From: Op-07

To: Chief, Bureau of Naval Weapons

Subj: Satelite ELINT Program Requirements

1. To meet the operational requirements of Op-92 the following additions and modifications to the existing FY61 transit program will be required.

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(a) On the earliest e launch approaching a 70 degree inclination at a 500 nautical mile circular orbit a "piggy-back" satellite will be required similar to that furnished by NRL for IIA.

(b) Prior to 1 July 1961 a second "piggy-back" satellite will be required for a launch into an orbit similar to that described above.

(c) Backup shots will be required in case of failure of either of the two shots outlined above.

2. As a longer range requirement in FY62-63 the Bureau of Naval Weapons should program at least two shots per year with suitable backup to continue the FY61 program outlined above.

3. In the ELINT package covered in 1 (a) above the Satellite will be a complete ELINT entity with a cover. The cover will be an extension of the Transit IIA - GREB program for the investigation of the Van Allen Belt radiations. NRL will be responsible for this cover program and the publicity associated with it. In the ELINT portion of the Sattellite package an intercept system will be supplied by NRL as in transit IIA. This L-Band intercept system because of the lower frequency will require larger antennas, filter units, detectors, etc., thus requiring additional weight. This combined with the larger magnets on the radiation cover experiment will increase the weight of the Satellite approximately 15 pounds bringing the total weight in the vicinity of 55 pounds. Its outer shape will be spherical and twenty inches in diameter.

4. In the Satellite package required in 1(b) above the unit again will contain a third in the series of Van Allen Belt investigational experiments as its cover. The ELINT package will be a replacement for the ELINT satellite launched in Transit IIA have its primary frequency coverage "S " Band. However, it is hoped that developments in the state of the art will have progressed so that a unit combining both "S" and "L" band systems can be launched. Also requirements for more detailed investigation of certain of the ELINT parameters are recognized and conserted attempts to include these in the instrumentation package will be made. Additional weight amounting to 5 to 10 pounds over the

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previous Satellite will be required in the package to cover the combined ELINT package and a more complex cover experiment. The physical size will remain 20 inches in diameter.

5. Concurrent with the dev[redacted]t of these two new Satellite packages a certain amount of research will be required to reduce to instrumentation hardware techniques for more detailed examination of some of the ELINT parameters. This research will improve the collection capabilities of these units and the results of these studies will be incorporated as early as feasible.

6. The U. S. Naval Research Laboratory has estimated the cost of the first Satellite development outlined in paragraph 3 as follows:

New Solar Radiation Experiment	200K
New Data System	250K
Operational Flight Models	620K
Total	1070K

The cost of the second Satellite program outlined in paragraph 4 are estimated as follows:

New Solar Radiation Experiment	200K
Combined Data System	150K
Operational Flight Models	720K
Total	1070K

The research covered in paragraph 5 will cost approximately 200K additional.

Total FY 61 funds to cover this work at the U. S. Naval Research Laboratory will be 2,340K total.

7. Reorganization of the transit plans to incorporate the above requirements should be effected as soon as possible.

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