frequencies.
- b. University of Goettingen, Germany. A study program on resonance and magnetic dipole absorbers, and absorption of energy by media possessing internal magnetic fields.
- c. Polytechnic Institute of Brooklyn. Study and experimentation using lossless dielectrics and resistance sheets for a layer-type absorber suitable for ground applications.

SECRET

9001

SECRET

d. Bjorksten Research Laboratories, Madison, Wisconsin. Present approach is toward the use of high loss magnetic materials in a dielectric matrix. Primarily for application to ground structures with possible application to aircraft.

e. Deutsche Magnesit, Munich, Germany. A multi-layered paint type of absorber approximately 2 mm. thick. Laboratory tests have indicated 95% power absorption at 9300 mc/s.

f. Emerson and Cuming material. An absorbent material inserted in plastic honeycomb. The material is approximately one inch thick and laboratory tests have measured 95% power absorption from 2500-13,000 mc/s. The material is to be applied to a T-33 for full scale flight testing.

g. Battelle Memorial Institute. A study program to reduce the radar cross section of aircraft, primarily directed at the lower frequencies.

4. Dr. Rufus W. Wright, Naval Research Laboratory, gave a presentation of the USN effort on radar camouflage. Work is directed primarily toward application to naval vessels.

5. Dr. Rodgers, Lincoln Laboratory, gave a summary of current Lincoln work on RAINBOW (Confidential Title) material. The present work consists of:

a. Effort on a continuous process which is a homogeneous coating to replace the geometric arrangement of conductive squares.

b. Study of the equivalent circuit of the material to more fully understand its characteristics. (In this regard, Dr. Rodgers stated that work to date indicates the material behaves like a series RC circuit.)

c. Improvement of field reflection measurement techniques.

d. Scale model reflection measurements. Westinghouse has been conducting the measurements and has been troubled by a 15 db dynamic range measurement limitation in their equipment.

6. Dr. Rodgers stated that the Lockheed Aircraft Corporation and the Polaroid Corporation were having difficulties with the RAINBOW (Confidential Title) material. The process used by Lockheed to apply the material to the aircraft surfaces affects the material so as to alter the electrical properties as built in by the Polaroid Corporation. Therefore, the point involved is not a difference of opinion as such but rather a case where a mutually compatible material and application process must be found.

SECRET

67-115854

SECRET

7. The proposed Lincoln Laboratory program for the Air Force and Navy was discussed. Dr. Rodgers said that current Lincoln thinking on the scope of proposed work would be expressed by stating two changes to the proposal dated 13 May 1957 and identified as PLJW-96. The two changes are:

a. Delete paragraph 2.2 relating to full scale flight testing.

b. Add a paragraph numbered 2.1.2 as follows:

"Model Tests. To determine the degree of optimum coverage, approximately 1/10 scale model tests should be conducted using materials having the correct electrical characteristics." (Dr. Rodgers added that some work remained to insure that such tests are completely valid although present indications are that the tests will be useful.)

8. Colonel Appold amplified on the deletion of full scale flight tests from the Lincoln proposal. The deletion does not mean such tests are not desirable, but rather that such work is not imminent and a decision on the Laboratory's participation can be made at a later date. Comprehensive flight tests may take a year or more and may well start during this fiscal year (FY 58). Deletion of flight testing for the time being probably will allow a downward revision of the funds initially required for the Lincoln proposal. For economic reasons, it will be desirable to use existing radar facilities as much as possible when flight tests are undertaken. Also, it is anticipated that considerable planning and coordination will be required and the assistance of Lincoln in this will be required.

9. Commander Petersen expressed the desire that time schedules be included in the Lincoln proposal. Colonel Appold said he certainly agreed and that time schedules and fiscal estimates would be included in the discussions and negotiations between ARDC and Lincoln Laboratory when the Laboratory is in a position to go into more detail on the proposal. (Action required by ARDC and Lincoln.) (Dr. Rodgers informed the group that other work had been extended considerably past previous estimates and that although the work would definitely contribute toward the USAF-USN program, it precluded the Laboratory from working full time directly on such a program per se.)

10. The subject of funds for the Laboratory to support the new program was discussed. At present, FY 58 funds of \$500,000 to be provided equally by the Air Force and Navy, are tentatively programmed. As of the meeting date Lincoln had not received any of the money.

SECRET

SECRET

The Navy plans to turn over \$250,000 to the Air Force to be applied to the Lincoln budget. These funds have not yet been received by the Air Force and Commander Petersen said that he was not sure when they would be available in view of the uncertainties associated with the budget in general. The Air Force has reached an agreement with Lincoln to have its share accomplished within the P-600 FY 58 funds provided to the Laboratory by the Air Force. Dr. Rodgers stated that any reduction in the FY 58 funds budgeted to Lincoln by the Air Force may affect the magnitude of work to be undertaken by the Laboratory. It was agreed by the committee that this matter was a subject outside of its control. The Joint Services Advisory Committee for the Lincoln Laboratory and ARDC would have to resolve this and arrive at a mutually satisfactory solution. (Action required by Hq USAF, DCS/D.) Discussions must also take place between ARDC and Lincoln regarding the details of the work proposal and fiscal estimates. (See paragraph 9 above where action is required by ARDC and Lincoln.)

11. The next meeting of the committee is tentatively set to be held during the month of December 1957. When the specific time and place are determined, all members will be notified.

Norman C. Appold
NORMAN C. APPOLD
Colonel, USAF

Distributions:

Chairman	1 copy
USAF	1 copy each member and alternate
USN	1 copy each member and alternate
Lincoln	1 copy each member

SECRET

C7-115854