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ARMY AVIATION TEST BOARD FORT RUCKER ALA
PRODUCT IMPROVEMENT TEST, RELOCATION OF FM ARC-54 AND AT-1108 U--ETC(U)
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DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION TEST BOARD
Fort Rucker, Alabama 36360

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JUN 4 1968

SUBJECT: Final Report of Test, Product Improvement Test, Reloca-
tion of FM ARC-54 and AT-1108 UHF/VHF Antennae,
USATECOM Project No. 4-5-0500-10

Commanding General
US Army Materiel Command
ATTN: AMCPM-IRFO-T
P.O. Box 209, Main Office
St. Louis, Missouri 63166

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1. Purpose. To determine the adequacy of the relocated FM and AT-1108 antennas on the AH-1G Helicopter.
2. Background. The US Army Aviation Test Board (USAAVNTBD) conducted the system effectiveness portion of the Reliability Test of the AH-1G Helicopter during the period July 1967 - January 1968 . (~~reference 2, inclosure 1~~). During test it was determined that the communication systems installed in the helicopter were unsatisfactory because of antenna problems. The US Army Materiel Command requested, through US Army Test and Evaluation Command, that the USAAVNTBD test relocated UHF-AM/VHF-AM and VHF-FM antennas (~~reference 1~~). On 1 February 1968, Bell Helicopter Company provided to the USAAVNTBD modification kits for relocation of the antennas.
3. Description of Materiel. The AH-1G Helicopter is equipped with a government-furnished AT-1108 UHF-AM/VHF-AM antenna and a contractor-furnished VHF-FM antenna. The AT-1108 is a blade type

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USATECOM Project No. 4-5-0500-10

with two antennas installed in a single housing. The UHF-AM antenna operates in the frequency range of 225 to 400 mhz, and the VHF-AM antenna operates in the frequency range of 116 to 152 mhz. The VHF-FM antenna is a blade type that operates in the frequency range of 30 to 76 mhz.

4. Scope. The USAAVNTBD conducted the product improvement test (Category II) of the relocated communication antennas on the AH-1G in the vicinity of Fort Rucker, Alabama, during the period 6 February - 28 February 1968. Relative antenna radiation patterns were made and communication range determined for each radio set.

5. Summary of Results.

a. The antenna radiation patterns (Inclosures 2 - 4) indicated signal blanking at some compass points; however, the radiated signal strength of the relocated antennas was increased sufficiently in comparison to that obtained at the original locations to allow line-of-sight communications.

b. Average communication ranges were as follows:

<u>Radio Set</u>	<u>500 Feet Altitude</u>	<u>3000 Feet Altitude</u>
VHF-AM	32 miles	69 miles
UHF-AM	28 miles	47 miles
VHF-FM	27 miles	48 miles

c. No installation instructions were provided for relocation of the antenna systems. The Bell Helicopter Co. representative furnished verbal instructions to installation personnel. The modification was comparatively simple and no problems were encountered.

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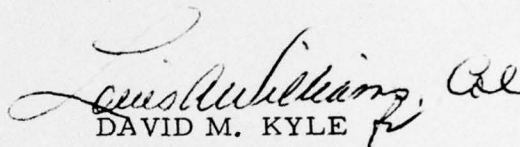
SUBJECT: Final Report of Test, "Product Improvement Test, Relocation of FM ARC-54 and AT-1108 UHF/VHF Antennae,"
USATECOM Project No. 4-5-0500-10

d. The relocated AT-1108 VHF/UHF antenna was not damaged during the test by either landings or ground handling of the helicopter.

6. Conclusion. Relocation of the antennas has increased the communication capability for the AH-1G Helicopter.

7. Recommendation. It is recommended that the AH-1G Helicopter antennas be relocated as prescribed in reference 1, inclosure 1.

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DAVID M. KYLE
Colonel, Artillery
President

Copies furnished:
Commanding General, US Army Test and Evaluation
Command, ATTN: AMSTE-BG, Aberdeen Proving
Ground, Maryland 21005

REFERENCES

1. Letter, AMCPM-IRFO-T, US Army Materiel Command, 27 December 1967, subject: "Request for Project Directive on UH-1/AH-1G Equipment," with 1st Ind, AMSTE-BG, US Army Test and Evaluation Command, 10 January 1968.
2. Third Partial Report of Test, USATECOM Project No. 4-6-0500-02, "Reliability Test of AH-1G Helicopter (HueyCobra), System Effectiveness," US Army Aviation Test Board, 2 May 1968.

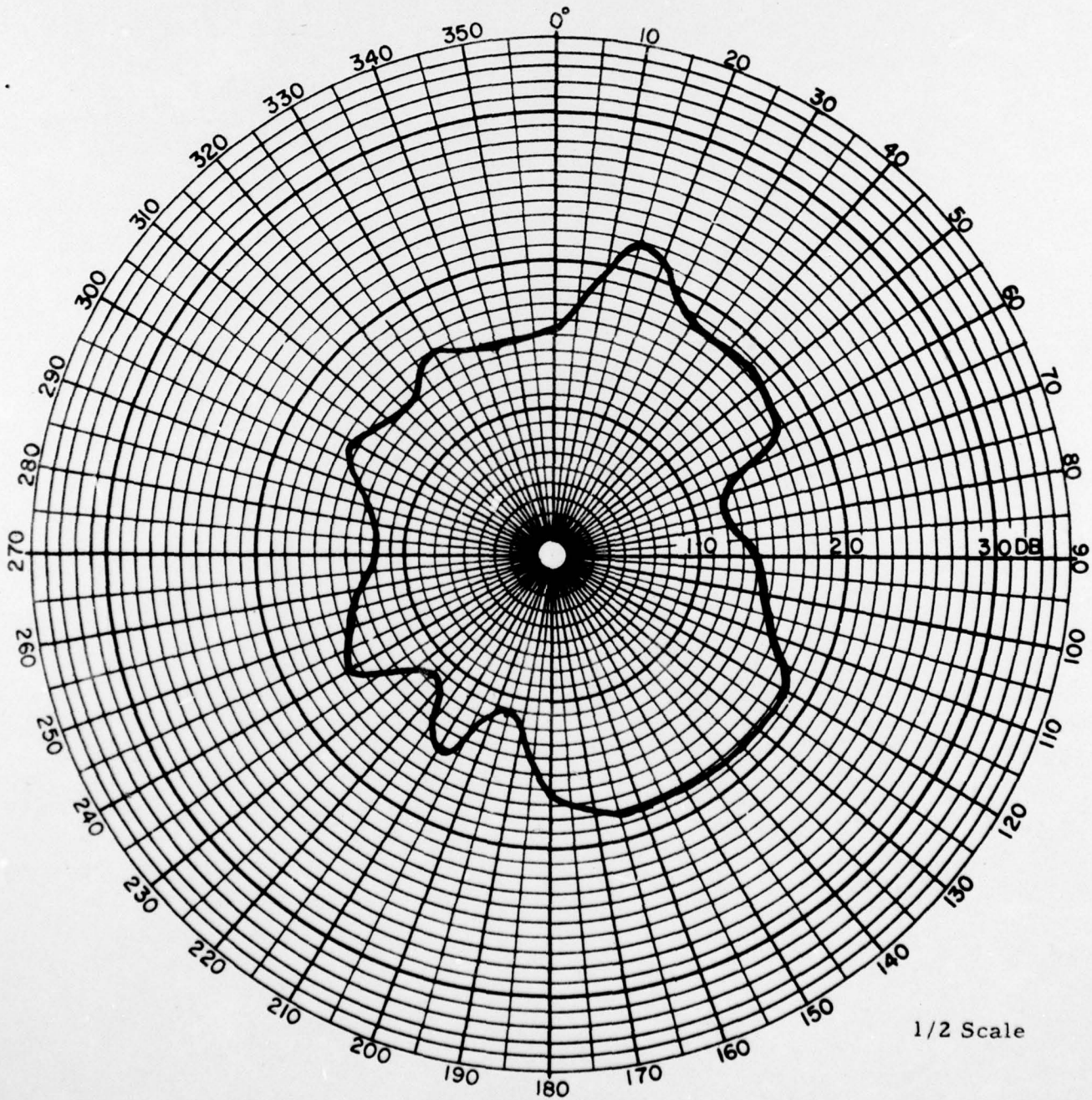
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INCLOSURE 1

ANTENNA RADIATION PATTERN

Date: 20 February 1968
A/C Location: Black, Alabama
Gnd. Sta. Location: County Line
Flight Attitude: S/L
Altitude: 3,000 feet

A/C Type: AH-1G
Number: 66-15257
Antenna Type: Blade
Number: AT-1108/ARC
Frequency: 52.4 mhz

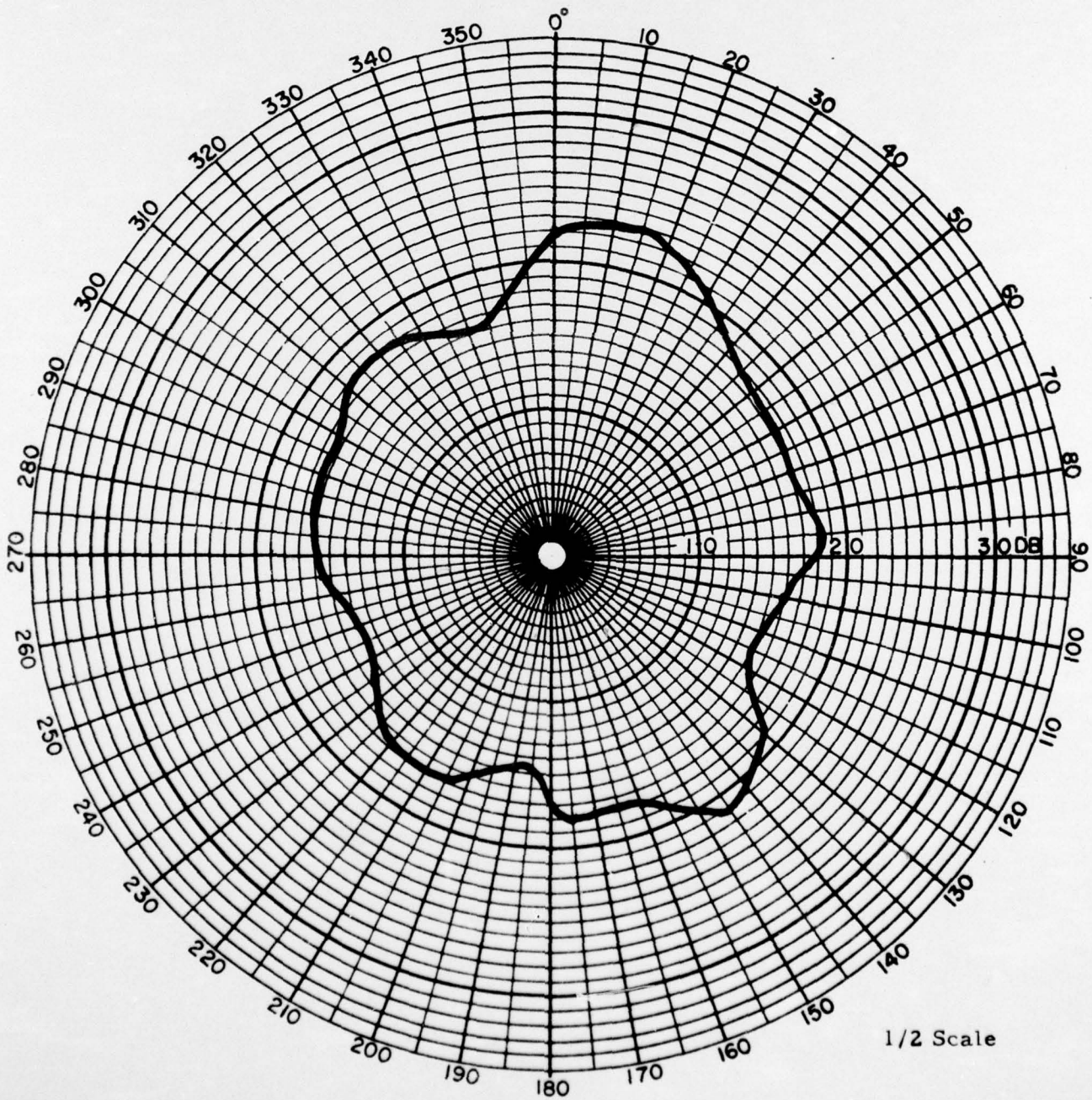


INCLOSURE 2

ANTENNA RADIATION PATTERN

Date: 19 February 1968
A/C Location: Black, Alabama
Gnd. Sta. Location: County Line
Flight Attitude: S/L
Altitude: 3,000 feet

A/C Type: AH-1G
Number: 66-15257
Antenna Type: Blade
Number: AT-1108/ARC
Frequency: 119.5 mhz



INCLOSURE 3

ANTENNA RADIATION PATTERN

Date: 19 February 1968
A/C Location: Black, Alabama
Gnd. Sta. Location: County Line
Flight Attitude: S/L
Altitude: 3,000 feet

A/C Type: AH-1G
Number: 66-15257
Antenna Type: Blade (Collins)
Number: Nomenclature unk.
Frequency: 52.4 mhz

