~~TOP SECRET~~

BYEMAN CONTROL SYSTEM

14.00025.174D

~~(S)~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

THE NRO STAFF

2 December 1971

MEMORANDUM FOR DEPUTY DIRECTOR, DEFENSE RESEARCH & ENGINEERING (ELECTRONICS AND INFORMATION SYSTEMS)

SUBJECT: ACP on Ocean Surveillance (Surface)

The ACP on Ocean Surveillance (Surface) was reviewed. In general, it was considered a good first approximation approach to an extremely complex and multifaceted problem area.

Some general comments are in order. These involve fundamental issues and philosophy; a brief discussion of each is in order:

a. There exist both "national" and "Navy" requirements for ocean surveillance data. Yet, the ACP is not specific in identifying the sources of and relative priorities between the two groupings. In fact, there is no mention of non-Navy needs in paragraph Ia. If it is impossible to satisfy the "national" requirements by considering them as a sub-set of the "Navy" requirements, then an extra difficulty exists in designing systems and composing systems mixes capable of satisfying both sets of requirements. It is unofficially understood that the Navy generally accepts the requirements' guidelines used in the studies recently completed by the Director, Program C. "National" ocean surveillance requirements are much more vague and are only addressed in a cursory manner in the USIB SIGINT Five-Year Plan. In our opinion, the Navy's aforementioned approach to requirements definition appears valid (In fact, similar requirements' matrices could be made for other forms of surveillance of land and airborne weapons systems and platforms).

b. Flowing from the requirements above, the inevitable problem of roles and missions arises. The objectives of the ACP are stated but not achieved. In particular, the implications of the ACP on the NRO are not clear. Management concepts are only partially developed. Possibly, the present state of affairs stems from a mismatch of capabilities and requirements. The Navy has the stronger requirement,

~~EARPOP~~ HANDLE VIA BYEMAN CONTROL SYSTEM

~~TOP SECRET~~

EXCLUDED FROM AUTOMATIC REGRADING DOD DIRECTIVE 5200.10 DOES NOT APPLY

CONTROL NO BYE-13253-71

WORKING COPY

55-5

while the NRO and its affiliates possess the stronger capability to resolve the problem. Further complicating the problem is the question of how much "intelligence" is really involved in locating platforms through their electronic emissions. There are many within the Navy who would argue that it is operational data (much as the data supplied by a radar for navigational purposes by the ship's navigator and operations officer).

c. The ACP appears somewhat biased in favor of aircraft platforms. The widespread areas to be covered and the ever-shrinking number of aircraft built every year by the Navy would tend to discount a great emphasis in this direction. At the same time, it is admitted that dedicated aircraft would be useful for small-area, close-in surveillance purposes.

d. Although the threat has been identified and expanded upon, there is lacking in the ACP a discussion of the varying degrees of hostility in which ocean surveillance must be maintained. The passage from a peacetime environment to a limited naval or all-out war must dictate an increasing level of attention to the question of survivability.

e. Certain evaluation criteria are well developed, whereas others are ignored or partially discussed. For example, the ACP implies that security is a criterion (page 33, Option C), yet there is no evidence that special security considerations have any effect on the roles of the Navy and the NRO in management of the program. Vulnerability, flexibility, command and control, national needs and other criteria are not well developed.

f. In point of fact, a number of on-going hardware programs are in development and should see operation in mid-summer of 1972. These are:

(1) URSALA I (Spinning pencil beam concept).

(2) [redacted]

(3) POPPY Priority Data Extractor and [redacted]

(4) [redacted] (NSA data management effort).

(5) Improved data relay through use of Program 777 (DSCS Phase II) satellites.

Commitment to one approach at this time would be unwise. We are in a "fly-before-buy" mode now and will gain valuable experience and insight into the best ELINT systems approach to geolocating ships.

g. Possibly too much emphasis has been given to ELINT satellites (which require a cooperative, emitting adversary). More research is warranted in systems employing other sensors; [redacted] possibly NRT/EOI systems in the visible spectrum. Multipurpose/multisensor satellites should receive more attention.

h. Performance data is developed, but cost data is quite poor. There is no indication of cost constraints, nor the tradeoffs necessary or proposed to achieve fixed budget ceilings.

i. A very great part of ocean surveillance will be addressed in the rapid processing, dissemination and communication of data. The NSA, NRO and Navy are all making progress in this area (sometimes unknowingly - the Navy's Fleet Sat Com could, for example, be a great contributor, although ocean surveillance is not its primary function).

j. The paper has no recommendations for SecDef to approve. In particular, the implications for future studies or management changes are not clearly indicated.

In view of the above considerations, it is recommended that the ACP be revised.

David D Bradburn

DAVID D. BRADBURN
Colonel, USAF
Director