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HANDLE VIA BYEMAN CONTROL SYSTEM

~~1ST~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

THE NRO STAFF

30 January 1970

MEMORANDUM FOR REAR ADMIRAL MORAN, USN (OP-76)

SUBJECT: Data for Incorporation with Program 749 Development Concept Paper

REFERENCE: BYE 65725/69, 8 December 1969

In response to the referenced memorandum, each EARPOP system has been examined to determine its feasibility for providing ocean surveillance information.

[redacted] and those 989 vehicles designed and dedicated for communications or telemetry intercept are not considered. Program 770A (STRAWMAN) is not considered because of limited swath width (250 NM), limited frequency spectrum, and the imminent (mid-1971) phase-out of the program.

25X1

The possible contributions to ocean surveillance of the remaining EARPOP programs are outlined in Tables I through III with the attached narratives. Categories a, b, and c of the Tables correspond to the cases defined in paragraph 5 of the reference. Under category a for each program, it should be noted that the capabilities outlined reflect only the physical specifications of the system and do not account for probable higher priority tasking for national objectives. The present programs can provide only very limited ocean surveillance collection on a true "not to interfere" basis. A measure of this capacity is that information presently being provided by the POPPY vehicles.

It should also be noted that no attempt has been made to assess the detection capabilities of these vehicles in terms of the power output or the percentage on time of the various shipboard emitters.

Incremental costs are not included in these summaries since specific bases are necessary to cost any alternative. This is so since such costs are very significantly influenced by such factors as number of launches in a given time period,

total contractor business, other "customer" considerations, etc. At the present time, the NRO is re-examining and adjusting the [redacted] POPPY, and 989 programs with the resultant variations in the cost bases. 25X1

In regard to photographic systems only the real-time readout system, which is in an R&D technology development/ study phase and which would not fly before the mid-1970's, might meet the timeliness requirement. This system will cover between 200 and 400, 3 x 3 mile targets per day, some of which might be Naval targets which have been approved by USIB (COMIREX). In time of crisis additional Naval targets might be acquired. Acquisition of moving targets in open ocean areas would be nearly impossible.

for LEW ALLEN, JR.
Brigadier General, USAF
Director

Atch
Tables I, II, and III
w/atch Narratives

TABLE II

POPPY (770C)

	Location Accuracy	EPL Characteristics	Area of Coverage	Revisit	Time Delay in Delivery
Category a					
No change	[redacted]	RF, MOD, PG, PRF, PD, [redacted] Scan Type, Scan Period, Scan Rate Freq 100-10,000 MHz, 14.6-15.1 GHz Wide tolerances	Within approx 3,000 NM of [redacted] (Covers most of N. Atlantic and N. Pacific Oceans)	For 40° latitude, 4 looks spaced 100 minutes apart followed by 300 minutes of no looks	1-24 hrs depending on volume of intercepts
Category b					
Additional hardware (No modification)	[redacted]	(Same as Cat a)	Nearly worldwide with addition of [redacted] in southern hemisphere	(Same as a)	(Same as a)
Category c					
Additional hardware plus modification	[redacted]	(Same as Cat a) Could modify Freq spectrum	(Same as b)	(Same as a)	(Same as a)

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~~EARPOP~~

[redacted] BYEMAN
Control System

Atch, BYE 12572/70
Cy 1 of 2, Pg 3 of 6

TOP SECRET

POPPY (770C)

The POPPY vehicles, since they function as transponders, are limited in their ocean area coverage by the requirement for being within line of sight of a ground readout station. The present program includes stations in [redacted] the [redacted] the first three of which will have an on-site analysis and geopositioning capability which would enable the collection of timely ocean surveillance data. 25X1

The requirement for the simultaneous line of sight visibility of the satellite by the emitter and station thus limits the area of coverage to within about 3,000 NM of these three ground sites. These are merely geometrical constraints and do not account for any higher priority tasking and the serious problem of deinterleaving signals from shipborne emitters from amongst the great number which are received when the swath includes some land mass.

Category c of Table II assumes a modified POPPY optimized for the ocean surveillance task with receivers with increased sensitivity and geopositioning capability.

TABLE III

989

	Location Accuracy	EPL Characteristics	Area of Coverage	Revisit	Time Delay in Delivery
Category a					
No change		RF, MOD, PG, PRF, PD, ERP, Scan Type, Scan Period, Scan Rate Freq 4.0-12 0 GHz Wide tolerances	All ocean	At 40° latitude approx one look/ 12 hrs	Several wee
Category b					
Additional hardware (No modification)		(Same as Cat a)	All ocean	(Same as Cat a)	1-2 hours
Category c					
Additional hardware plus modification		(Same as Cat a) Freq 100-12,000 MHz	All ocean	(Same as Cat a)	1-2 hours

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~~EARPOP~~

[redacted]
Control System

Atch, BYE 12572/70
Cy 1 of 2, Pg 5 of 6

TOP SECRET

PROGRAM 989

The Program 989 TRIPOS/SOUSEA payload is a general search vehicle which operates in the 4.0-12.0 GHz range. It is conceivable that a modified 989 payload within this series could be designed to more adequately cover the shipboard emitters frequency spectrum.

Six ground stations are presently in operation which receive the data which the satellite has recorded. This tape-recorded data is then mailed to the SCF for processing and analysis. [redacted] 25X1 [redacted] Because of the long delay inherent in the present system, it would be necessary to procure an on-site processing and analysis capability at the ground sites to permit the timely delivery of ocean surveillance data.