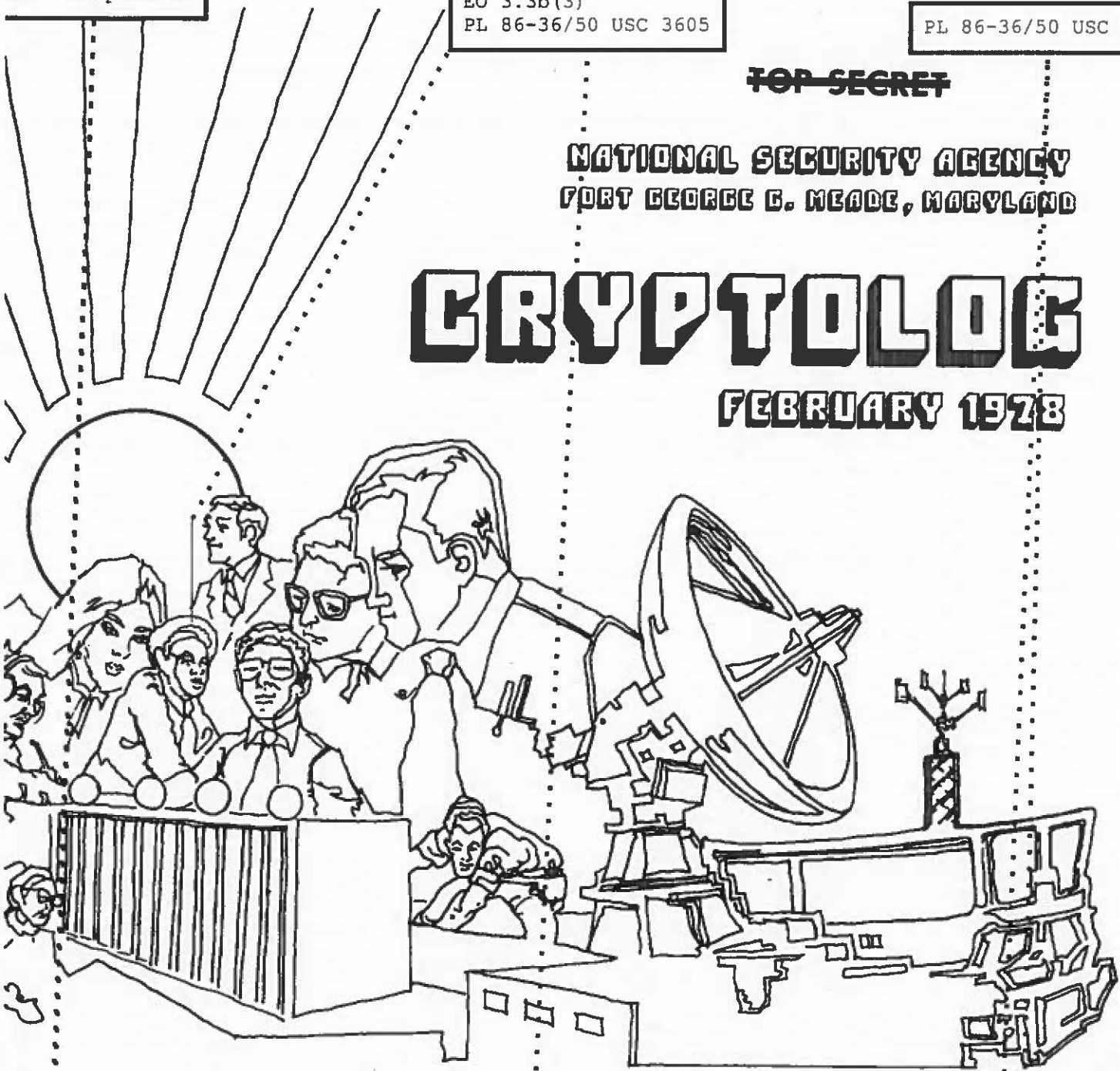


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NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND

CRYPTOLOG

FEBRUARY 1978



STEPSTONE AND A NON-RUSSIAN VOICE PROBLEM...	1
COLLECTION-SUPPORT T.A. IS NOT FOR EVERYONE.	7
	9
	11
	14
	14
	15
	17
	19
	20

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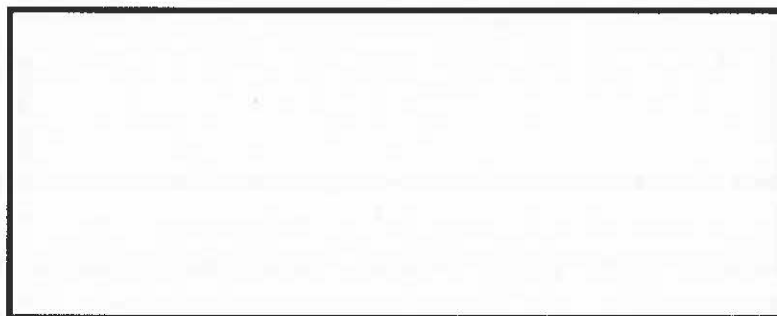
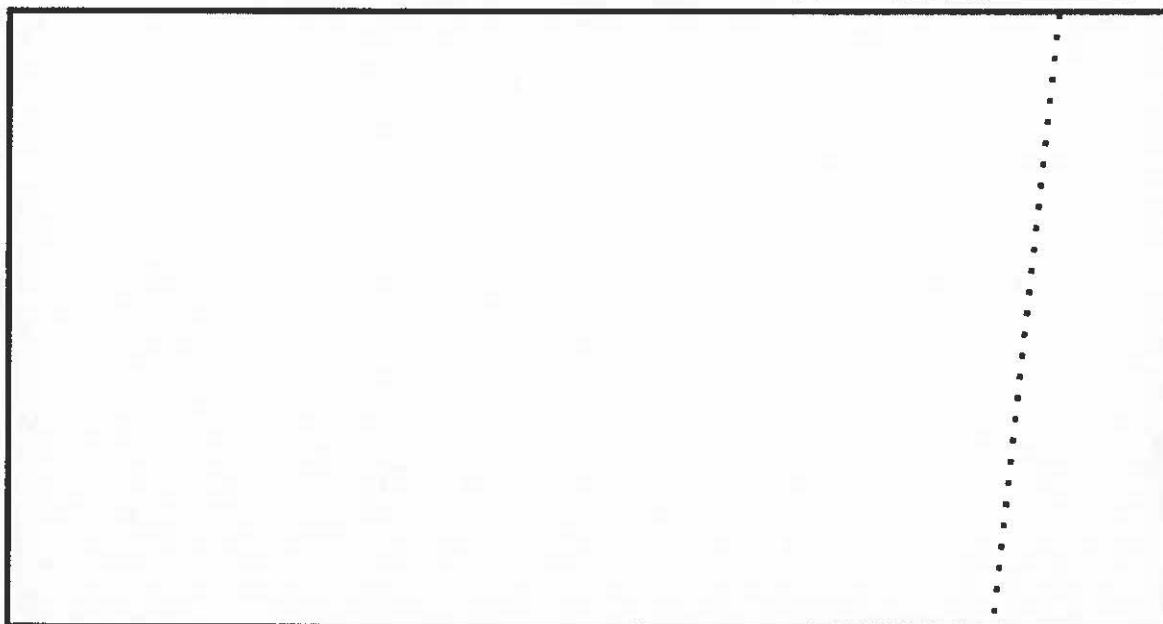
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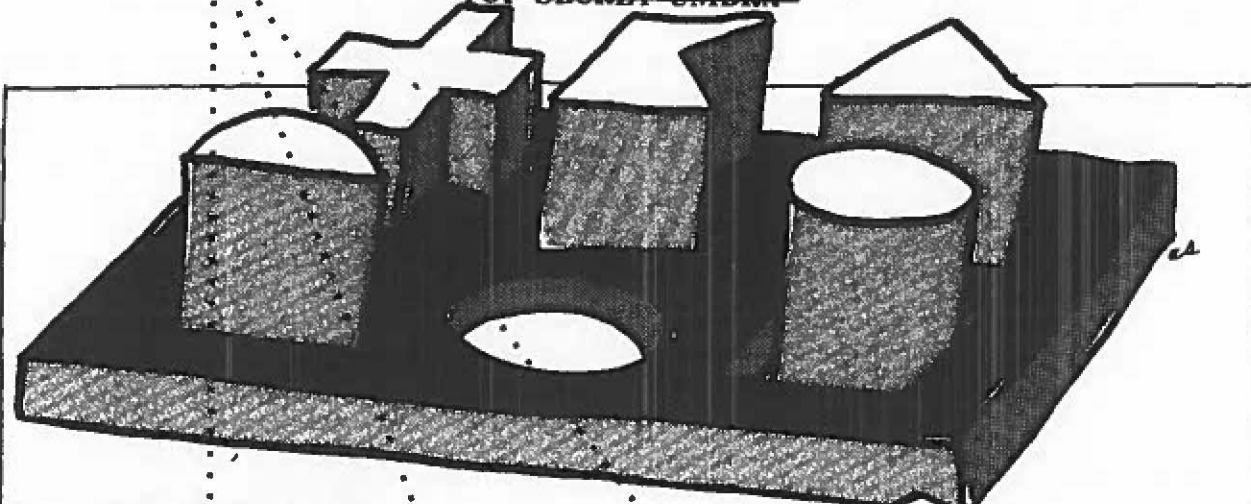
Published Monthly by P1, Techniques and Standards,
for the Personnel of Operations

VOL. V, NO. 2

FEBRUARY 1978



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STEPSTONE AND A NON-RUSSIAN VOICE PROBLEM: Square Peg, Round Hole?

A323

In the April 1976 issue of CRYPTOLOG, [redacted] of A633 introduced and explained the STEPSTONE I computer subsystem designed to aid the voice transcriber in preparing transcripts. As she pointed out, the use of computers can help to free transcribers from many clerical and unnecessary nonlinguistic tasks. But, to us, one of her most significant statements was, "[STEPSTONE] can be adapted for use on other [i.e., non-Russian] transcription problems with minimal effort." While one might wonder about the amount of that effort, we in A323 found that the adaptation of the STEPSTONE I concept to our specific requirements was an absolute necessity.

When STEPSTONE I was first introduced to our "non-Russian" problem, we were somewhat surprised to see how easy it was to use STEPSTONE data entry and retrieval procedures. We had been awaiting a flexible, on-line transcription capability, and, after several disappointments and failures with forerunners of machine-assisted transcription, we were ready for something that would work well.

To begin with, we noted that some people who were using computer programs and software were missing vast opportunities to improve their operations because they never really explored how computer technology could be applied to

their specific intelligence-production problems. In our case, we took to heart [redacted] remarks about adapting STEPSTONE to other transcription efforts and we began to look for the most profitable way of using STEPSTONE.

Naturally, there were several logical and reasonable restraints that set bounds for any "fine tuning" that we might do to STEPSTONE or its procedures:

- Our changes could not interfere with the normal operation of the overall STEPSTONE system;
- The results of our "tuning" could not in any way conflict with other existing A3, A Group, or Agency computer programs, or unnecessarily duplicate existing data entry or retrieval programs;
- Any changes would have to be necessary, easily understood, and consistent with the design and format of STEPSTONE; and
- It could not cost the Agency anything beyond the normal, planned cost (in time and money) for STEPSTONE operations.

What Is STEPSTONE? What Did We Expect?

As designed, STEPSTONE I is an on-line terminal subsystem to aid voice transcribers

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in preparing transcripts, with its main thrust being the entry of the transcripts. STEPSTONE also provides the transcriber with temporary storage and retrieval capabilities. The transcriber enters the data at a terminal near his or her transcription position and the data is relayed to a large data bank -- the IBM 370. This data then becomes part of the PROD Data Base (PDB), where procedures, e. g., SELLERS and SPECOL, exist for extracting entire transcripts or key items within transcripts. In the future, transcribers and analysts will gain access to the Model-204 retrieval system Answer Files by using their STEPSTONE terminals.

The above features made STEPSTONE sound very attractive, and we impatiently awaited its arrival; but, when it was measured against our needs, we were quickly disappointed. We were glad that we would be able to create our transcripts on line -- no more typewriter-produced paper transcripts. But STEPSTONE's temporary storage and limited retrieval capability presented a major stumbling block. After numerous questions, we came to realize that what we wanted, and had expected, was not within the scope of STEPSTONE's current purpose. STEPSTONE I is merely a portion of the larger, more flexible REDSTAR system that, some day, will give us the desired computer support.

Our Requirements

We realized that our requirements and expectations could not be met by the procedures and formats as presented in STEPSTONE. What exactly are these requirements?

Our branch has two teams, each comparatively small. One deals with a complex series of targets involving [redacted] subjects; the other team handles similar targets [redacted] nature.

Because of the limited number of persons assigned to our transcription effort (approximately 30), our branch relies upon the progressive processing concept, whereby each person in the voice effort must be a scanner, transcriber, analyst, and reporter -- a STAR. In addition to these basic tasks, each STAR is assigned reporting responsibilities [redacted]

[redacted]

The STAR system not only allows us to approach maximum utility of assigned personnel, but also provides us with the latitude needed to [redacted]

Because the scanner/transcriber is also an analyst/reporter, he or she decides whether or not a particular item warrants transcription [redacted]

[redacted] This process of "selective transcription," [redacted]

eliminates the processing of superfluous items and frees the STAR to perform his or her analyst/reporter duties.

Considering the operational processing concept practiced, there are three transcription and reporting factors which have a direct bearing on our approach to STEPSTONE I:

[redacted]

- Because of the nature of our targets (i.e., a random mix of subjects), it is not feasible for one STAR to be tasked with transcribing solely one category of subjects [redacted]

[redacted] Everyone processes any subject, regardless of his or her individual reporting responsibilities;

- Because everyone may process anything, it is more important to readily identify the subject matter of the transcript than to identify the transcriber.

Instead of retrieval [redacted]

[redacted] by transcriber, as provided by STEPSTONE I, our operational needs are:

[redacted]

Only when these basic retrieval requirements are met does the ability to retrieve [redacted]

[redacted] by transcriber have any real value for us.

Modification of the STEPSTONE Format

Because STEPSTONE I was designed for an organization involved solely in the transcription process and made no specific provisions for [redacted]

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retrieval of transcripts by subject matter, we were initially confronted with three options:

- A) we could tailor our operations to conform with the given STEPSTONE format;
- B) we could enter transcripts using the STEPSTONE format as presented, and retrieve them by subject matter using SELLERS, SPECOL, and the Model-204 system; or
- C) we could try to adapt the STEPSTONE format to meet our specific retrieval needs.

Option A was dismissed as wholly unacceptable. Option B was rejected because, at the time STEPSTONE was introduced to our operations, SELLERS, SPECOL, and Model-204 were relatively inaccessible to the STARS. Left with option C, we set out to identify those portions of the STEPSTONE format templates which lend themselves to modification.

We should stress, however, that we fully realized that any modifications to the STEPSTONE format or the use of STEPSTONE for purposes other than those originally intended was solely an interim adjustment until the arrival of fully accessible, convenient, data retrieval programs.

One of the basic requirements in our transcription process is the checking of transcripts for accuracy. In STEPSTONE, the checker verifies that a particular transcript has been examined for accuracy

[Redacted]

Our first attempts to perform quality control of the transcripts brought home the need to differentiate between transcripts produced by the two teams. Since both categories of information are

[Redacted] and because of the large volume of transcripts produced by both teams, we found that, in order to quality-control (QC) one team's transcripts, that team had to wade through numerous transcripts prepared by the other team.

[Redacted]

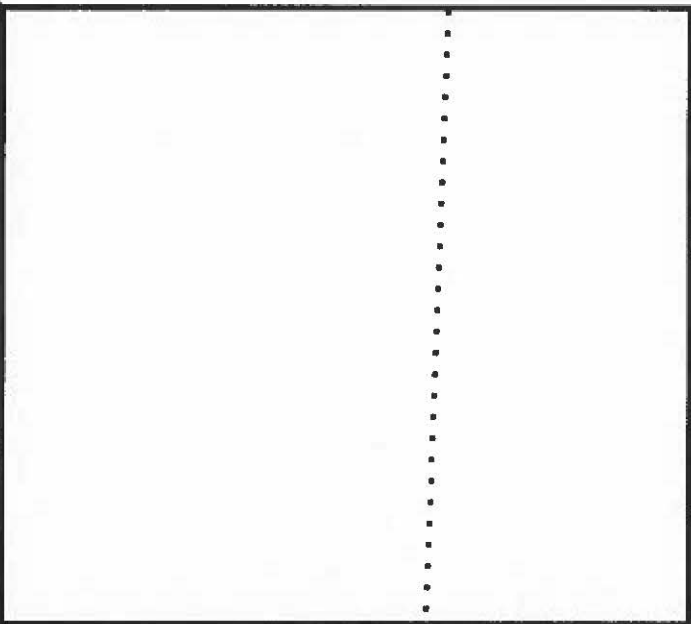
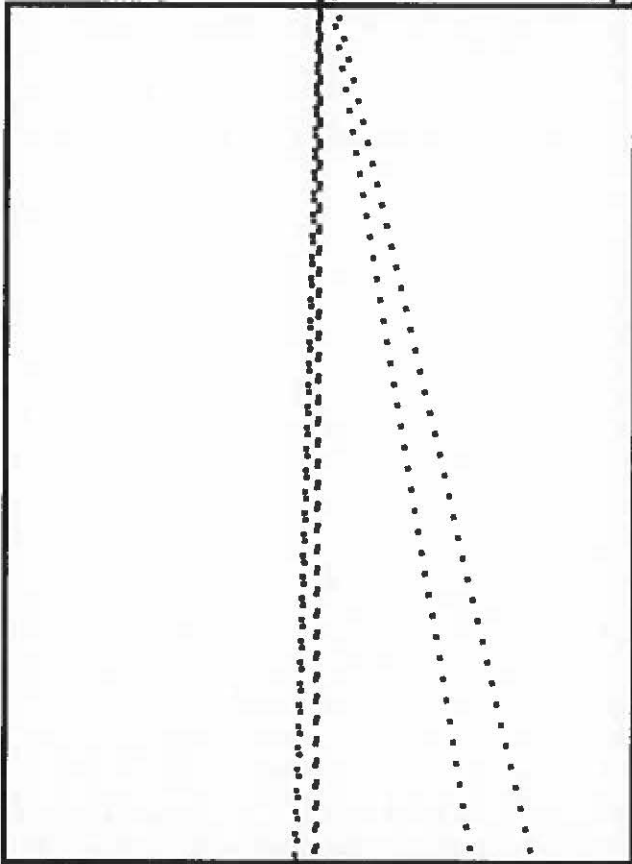
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Systematic Adaptation of STEPSTONE Format

Realizing that the STEPSTONE format could be "modified" (there was no modification of software), we began to look for ways to retrieve transcripts by subject matter and location of activity.

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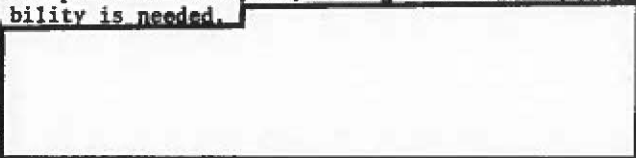
The STEPSTONE system provides three transcript files: the Current File (CU File), the Backlog File (BK File), and the History File (HI File). As [redacted] described the arrangement in her article,

"Briefly, all data entered into the system goes into the Current File. When the transcript has been reviewed linguistically and analytically [that is, subjected to QC], it is sent to the PROD Data Base and to the on-line History File. It remains in the on-line History File 15 days for local access and is then purged."

While our "modified" [redacted] provided us with much greater flexibility in retrieving transcripts, we were still not satisfied that all possibilities had been exploited. Upon closer examination of the STEPSTONE User's Manual, we noted that

In other words, as the system is designed, a transcript should remain on-line for the one to two days required for its transcription and QC, plus the 15 days it spends in the on-line History File -- a total of 16 or 17 days. The ability to maintain transcripts on-line for 16 or 17 days is apparently more than adequate for a shop dealing solely with transcription. However, for our operation, dealing with both transcription and analysis, a longer on-line capability is needed.

[redacted] it seemed to be an ideal place and opportunity to improve retrieval flexibility.



When the modified [redacted] are used together, analysts can easily and quickly determine the basic content and subject matter of each transcript. Some hypothetical examples:

Our problem, therefore, was how to deal with the built-in on-line limitations of the system. Our first objective was to prevent selected transcripts from being automatically purged after 16-17 days in the system. Our approach to solving the on-line problem was constrained by the fact that we are obligated to QC all transcripts on a timely basis to allow

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their entry into the PDB. As stated above, once a transcript has been QC-ed, it is automatically transferred to the History File, where it has a 15-day on-line life expectancy. We realized, therefore, that we would have to systematically remove selected transcripts from the History File to prevent their loss. By removing [redacted]

[redacted] a transcript already in the History File will be automatically transferred back to the Current File. Without [redacted]

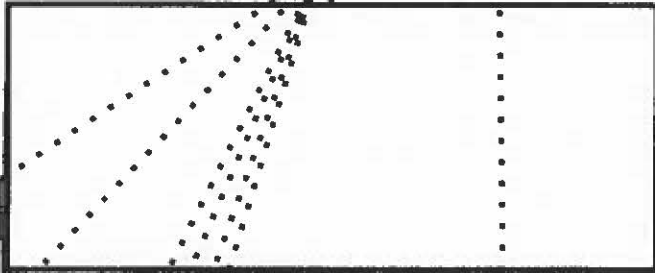
[redacted] a transcript will remain in the CU File for 30 days and then be transferred automatically to the BK File, where it may stay for an indefinite period of time (depending upon the disk space available). Thus, the first two steps we devised for the process of maintaining selected transcripts on-line for as long as necessary were to:

- QC transcripts on a daily basis, allowing their entry into the PDB and their transfer to the History File; and
- after transcripts have been in the History File approximately 13 days (since they "disappear" after 15 days), call-up those transcripts that are to be kept on-line

[redacted]

We dubbed this second step the "Zero-QC Process." Since [redacted] determines when an unchecked transcript will drop from the CU File into the BK File [redacted]

[redacted] This step ensures that a Zero-QC-ed transcript will remain in the CU File for an additional 30 days before it is transferred to the Backlog File. [redacted]



At the end of each work day, checkers carry out both the QC and the Zero-QC processes. As of this writing, selected transcripts have been maintained on-line for over 14 months. Aperiodically, we review the Backlog File and delete those transcripts that are no longer necessary. Twice during this 14-month period, our Computer Support Branch notified us that our page count in the Backlog File was nearing file capacity and we were asked to reduce the number of transcripts. We complied by deleting those transcripts related to completed or nearly completed projects/products for which there was no longer a need for on-line maintenance.

Summary

In summary, we recognize STEPSTONE and its concepts as invaluable transcription tools. For many, it serves well as is. The original STEPSTONE concept of machine-formatted transcription has been left virtually intact by our modification. [redacted]

Only those items not needed by our peculiar system of operations, the STAR system, have been modified.

With the recent developments in other computer programs, the experience gained from our exposure to STEPSTONE, and the assistance of our Computer Support Branch, we, as transcribers and analysts, are more confident that computer technology offers much to the voice effort.

For us, the immediate advantages of the modified STEPSTONE I were:

- a transcription retrieval capability with better than 6 months of selected material on-line;
- a systematization and standardization of both the transcription process and the analysis/reporting effort;
- quick, convenient, and reliable retrieval by subject at the STAR's immediate disposal; and
- a significant reduction in the amount of time required to perform quality control.

Perhaps more importantly, by being able to group together transcripts related to a specific subject over a given period of time, through the modified use of STEPSTONE, we are now more confident that we are producing SIGINT product based upon all available voice material. In this way, we feel we are in a better position to comply with the ultimate objectives regarding "finished SIGINT," as outlined in V-129-175, "Intelligence Conclusions in SIGINT Product."

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COLLECTION-SUPPORT TA IS NOT FOR EVERYONE



[REDACTED]

GROF

It is often said that the traffic analyst working in a collection-operations area isn't doing traffic analysis. This is because very little in-depth analysis is being performed. Better termed, the work could be called "collection-support analysis." It is a special type of traffic analysis for which not all traffic analysts are well-suited. In fact, it is so different that some might suggest it be considered as a unique career specialty.

Recruitment of individuals with an aptitude for collection-support analysis, in my opinion, should be better defined. Too often, there seems to have been a willingness to accept any traffic analyst willing to work rotating shifts or perhaps willing to take a field-station tour of duty. Unfortunately, the skills needed to be a good traffic analyst do not necessarily transfer into making a good collection-support analyst (CSA). A certain mental persuasion is needed in order to be a competent CSA/TA in a collection-support analysis environment. This person plays a vital role in the collection cycle. He should be the oil and grease in the input, output, and feedback process of the collection cycle. This article will identify the role of the collection-support analyst and attempt to identify what his mental persuasion should be toward his job.

The CSA is the traffic analyst who works with the collectors of [REDACTED] at an operations area such as in GROF or [REDACTED]. The CSA necessarily relies upon applying information as documented from the in-depth analysis performed by traffic analysts in the tasking organization. One of his main functions is to serve as a liaison between the collectors and the tasking organization and

perhaps different professional disciplines within the operations organization.

The tasking of mission to an intercept station is always changing. This causes the CSA to familiarize himself constantly with new targets, with no assurances that those targets will remain on mission for long. Often, the mission assigned to the station will be bits and pieces of several entities. That means that the CSA will also need to familiarize himself with many related but non-mission entities that may happen to be intercepted. Thus, the CSA must have a good information and recall system (i.e., working aids, Technical SIGINT Reports, and/or a good memory). This is one reason why the CSA may frequently complain about the quality and timeliness of TEXTA, TSRs, and other working aids. The experienced CSA soon learns that the information seemingly critical to him is not readily forthcoming. Often, it requires him to establish his own variety of working aids which he invariably feels the parent organization should have produced. Actually, the problem is simply a case of a difference in perspective and each has his own view of the priorities.

The CSA's perspective is closer to that of the collector, whereas the perspective of the analyst in the parent organization is closer to that of the output or reporting phase of the collection cycle. The CSA is caught in between the two conflicting parties. As amazing as always, the tasking organization never seems to give necessary acquisition data useful to the collector in quickly identifying and copying a new target. For example, the collector might ask whether [REDACTED]

[REDACTED] Although it would .

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seem fundamental to "think collector" when assigning a target by giving the collector the best acquisition information possible, this is often not done. The CSA is then left to grope around, trying to fill the voids in the acquisition data.

The irreducible aspect of "thinking collector" is concerning ourselves with the needs of others and keeping in mind that collection is the starting point of the collection cycle. Viewing it otherwise can only cause friction in this cycle. This means that the technical in-depth analysis feedback must be given as high a priority as other aspects of a job. Then, in times of crisis, when collection is most essential, objectives will more likely be satisfied. As in farming, raising a good product requires a good amount of cultivation. It seems today that NSA is too often content with the present yield of a product with little or no cultivation.

The collection-support analyst attempts to fill the vacuum created by the inward reflection of the tasking organization. The CSA organizes the technical information in order to:

- minimize the acquisition time;
- maximize intercept and the meeting of collection objectives;
- reduce the learning time needed by the collector to ensure that he will quickly familiarize himself with the target;
- document his efforts, since people are constantly rotating or transferring; and
- give feedback through field-station TA.

In turn, he must communicate to the tasking organization just what the acquisition and copy problems are. The CSA must concern himself with "next time" so that collection may proceed routinely whenever a crisis presents itself. Secondly, collectors often do not copy the same target on consecutive days. Thus, the CSA may need to serve as the focal point of an in-house dialog. It is he who should ensure the follow-up on significant intercept.

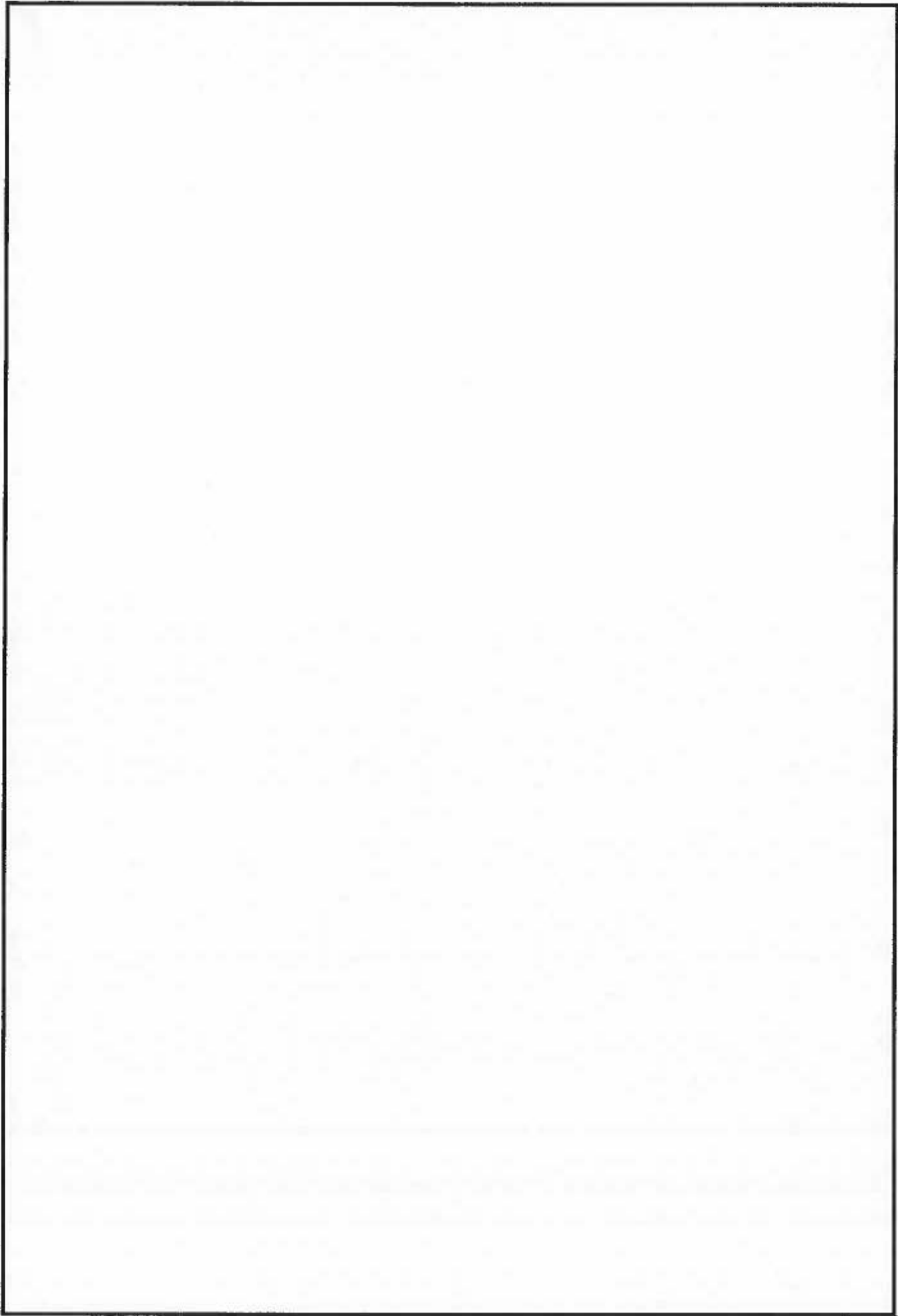
The CSA most often concerns himself with the present and the future, and this requires a lot of intuitive and innovative action. The results of these actions will necessarily reflect his ability to understand his collection environment. In addition to understanding the collector's job, he must be able to relate to the person who is working as a collector. This involves an understanding of such things as collection techniques, signals analysis, computer applications, language, and reporting. The better the CSA understands these related disciplines, the greater the service he can provide to the operations organization.

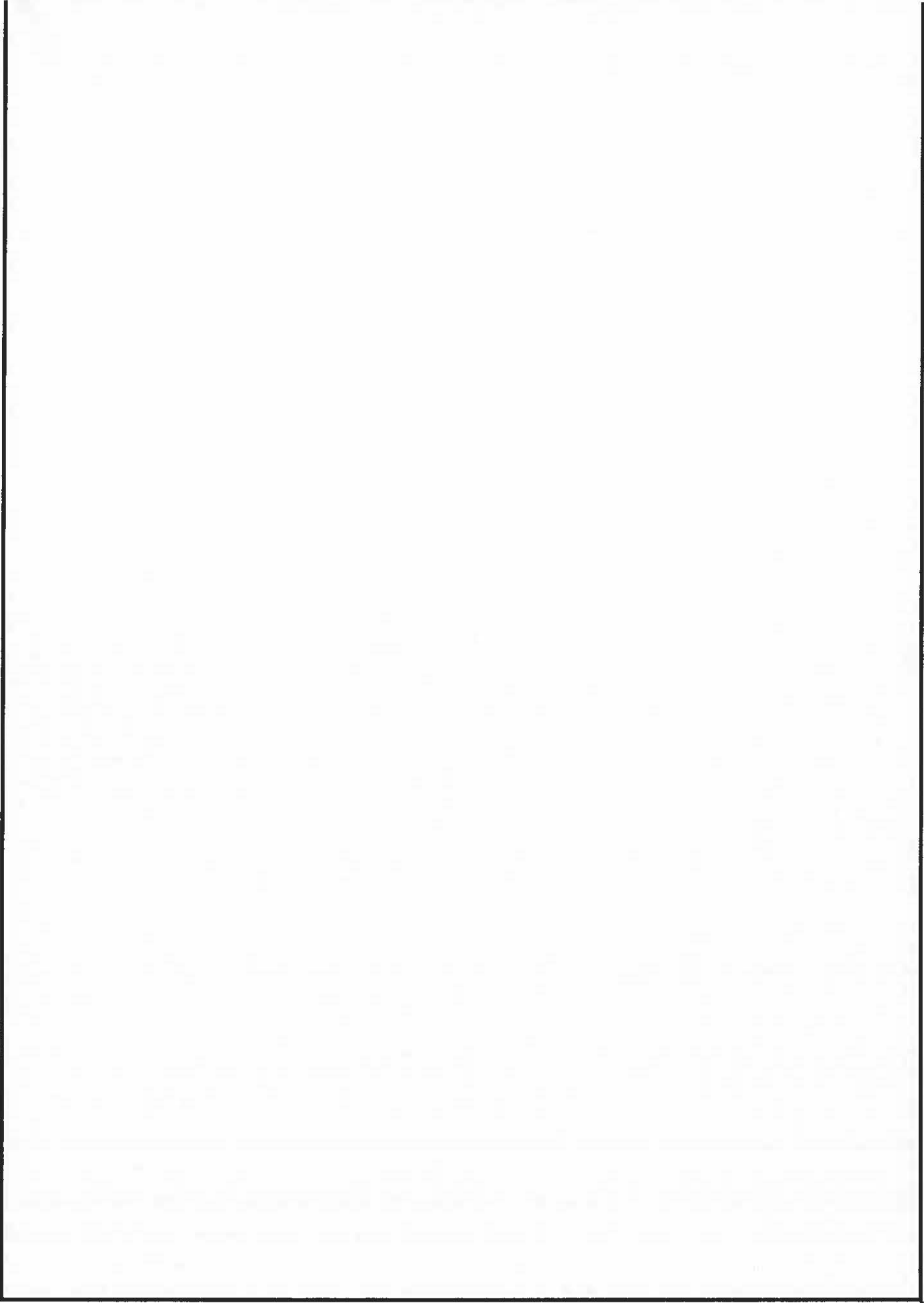
Often, the dialog between the collector and the CSA sounds more like confrontation than cooperation. And, when placed in CSA jobs, many traffic analysts feel uncomfortable and some-

what frightened at being cajoled. In a way, it is a sort of game. The collector tests the CSA's credentials so that he can evaluate the CSA's use to him. Conversely, the CSA must test the collector so as to ascertain the collector's proficiency and attitudes. Obviously, people vary in their inclination to doing various jobs. Whereas one collector may love to copy new mission, another may be more content with copying a target with which he is familiar. But the fact is, the CSA and the collector must work as a team and must communicate with one another. If they do not build a close working relationship, the entire mission is likely to suffer. If nothing else, the CSA must be able to display sincere empathy with the collector's problems and seek ways to alleviate many of the technical ones. The CSA must show restraint and diplomacy toward the collector's work. Who in his career has not seen the instance when a collector has laboriously copied a target for 2 hours and then an undiplomatic CSA glances at the traffic and tosses it immediately in the burn bag? When that happens, is it any wonder that, the next time that intercept is needed, the copy may not be forthcoming?

The CSA must not be afraid of taking charge of a situation. Often, he must make a decision on whether to continue copying a new target or to have it dropped. In the midst of a crisis he may need to weigh the factors of maintaining mission discipline as given in the tasking, or ignoring some mission in order to copy a "hot" item. It is in times of crisis that new targets appear and the decision of whether or not to copy a target may be critical to the gathering of needed intelligence information. Conversely, the improper use of resources by ignoring mission tasking may also cause problems. It will probably be the CSA who can best determine if one target should be sacrificed to copy another -- and then to determine which one to drop. In these days of optimum tasking, some target will have to fall off the tasking ladder if an unassigned target is copied. Therefore, the CSA must know where mission discipline must be maintained and where it can be sacrificed. The CSA should be able to recommend the direction and help steer coverage.

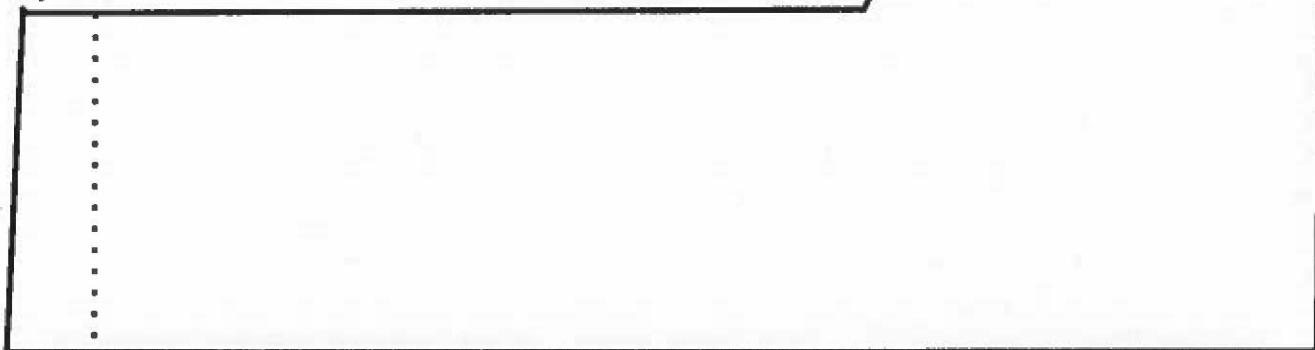
Collection-support analysis is where traffic analysis begins and it can often be exciting. The person must enjoy working with the unknown and be willing to deal with the frustrations of a constantly changing mission environment. It is not a place for people who do not like change or the unexpected. The CSA is an important part of the collection cycle, but he is only as good as the support he receives or can muster. Since remote operation is becoming an increasing endeavor in the NSA effort, it would be beneficial for those who can do CSA work to gain such experience so that they can gain a better perspective of the collection environment. In turn, they will increase their value to NSA.



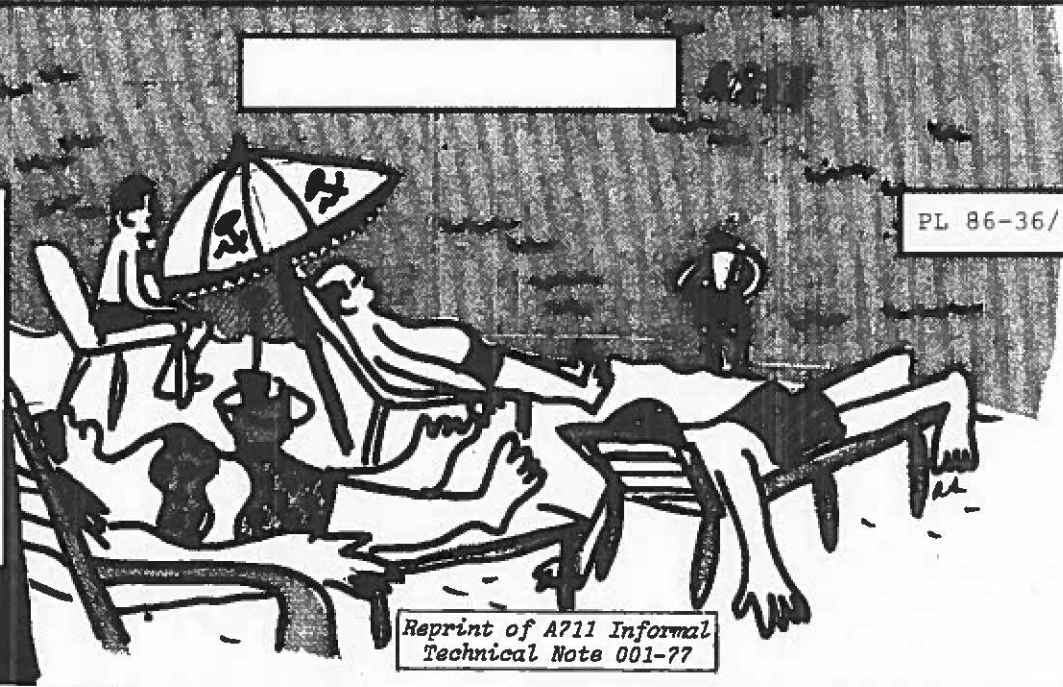


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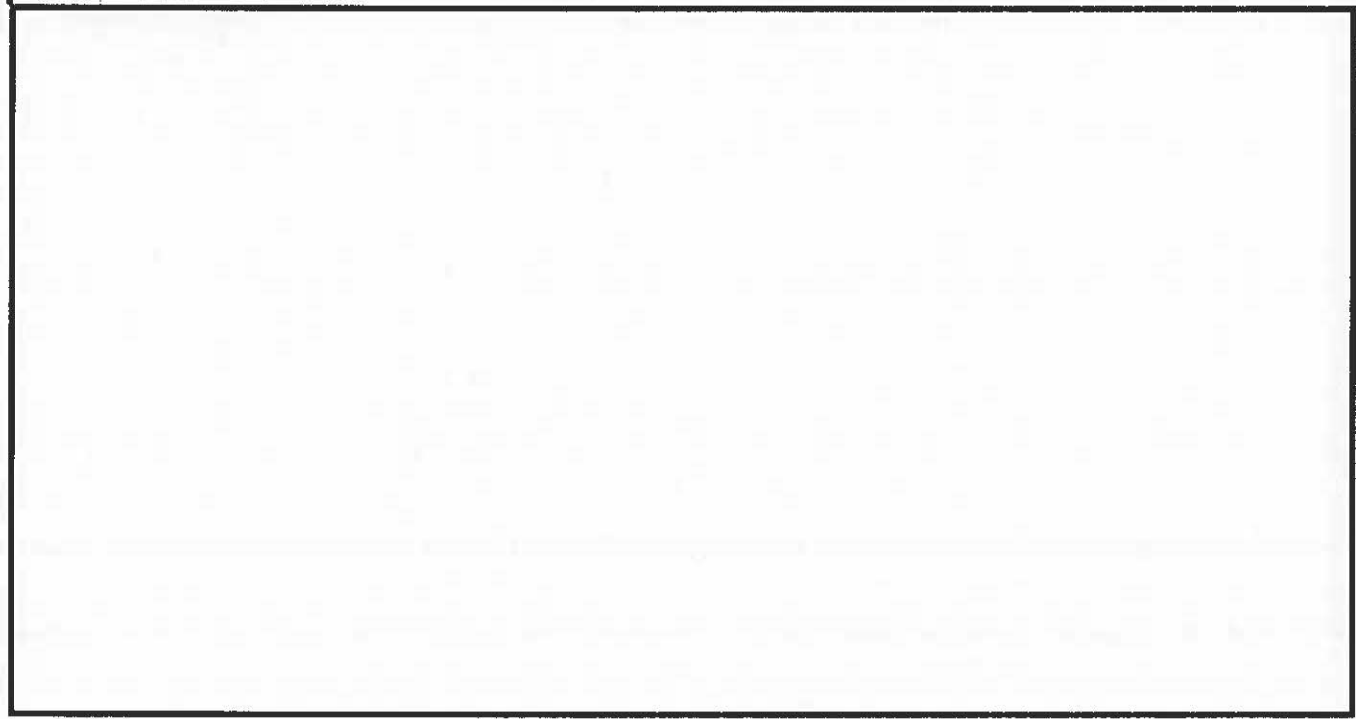
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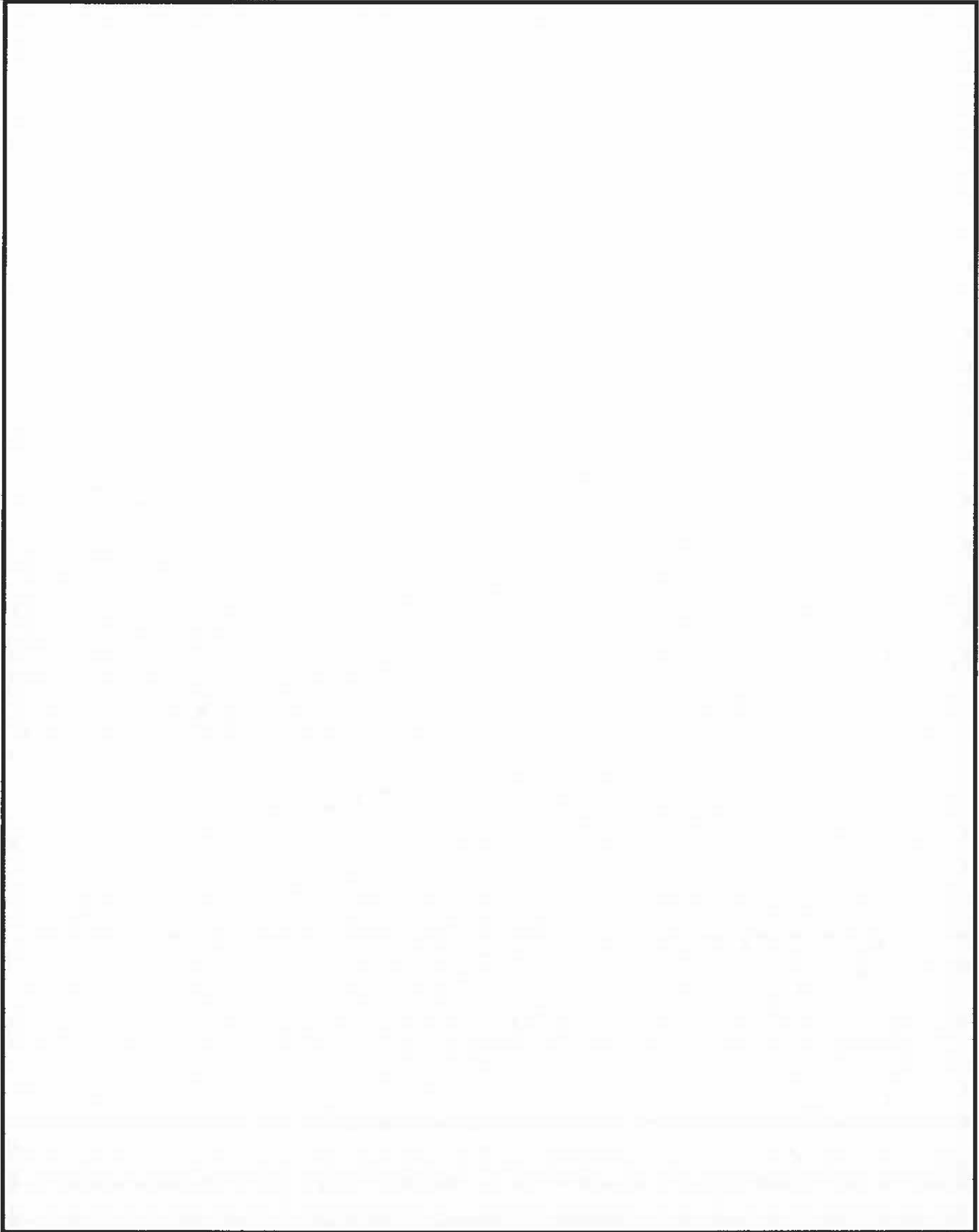


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Technical Note 001-77*



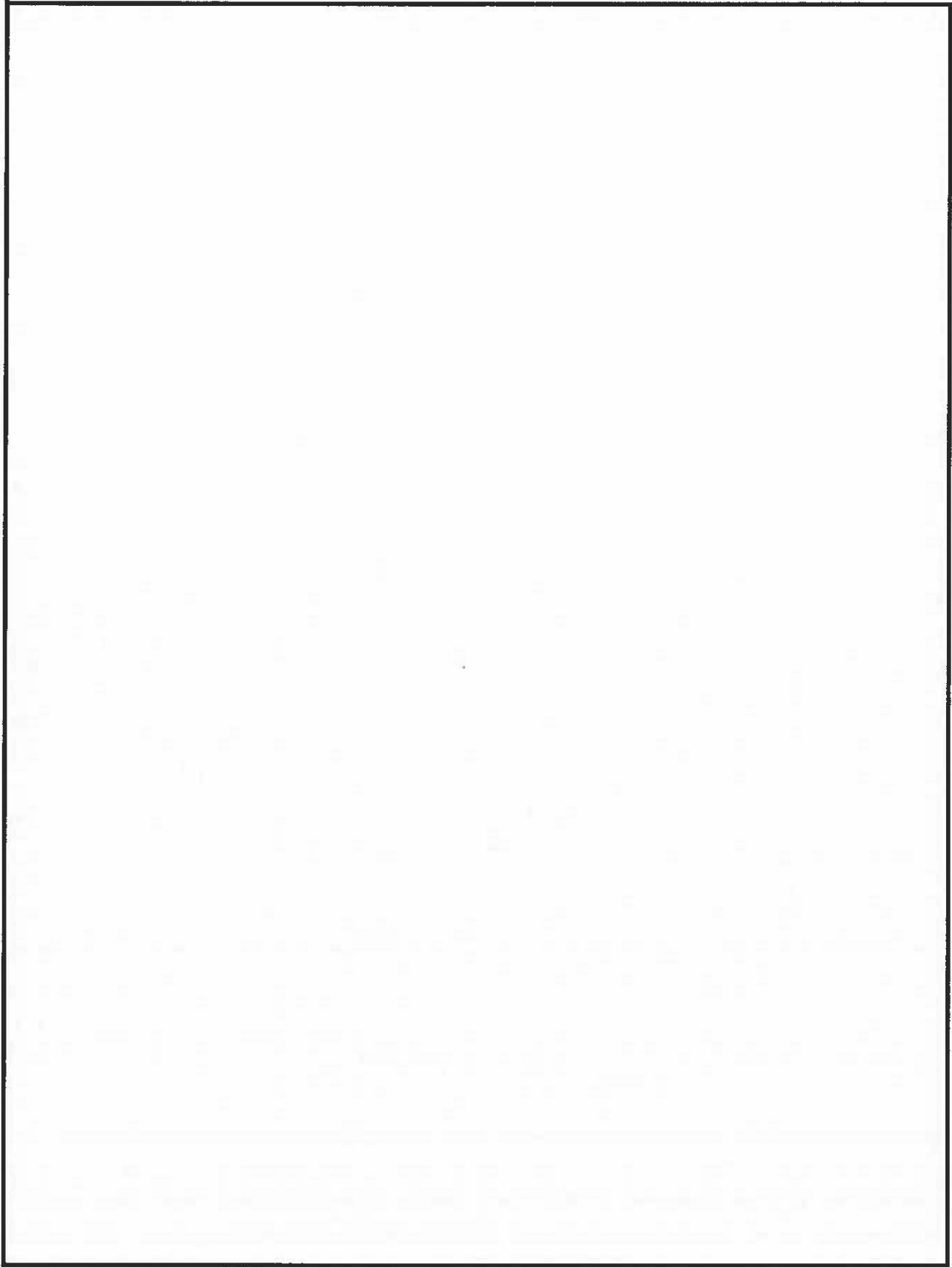
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