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~~SECRET~~ EARPOP HANDLE VIA BYEMAN CONTROL SYSTEM

(When filled in)

SPECIAL PROJECTS CONTROL NO.
NRL B-0032-68

DATE
7-9-68

ORIGINATOR			SERIAL NO.	ENCLOSURES
Richard L. Wales [illegible] Msg from [illegible] (LCDR [illegible])			BYE-57789-68	None
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SUBJECT
[redacted] FIELD EFFORT
(5 Pages)

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(When filled in)

HANDLE VIA BYEMAN
CONTROL SYSTEM
PROJECT EARPOP

Richard L. Wales
9 July 1968

B-032-68

[redacted] FIELD EFFORT

July 1967 thru June 1968

I would like to take this opportunity to summarize the activities performed at [redacted] throughout the past year. In evaluating the effort expended at [redacted] thought should be placed on how our accomplishments, and failures, can enhance our position when conducting future installations.

When the digital system was installed at [redacted] there were some aggressive operators who jumped at the opportunity to be a part of something new, even though the output was extremely vague at that time. Many others took the "show me" attitude before committing themselves to an unknown career. I suppose there were also some who expected the new system to fail and be discarded within a few months.

I believe it is worthy of noting the type individual that generally falls into the above categories. First the aggressive operator willing to try anything new is, for the most part, a young enlisted man who will probably get out of the service after his first tour. He is an enthusiastic worker, but sometimes loses this enthusiasm when the efforts required exceed the forthcoming rewards. The "show me" group are the more cautious individuals and generally include the career serviceman. They have already chosen their profession and they want to insure that the career field they choose has some future. The skeptics too sometimes become strong supporters when the worth of the new system becomes apparent.

As I saw it, it was my job to sell the station personnel on the capabilities of the digital system, and prove to them that it has a permanent place in the POPPY system. The approach used was that of operating the system, using station personnel for all functions possible, and permitting the processing results to convince each individual of the system's usefulness.

Following are some of the major projects and accomplishments encountered in the past year:

1. Geographic Sort (July-August 1967)

The process of selecting a parcel of land and then sorting for all data possibly received from that parcel did not prove attractive. The main drawback to this approach was the inability to evaluate the output. Invariably the

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output contained data from many emitters.

[redacted]

2. Northern Fleet Observation (July-August 1967)

Attempts were made to monitor ship traffic, particularly in the Norwegian and Barents Seas. However results were limited by our geographic sort capabilities and lack of emitter parameter sorts.

3. Benchmarks (August-November 1967)

[redacted]

While looking for "benchmarks" many familiar unfriendly signals were processed with varying degrees of success. Tall

[redacted]

4. Shipborne Emitters

In August, 1967 a request was made by NSG to submit reports on shipborne emitter activity. Very little was done on this request until early 1968. At that time the effort was accelerated with emphasis being placed on coordinated processing between the QC and computer operators.

Verifying that an emitter is shipborne is not an easy task. Many shipborne emitters have similar or identical parameters with land mounted emitters. Those identified by

the QC operators are now digitally processed in hopes of obtaining locations. Some locations have been obtained, but generally the confidence level is rather low, since there are no means of comparison.

5.

6. Ephemeris

Reception of ephemeris data was extremely irratic and the contents were sometimes questionable thru December 1967. The confidence in available ephemeris and knowledge of how to use it has progressed considerably in the last six months. The Norad Spadats 5-line ephemeris information has become our standard. The reception of ephemeris information at least twice weekly is mandatory to field location efforts.

7. Software

Proof of the software advancements is shown by our improved ability to process signals and ultimately arrive at emitter locations. The software approach to signal

Many programs have been contributed by station personnel. These range in content from equipment diagnostics, to quality control programs and ephemeris calculators.

8. Equipment

a. Receiver/Analog Processing Unit --- The receivers and analog processing unit installed in April 1967 have functioned properly with very little attention. In May 1968 the synthesized receivers model RS-1A were installed. No problems have been experienced with the model RS-1A receivers.

b. Digital Processing Unit —— No problems were encountered with the digital processing unit after initial installation.

c. Pulse Sorters —— No problems have been encountered with the pulse sorters. However with our available software and the limited nature of most of our data, almost all digital processing was done on raw data.

d. BTM-9 —— Few problems were encountered with the buffer electronics. However an intermittent parity error indication is still possible in the TEST mode of operation. The TM-9 tape transport has required a nominal amount of maintenance.

e. 81ØA Computer —— The central processor has been exceptionally trouble-free. The real time computer interface with our digital acquisition system has been very successfull. The TM-11 tape transports have required more maintenance than a desirable level. Only recently have we established a satisfactory confidence level in them. Other peripheral devices have functioned satisfactorily with a nominal amount of maintenance.

9. [redacted]

Second we evaluated many error trends typically caused by incorrect ephemeris, erroneous data and improperly selected limits for some of our processing programs.

Third, and most important, the station received recognition from NSA and NSG for a "job well done". This has produced phenomenal results. Station personnel were now convinced that the digital system is a worthwhile part of the POPPY program.

1Ø. [redacted]

In conclussion I would like to express my personal gratification for the opportunity to work as a member of the POPPY team. It has been an exceptionally rewarding year, both professionally and in family life.

Personnel at [redacted] have made significant strides in the past year at adapting the POPPY collection function to include the digital acquisition and processing system. I believe they are adequately using all the tools that have been made available to them for signal processing. i.e. Equipment is operating with very little down time and the software is effectively being used. In addition they are attacking many side functions of their own undertaking.

They are eager to implement advancements, particularly software designed for better signal processing. Present efforts are concentrating on reducing manual interface delays and establishing good signal analysis techniques for the digital processing.

In short, these people are raring to go! It is our job to provide the direction for this enthusiasm.