S E C R E T

HEADQUARTERS
V FIGHTER COMMAND
APO 929

22 August, 1943

AG 373 J

SUBJECT: Results of SCR 602 Flight Tests.

TO : Commanding General, V Fighter Command, APO 929.

1. In an effort to experimentally determine the operating characteristics of the newly-arrived SCR 602 Radar Sets a series of flight tests have been made under optimum conditions.

2. The tests were made with an SCR 602 set located on Haidana Island, which provided a perfectly flat reflecting surface at an elevation of approximately 10 feet above sea level. The flights were made straight out to sea.

3. The results of the first test were very distressing, as it was impossible for the set to puck up a B-24 Heavy Bomber at greater range than 25 miles when flying at 20,000 feet. This flight was repeated on another day and the same results were obtained. The maximum range at 15,000 feet was 42 miles. At 10,000 feet the range limit was below 40 miles. The results of this flight test has been confirmed by information from the stations operating at tactical locations. High flying aircraft have never been picked up at 20,000 or above at greater ranges than 25 miles. This makes these stations unreliable, as the Japanese nearly always fly on strike missions between twenty and thrity thousand feet.

4. In an effort to lower the antenna lobes and increase the range at high altitude, a 10-foot wooden platform was built and the SCR 602 placed upon it. The same flight tests were run, with the result that the range was increased to approximately 60 miles for aircraft flying at 10,000 feet. The ability of the SCR 602 station to pick up high flying aircraft was not improved by use of this platform.

5. The horizontal characteristic of the SCR 602 Yagi Antenna are narrow main lobe, side radiation at each side of the anten a equal to 25% of the main lobe filed strength and back radiation equal to 20% of the main lobe field strength. This pattern causes numerous permanent echoes, and is very undesireable in the mountains. The vertical pattern is scattered above 15,000 feet at ranges greater than 20 miles.

6. Preliminary tests have been made using a RAAF LW/AW Antenna with the SCR 602 Radar Equipment. These tests, though incomplete, indicate that this antenna will be quite satisfactory. The LW/AW Antenna is the same general design as the SCR-588 GCI Antenna which has proved to be the most practical Radar Antenna in use. There is every reason to believe that this antenna will be adequate for use with the SCR 602 Radar Equipment. Tests completed at this date show that use of this antenna will provide a considerable increase in range as well as excellent high-altitude coverage.

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Tracking of the test plane extended to 80 miles when the plane flew at 20,000 feet. The delay in making final flight tests is being caused by the fact that additional time is still required to design, test and draw final specifications for the method of feeding the antenna. It is expected that further refinements in matching feeders as well as further adjustments and tuning of the SCR 602 circuits will produce better results than those already recorded.

/s/ FLOYD A. LAMBERT
/t/ FLOYD A. LAMBERT
Major, Signal Corps
Asst Signal Officer

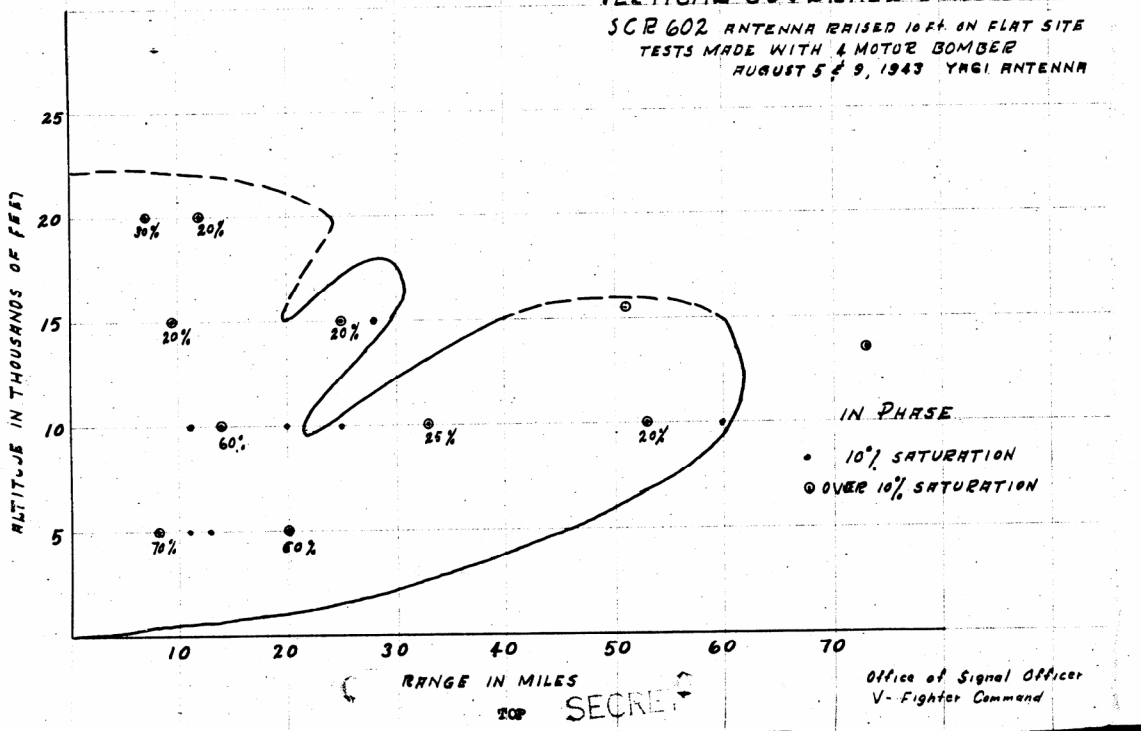
TRUE COPY

John J. Solon
JOHN J. SOLON
2nd Lt., Sig C

SECRET

VERTICAL COVERAGE DIAGRAM

SCR 602 ANTENNA RAISED 10 Ft. ON FLAT SITE
TESTS MADE WITH 4 MOTOR BOMBER
AUGUST 5 & 9, 1943 YAGI ANTENNA



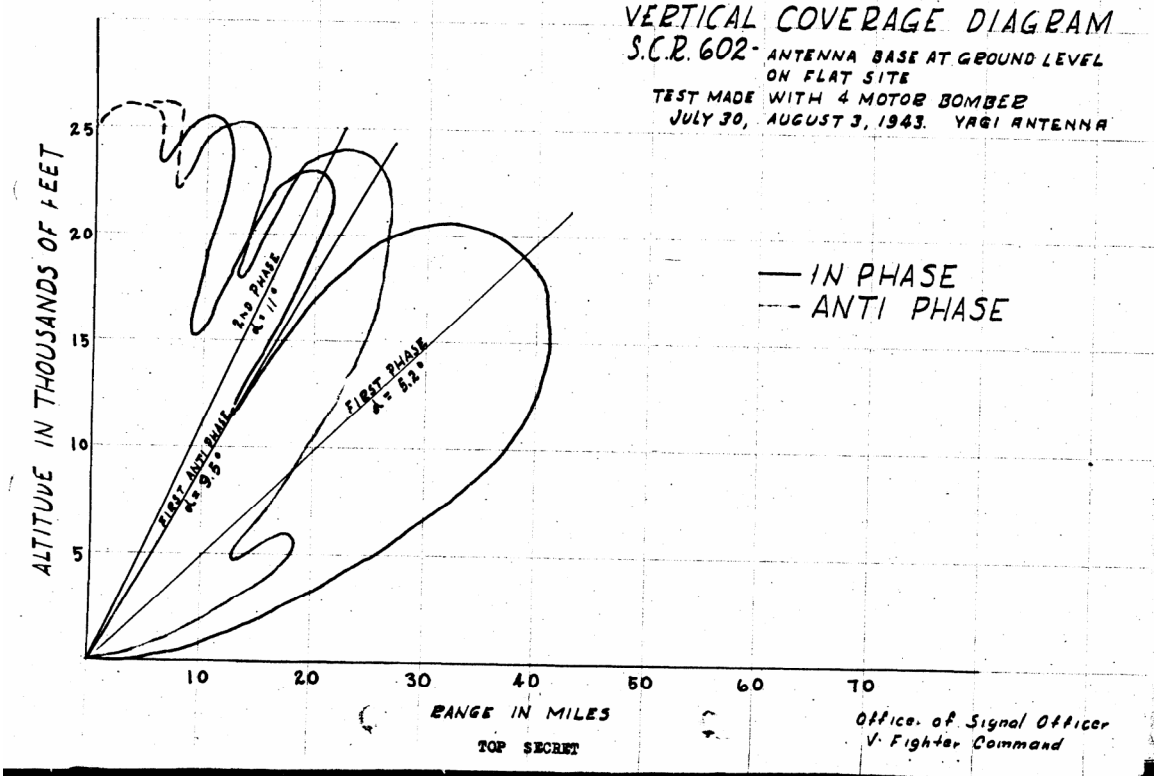
Office of Signal Officer
V- Fighter Command

TOP SECRET

SECRET

VERTICAL COVERAGE DIAGRAM

S.C.R. 602 - ANTENNA BASE AT GROUND LEVEL ON FLAT SITE
TEST MADE WITH 4 MOTOR BOMBER
JULY 30, AUGUST 3, 1943. YAGI ANTENNA



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