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DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, D. C. 20301

76-5300

27 DEC 1976

Honorable A. M. Lovelace
Deputy Administrator
National Aeronautics and Space
Administration
Washington, D. C. 20546

DECLASSIFIED IN FULL
Authority: EO 13526
Chief, Records & Declass Div, WHS
Date: JUL 21 2010

Dear Al:

(S) As requested in the letter from the Director of Special Programs, dated 19 November 1976, the Department of Defense has reviewed the proposed change in the orbital inclination of SEASAT-A along with the attendant national security implications. It is our judgment that changing the orbit toward the pole causes a severe degradation in the ability to fully use the altimeter data.

(S) The presently planned SEASAT-A orbit with an inclination of 108° retrograde is ideally suited for maximum utility of the altimeter data for marine geodesy. It will satisfy a significant portion of the DoD gravity requirements for the operational forces by providing data for launch region gravity model development, missile platform erection, and inertial navigation system mechanization. If the proposed polar or near polar orbit is obtained for SEASAT-A, the ascending and descending passes will intersect at too shallow an angle to permit adequate radial adjustment of the orbit. Without such adjustment, any radial orbit error translates directly into an error in the East-West component of the vertical deflection and introduces a high frequency error into the geoid undulation.

(S) The national security implications of SEASAT-A persist regardless of the orbital inclination assuming the precise altimeter and accompanying timing data are retained. This is primarily for two reasons:

a. (S) The worst case for geodetic purposes is the near polar orbit providing North-South passes with no information for East-West deflection calculations. However, any vessel traveling along a North-South track could have derived precise compensation for navigation errors which are introduced by the North-South deflection of the vertical.

b. (S) The altimeter data acquired from any inclination could provide additional data which is adjustable to the GEOS-3 network, thereby giving more information than that currently being withheld in the DoD/NASA agreement on GEOS-3.

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EXECUTIVE ORDER 11652. EXEMPTION CATEGORY 3
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(U) It is recognized that a polar or near polar orbit will enhance the results of the SEASAT-A experiments of interest to the oceanographic community. However, the use of the data for accuracy improvement in strategic weapon systems is of greater importance to DoD. Our needs are best served by retention of the present 108° retrograde orbit.

(U) The proposed orbital inclination change does not affect the Synthetic Aperture Radar. The concerns previously expressed will still prevail.

Sincerely,

/s/ Robert N. Parker
for
Malcolm R. Currie

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COVERING BRIEF

23 DEC 1976

TO: DIRECTOR, DEFENSE RESEARCH AND ENGINEERING

FROM: DEPUTY DIRECTOR, STRATEGIC AND SPACE SYSTEMS SIGNED

PROBLEM: (S) NASA has proposed a change in the SEASAT-A orbit and has requested an official DoD statement on the value of the altimeter data and the national security implication attendant to the change. The NASA letter is at Tab B.

DISCUSSION: (S) A proposal to change the orbit of SEASAT-A from the present inclination of 108° retrograde to polar or near polar inclination has been made by members of the Ocean Dynamics Advisory Subcommittee (the external advisory group to NASA on SEASAT-A). The reported impetus for the change is to permit more effective coverage of the polar ice regions. It is also potentially based on the premise that changing the orbit to a polar inclination would reduce the value of the altimeter data to DoD thereby eliminating the classification/encryption problem with SEASAT-A.

(S) An analysis performed by the Navy indicates the polar orbit would cause a significant degradation in DoD's ability to use the SEASAT-A altimeter data to improve the accuracy of inertial navigation systems for our operational forces. However, the national security implications persist regardless of the inclination as long as a precise altimeter and the accompanying timing system are retained on SEASAT-A. The Synthetic Aperture Radar would not be affected by the proposed inclination change. While the synergistic effect of the total SEASAT-A instrument complement has not been determined, the concept is an additional point for holding the DoD position of data link encryption until all effects are known.

(S) A letter has been prepared for your signature to NASA affirming the DoD position and listing the concerns associated with the proposed inclination change. DoD interest is best served by leaving the present orbit unchanged.

RECOMMENDATION: (U) That you sign the letter at Tab A.

CONCURRENCES: JCS See attached memo, dtd 22 Dec 76

DD (R&AT) _____

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