C05025849

RECEIPT FOR CLASSIFIED MATT [redacted]
PRNC-NRL-10346 (REV. 9-54)

TOP SECRET

Return this receipt to:
DIRECTOR, NAVAL RESEARCH LABORATORY
WASHINGTON 25, D. C.

INSTRUCTIONS: The "Via" addressee should sign and return one copy of this receipt to the address indicated above, retain one copy, and forward the remaining copies and the envelope to the addressee. The addressee should sign the original of this receipt and forward it by return mail in the attached envelope.

NOTE: Secret and Confidential matter must be stored in a three-combination safe, three-combination vault, or three-combination, fire-resistent, locked file. When this classified matter is no longer needed it should be returned to the Director, Naval Research Laboratory, Washington 25, D.C. *(Code 1523)*.

RECEIPT IS HEREBY ACKNOWLEDGED OF

Copy 1, 2, and 3 of 5 Copies of

Subj: Solar Radiation Satellites in FY-62
dated 18 August 1961

HANDLE VIA
BYEMAN
CONTROL SYSTEM ONLY

ORGANIZATION *(Company, Institution, Activity)* TOP SECRET 17221		THE ABOVE MATERIAL IS CLASSIFIED TOP SECRET
[redacted]	TITLE OF RECIPIENT Capt. USN	DATE 24 Aug. 1961

NAVY-DPPO PRNC, WASH., D.C.

RECEIPT FOR CLASSIFIED MATTE [redacted]
PRNC

TOP SECRET

Return this receipt to:
DIRECTOR, NAVAL RESEARCH LABORATORY
WASHINGTON 25, D. C.

INSTRUCTIONS: The "Via" addressee should sign and return one copy of this receipt to the address indicated above, retain one copy, and forward the remaining copies and the envelope to the addressee. The addressee should sign the original of this receipt and forward it by return mail in the attached envelope.

NOTE: Secret and Confidential matter must be stored in a three-combination safe, three-combination vault, or three-combination, fire-resistent, locked file. When this classified matter is no longer needed it should be returned to the Director, Naval Research Laboratory, Washington 25, D.C. *(Code 1523)*.

RECEIPT IS HEREBY ACKNOWLEDGED OF

Copy 4 of 5 Copies of

Subj: Solar Radiation Satellites in FY-62
dated 18 August 1961

[redacted]

TOP SECRET

ORGANIZATION *(Company, Institution, Activity)*		THE ABOVE MATERIAL IS CLASSIFIED TOP SECRET
SIGNATURE OF RECIPIENT	TITLE OF RECIPIENT	HANDLE VIA BYEMAN CONTROL SYSTEM / DATE

NAVY-DPPO-PRNC, WASH., D.C.

~~TOP SECRET~~

18 August 1961

Subj: ~~Solar Radiation~~ Satellites in FY-62

1. This paper delineates the plans for the Solar Radiation Satellites beyond SR-4 which is the launching currently scheduled for December 1961.

2. The basic satellite mechanical configuration will be a new ball shaped unit twenty-four (24) inches in diameter and having a basic weight of sixty (60) pounds. This new design will have six solar cell patches of a larger diameter than here-to-fore and will supply the added power requirements of a more complex and flexible electronics instrumentation.

3. It is planned that the new construction arrangement will utilize assembling the individual units on a flat plate arrangement which will allow for easier servicing and modification than the previous "can" type instrumentation package. This assembly system will allow for rapid interchangeability of the various standardized units. By this standardization and interchangeability these units can rapidly be modified if the National ELINT requirements change and in a minimum time the new standardized units can be installed to meet these new requirements.

4. Spin Up will be required in each of these Satellites. This will be required on launch and at a later time when the "bird" has slowed its spin due to the magnetic damping forces. This later spin up will be on command.

5. In the electronics packages the "cover" experiment will be a continuation of the solar radiation series by [redacted] of the U. S. Naval Research Laboratory. Each successive unit will have additional refinements to compliment the scale of measurements being made. This experiment will utilize a transmitter which will broadcast this data continuously throughout the life of the satellite. The ELINT portion of the satellite will consist of a minimum of three and a maximum of four collection systems which can be grouped roughly into three frequencies which cover selected portions of the band from 160 to 500 Mc, 500 to 1000 Mc, and above 1000 Mc to some upper limit of about 6000 Mc. Each system will be a crystal video system having carefully designed filters to assure reception only in those bands covered and free from spurious responses. [redacted] Antenna systems will be designed to give as nearly perfect as possible spherical coverage. In the band 160 to 500 Mc this coverage will be compromised since only a pair of monopole antennas are available for this band.

6. Selection of the outputs of the various intercept systems will identified by the use of long and short pulses from the modulation system [redacted] ch of the two ELINT data transmitters.

~~TOP SECRET~~

RANDLE
BYEMAN
CONTROL SYSTEM ONLY

7. Two Systems of command receivers will be employed. One receiver will be utilized on the NASA command frequency to turn the Solar radiation transmitter on and off in accordance with international requirements. This receiver will also be responsive to commands which will turn on either or both of the ELINT data transmitters and also select either or both of the modulation systems for each transmitter. This later function will be a back up for the second receiver whose primary function will be only to command the ELINT experiments.

8. The second receiver will be used only to command either or both of the ELINT transmitters on or off and to select either or both of the modulation systems utilized by each transmitter.

9. The timing control will turn on for the ELINT Data system for a minimum of forty (40) minutes. This constitutes the longest pass of any orbit over the Soviet Union. Turn off would be automatic at the end of this period.

10. While a great deal of flexibility is being planned for this new series of Satellites and they will be capable of being responsive to changing National ELINT requirements for planning purposes the following coverage is proposed for this series of Satellites.

a. SR-5 - the lowest band coverages would be 230 to 270 Mc, the middle band coverage would be 500 to 585 Mc and 710 to 810 Mc. The highest band coverage would be 2000 to 2750 Mc.

b. SR-6 - the lowest band coverage would be 185 to 230 Mc. Middle band coverage 585 to 690 Mc and 920 to 1300 Mc. The top band would cover from 1300 to 2000 Mc.

c. SR-7 - the lowest band coverage would be 270 to 320 Mc. The middle band would provide a selected portion or portions of the UHF range and the top band would cover new portions of S-band and C-band through at least 5000 Mc.

11. Launch vehicles to be utilized would preferably be THOR-ABLE-STAR unit similar to that contemplated for the December launch of the Navy's Composite #1 Satellite units. This style of rocketry could be phased out at some future date when the Scout vehicle becomes reliable enough to shift the launch to such a vehicle.

12. The S-27 possibility for March 1962 seems attractive since it would provide a rocket vehicle in about the right time scale to fit the Solar radiation schedule. Its inclination (80°) is slightly higher than what we normally

~~TOP SECRET~~
~~HANDLE VIA~~
~~BYEMAN~~
~~CONTROL SYSTEM ONLY~~

desire but is not excessively high and would provide excellent polar coverage. With the new interrogation facility being activiated in [redacted] this orbit would be satisfactory. The altitude would be slightly higher than we would normally request but this would off set the slightly adverse inclination with better coverage from each station. It is recommended that the S-27 vehicle be utilized if possible for the Solar radiation SR-5 satellite.

13. An orbit of 67 1/2° inclination and 500 N.M. altitude in as near circular as possible is required for all of the following Solar Radiation Satellites.

14. The intelligence community would like to see the Navy program about three or four Satellites per year to meet its ELINT collection requirements. This number should be somewhat flexible and of course would be dependent upon the availability of boosters. Should one of the important coverage satellites like the S-band unit fail then action should be taken to replace it on a priority basis. This is where the flexibility proposed would be most important.

15. It is proposed that the program outlined be used as a guide for Chief of Naval Operations Op-07 planning and the Bureau of Naval Weapons for their guidance in implementation of the program.

16. It should be borne in mind that by Presidential directive the security of this program must be maintained and dissimination of the details of this program must be on a strict "need-to-know" basis only to those persons directly connected with anlespecially cleared for this project.

~~HANDLE VIA BYEMAN CONTROL SYSTEM ONLY~~