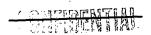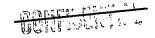CONFIDENTIAL

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2 February 1960

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GREB Orbital Data Requirements

Encl: (1) Solid Angle Version of WMAP, Binary Output Format

1. The Solar Radiation Satellite to be launched with Transit 2A is designed
for a useful life of one year. It will radiate 30 milliwatts at 108.000
±3 megacycles providing a telemetry link and a suitable tracking signal. The
modulation will consist of four subcarriers in the RDB standard channels 3,
4, 5 and 6. Three subcarriers will operate simultaneously with channels 3
and 4 used alternately. It is expected that the 108 megacycle signal will be
compatible with the tracking networks now in existence.

2. The launch will be made at an azimuth of 151 degrees from Cape Canaveral
to provide an orbital inclination of 67.5 degrees. The orbit is to be
circular at an altitude of 500 miles with a 3 sigma probability of a ± 100 mile
error. The satellite will be launched with Transit 2A and therefore will be
in a similar orbit. The Solar Radiation Satellite will be separated from the
Transit 2A package with a separation velocity of 1 foot per second shortly
after injection. It is requested that provisions be made to obtain tracking
data on the Solar Radiation Satellite separate from the tracking plans for
Transit. The Solar Radiation Satellite shell is spherical, 20 inches in
diameter and it will weigh 40 pounds. With perigee above 400 miles the orbit
should be smooth permitting long term predictions with reasonable accuracy.

3. The following data is required:

   a. Four copies of bulletins giving orbital constants as they become avail-
       able.

   b. Predictions are required in terms of northbound equator crossing times,
       longitude and orbit number. These will be required at least one month
       in advance. For example, it is requested that the predictions for the
       month of July be made available by 1 June 1960. It is requested that
       the agency providing the data indicate the expected time accuracy of the
       predictions.

   c. For manual data reduction purposes, four copies of the Printed World
       Map will be required. These are requested in weekly books with each book
       arriving at NRL no later than one week after the last day of the book.
       It is requested that this data be prepared from the orbit derived from
       the post-flight analysis. Since this satellite is solar powered, it is
       necessary that the time in sunlight be determined. It is requested that

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the World Map include a "sunlight" notation in place of the "twilight" notation. This notation should appear with every minute vector for which the satellite is in the sunlight.

d. Since the amount of data received by a satellite in one year is quite large, automatic data reduction techniques will be required and it will be necessary to obtain one copy of the World Map on magnetic tape in binary form as described in enclosure (1). This World Map should be prepared from post flight data. It is requested that the magnetic tape World Map be prepared weekly and that a week's data be available to NRL one week after the last day of the data.

5. It is requested that samples of each type of data be sent to NRL by March 15 for checking purposes.

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Martin J. Votaw
Code 5170

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