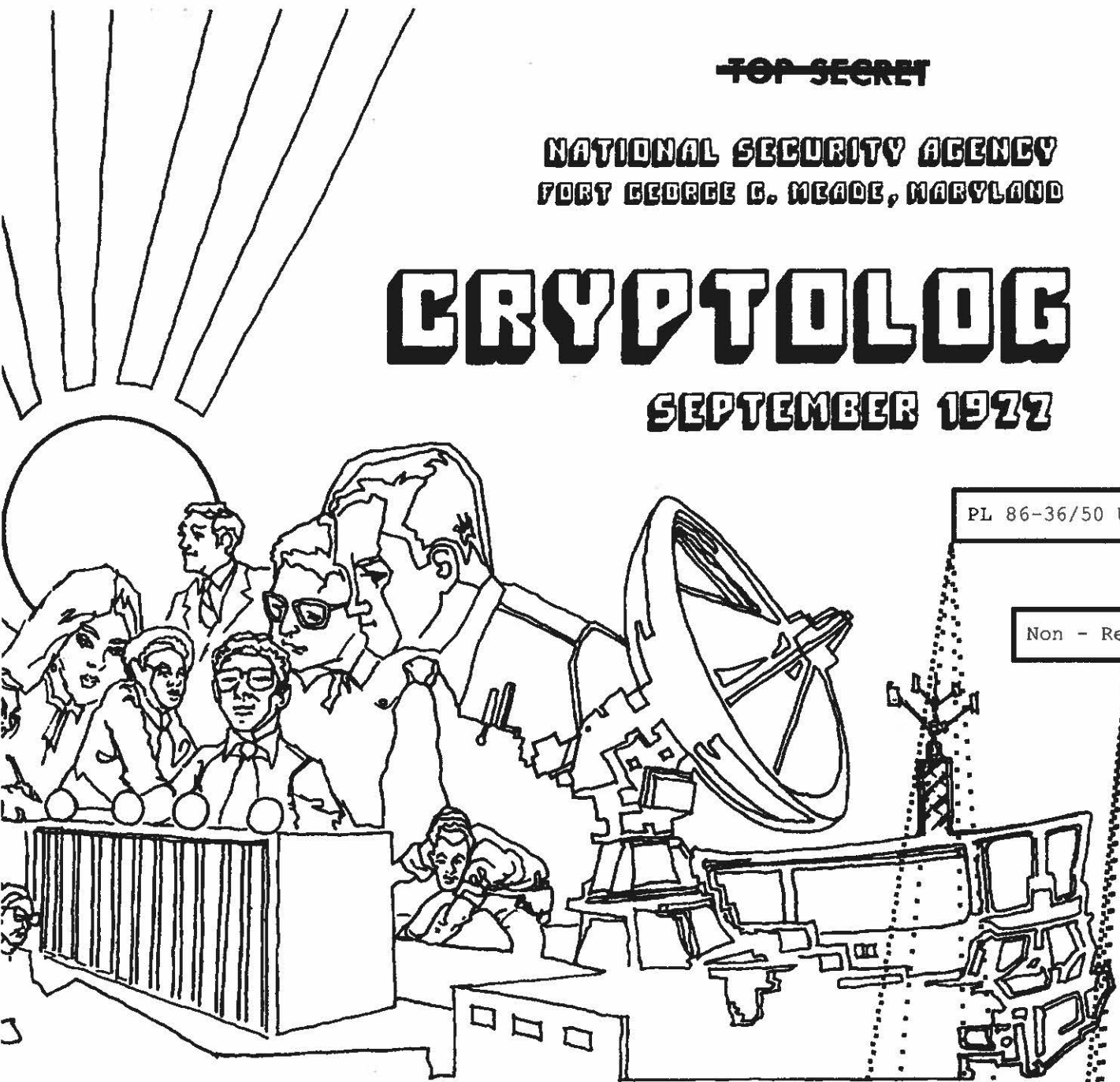


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NATIONAL SECURITY AGENCY  
FORT GEORGE G. MEADE, MARYLAND

# CRYPTOLOG

SEPTEMBER 1977



PL 86-36/50 USC 3605

Non - Responsive

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EO 3.3b(3)  
PL 86-36/50 USC 3605

Approved for Release by NSA on 11-29-2021, MDR Case # 110903

YOU'RE NOT GOING TO BELIEVE THIS, BUT IT'S

# ANOTHER LAST WORD ON I.A.T.S.

**F33**

*I* have been closely following the discussions on IATS and have frequently promised myself that, given time, I would make some comments of my own. The recent article "The Last Word on IATS?" (CRYPTOLOG, April 1977) provided the necessary impetus. But, first, a few qualifiers and qualifications are in order. My experience has been as a User, Designer, and Maintainer of

AG-22/IATS follow-on processing and applications systems. The following comments emanate from an admittedly parochial background but I feel they have a general relevance to the IATS discussions.

Most of the previous IATS discussions seem to be looking at the problem from the wrong end. The concern of the writers seems to rest

with the obligations binding the intercept operators (USSID 101), the proliferation of untimely processing systems, and the expanding volume of unwieldy data bases lacking analytic integrity. I feel it may prove worthwhile to approach the system from the other end -- to seek the opinion of the desk-analyst user who depends on the end product of the daily processing system to make his days productive. The basic question to be answered is, "How does the analyst view the output of the system and what does he do with it?"

### How Does the Analyst View the Output of the System. . .

My observation is that even though a tremendous amount of time and effort has been applied to the definition of copying instructions,

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installation of IATS equipment, communications links and computer hardware, and the writing of software, the analyst views the end result as a quick delivery system [redacted]

[redacted] It is his opinion that he now gets a daily "pink copy" (normally within 24 hours of intercept or sooner) that used to be courier-forwarded 3 weeks after intercept. The price paid for this "instant delivery" system is the elimination of the analyst-annotated, electrically forwarded technical vehicle (STRUM/TECSUM/ELFAIR), and the resultant refined data base. In a very real sense this viewpoint is correct in that we have eliminated the field site "STRUM" analyst and moved the burden of examining [redacted] (second-echelon analysis and reporting) back to the NSA desk analyst. Today's analyst no longer appreciates the number of "analyst" man-hours eliminated by our "overworked" intercept operators, and "sophisticated" computer software. No matter that the system now easily handles amounts [redacted] not even contemplated under manual operations; does the dirty work like [redacted] and allows the analyst to machine-search the entire intercept record for unique bits of chatter. He sees only that he must begin at the beginning with [redacted]

*... and What Does He Do With It?*

Again, from observations I would say that the analyst examines the system output and then manually logs pertinent data in prescribed formats. The result of this logging process has been variously described as "the 5x8 cards in the upper right-hand drawer," "drawing the circle," or "historical notes," but the generic term I like best is "SOI Summary." The SOI Summary is an analytically refined data base [redacted]

Admittedly this is not a comprehensive list, but it does contain the fundamental data required by an analyst to maintain continuity of an activity, and to build a "normal" activity data base from which inferences of abnormal activity can be drawn. I believe that for the majority of target activity currently maintained for continuity purposes (not intelligence purposes), a computer-generated summary can be produced from the IATS input that will allow more freedom for the analyst to concentrate on analytic rather than logging tasks.

The basic problem with the current daily output of the follow-on processes is that it is not

a summary, but a print of complete intercept. Thus the analyst is forced to examine large [redacted] and manually refine it by logging selected data into some type of SOI Summary format. A related problem with data base extracts (usually SPECOL) directed at the stored [redacted] is that they usually are pointed at one or, at best, two of the elements that would appear in an analyst summary. The extract can produce a listing [redacted]

But if the analyst were to make the numerous separate extract requests necessary to list all the elements of a summary, the resultant paper flood would quickly drive him back to the 5x8 card. What is needed is a daily, interactively updated SOI Summary program that will:

- provide summarized target activity information at the analyst's discretion;
- be compiled on the basis of varying time intervals (daily, weekly, SOI period, monthly),
- be immediately accessible (preferably by VDU) and conveniently updated,
- contain an exception report section that highlights unusual occurrences for analytic resolution, and
- be permanently stored as a refined, detailed, analyst-verified data base.

There are four assumptions that form the basis of a successful summary system. They are:

- The summary will be primarily applicable to stereotyped rather than high-interest or unusual targets.
- The effort required of the analyst to make the system work must be of a lesser degree than the effort required to keep hand logs.
- Full text of the target activity intercept must be readily available to the analyst at his request (preferably by VDU).
- [redacted] will be corrected only as far as [redacted] is concerned (preferably via software using the analyst-corrected Summary).

The key to a successful SOI Summary system would be its ability to "learn." Today's [redacted] would be played against analyst-supplied parameters, historical target knowledge, and man-machine corrected, current SOI data. Thus, as the analyst's current knowledge of the target grows and he interacts in a feedback loop with the SOI Summary system, the system's knowledge of the target grows and it is better able to refine [redacted]. As a result, the longer the SOI period lasts, the greater the target knowledge, the less [redacted] is outputted, and the few decisions must be made to refine the data by the analysts.

One of the more significant aspects of a well-designed SOI Summary system would be its ability to highlight unusual activity in an exception report. There are two levels of analyst

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~~HANDLE WITH CARE - SECURITY INFORMATION~~

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knowledge concerning a target available at any one time to the system - current and historical. The historical target knowledge resides in TEXTA or, in B Group, to a greater extent in BBAR. Current target knowledge would reside in the SOI Summary that is being updated daily by the analyst-computer relationship. The summary system can draw on both levels of target knowledge to provide for the analyst when [redacted] exceeds "normal" parameters. For example, the analyst has provided TEXTA/BBAR with the historical knowledge that [redacted]

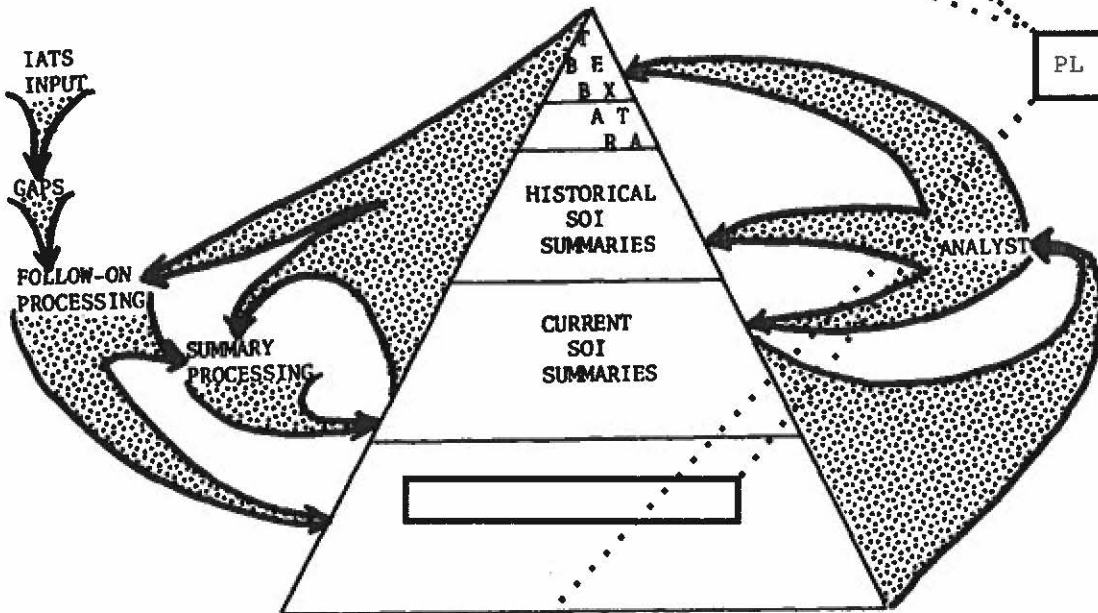
[redacted] would trigger a historical knowledge exception report. On another level, exception reports would also indicate high-interest items [redacted]

[redacted]

Thus, for at least the stereotyped activity, the analyst's daily job would become one of reviewing SOI Summaries and exception reports and making decisions designed to refined the SOI Summary data base by resolving conflicts, setting parameters, equating and identifying data. To counter the feeling of getting out of touch with a target, it would probably be advantageous for the analysts on a regular, cyclic basis to return to the process of reading all [redacted] and keeping the hand logs. This would also serve as a check and balance on the summary system and the parameters and profiles it relies on for exception reports.

If the hypothesis of computer summarization expounded above is applied to our current processing system and data base structure, the diagram below would be a generalized representation of the total system:

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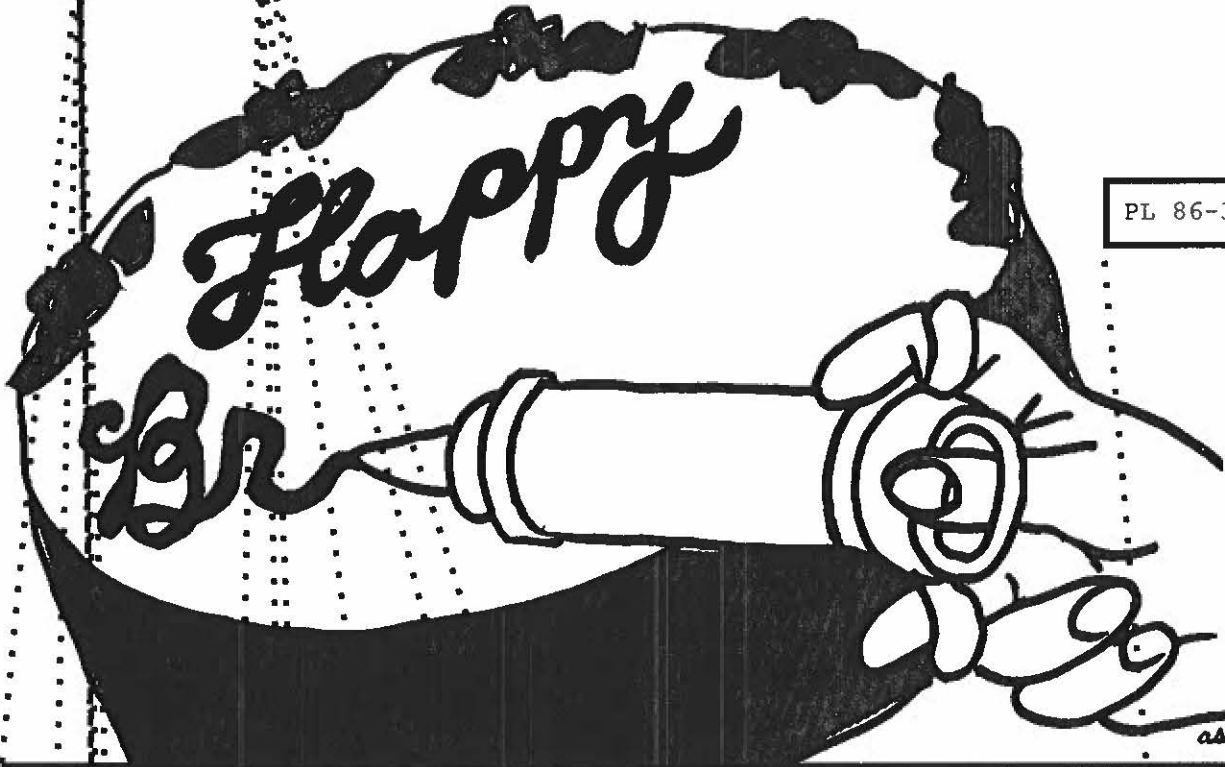
I realize that the addition of summarized data bases will add to Mr. Phillips' concern for the growing data storage problems. I can only suggest that examining the storage requirements for [redacted] in light of having a reduced, refined summarized data base may reveal a way to a net saving in on-line storage. I would further suggest that the analyst will be using the summarized data bases for the majority of his SPECOL extracts, with attendant saving in search time and output volumes. The implementation of an analyst-VDU environment and distributed data bases (Project RETINA in B Group) will allow the analyst to become an integral and interactive part of the system, and this should increase the integrity of the entire process. If Mr. Phillips' senior technical people believe that a system

of this type is worth pursuing, then any discussions to be held must start with the desk analyst and attempt to define his requirements. From these requirements will come a design for the back end of the system, and from there a determination of what foreseeable future hardware/software techniques, including interactive analyst involvement, can produce. Then and only then can a determination of the absolute minimum requirements for formatting, gisting, or flagging be established for the intercept operator. In short I'm advocating less operator and analyst involvement at both ends of the system and greater use of the potentialities of the computer software, coupled with the coming advances in access hardware.

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P16

*H* APPY BRITHDAY! No, don't reach for pen and paper to notify the editor about a typographical error. That's not a misprint, it's a *garble*, and

can handle it. But if a machine-translation system can be devised so that nonlinguists can determine the intelligence value of the translated traffic for possible further evaluation by linguists, the problem will at least be alleviated.

CONGRATULATE DAY OF BIRTH

This article describes the results to date (late June 1977).

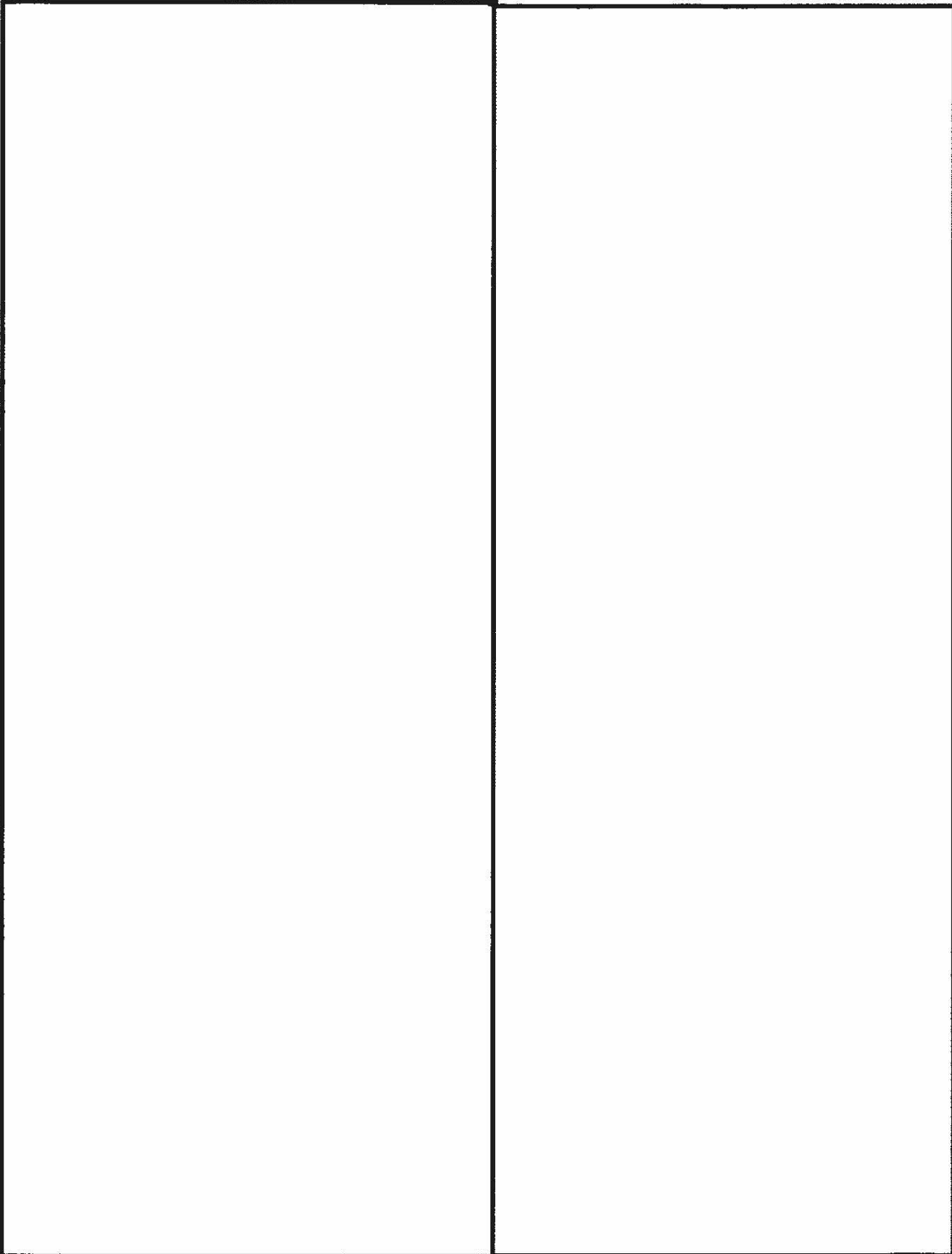
The first line [redacted] the second line is [redacted] the third line is a machine translation, which admittedly is still a little rough, but conveys the idea of HAPPY BRITHDAY (I mean BIRTHDAY): More on the translation later.

Any machine-translation system requires a "dictionary" to give target-language (the "into" language) equivalents, or translations, of the source-language (the "from" language) entries.

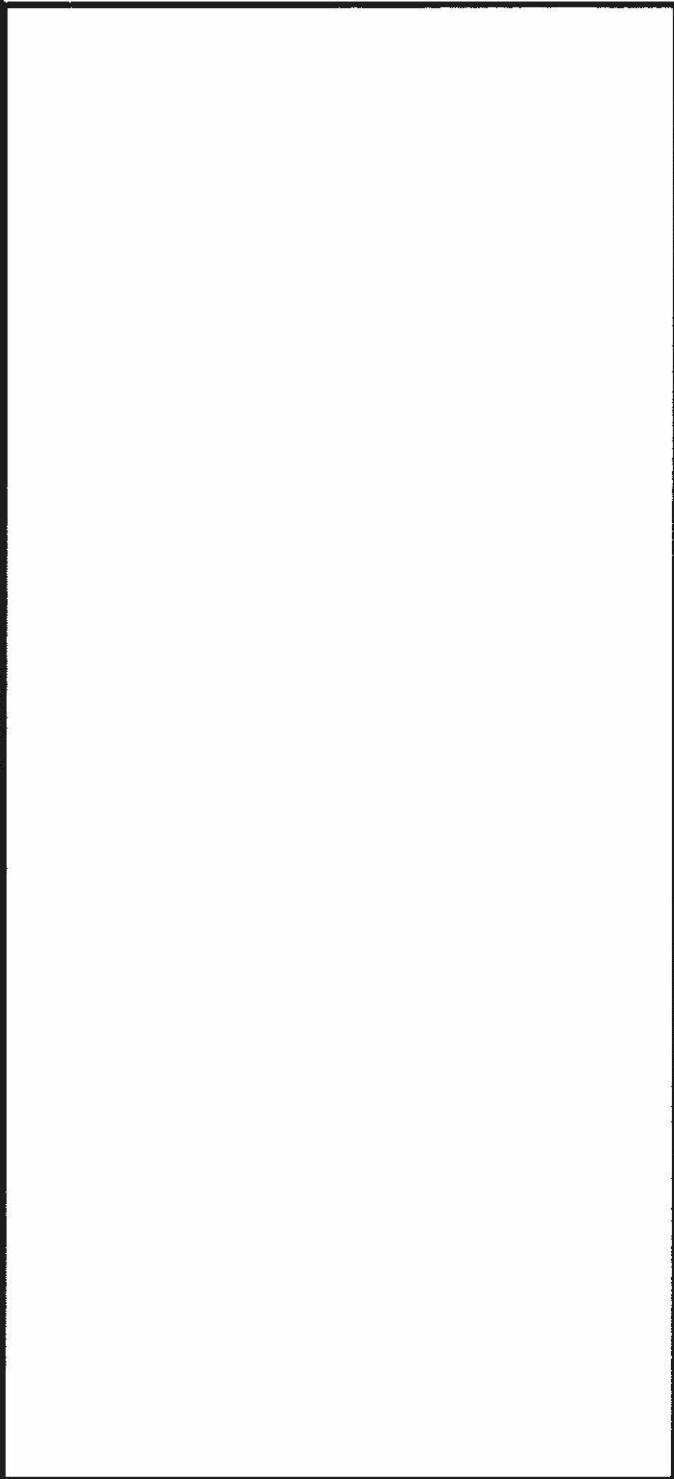
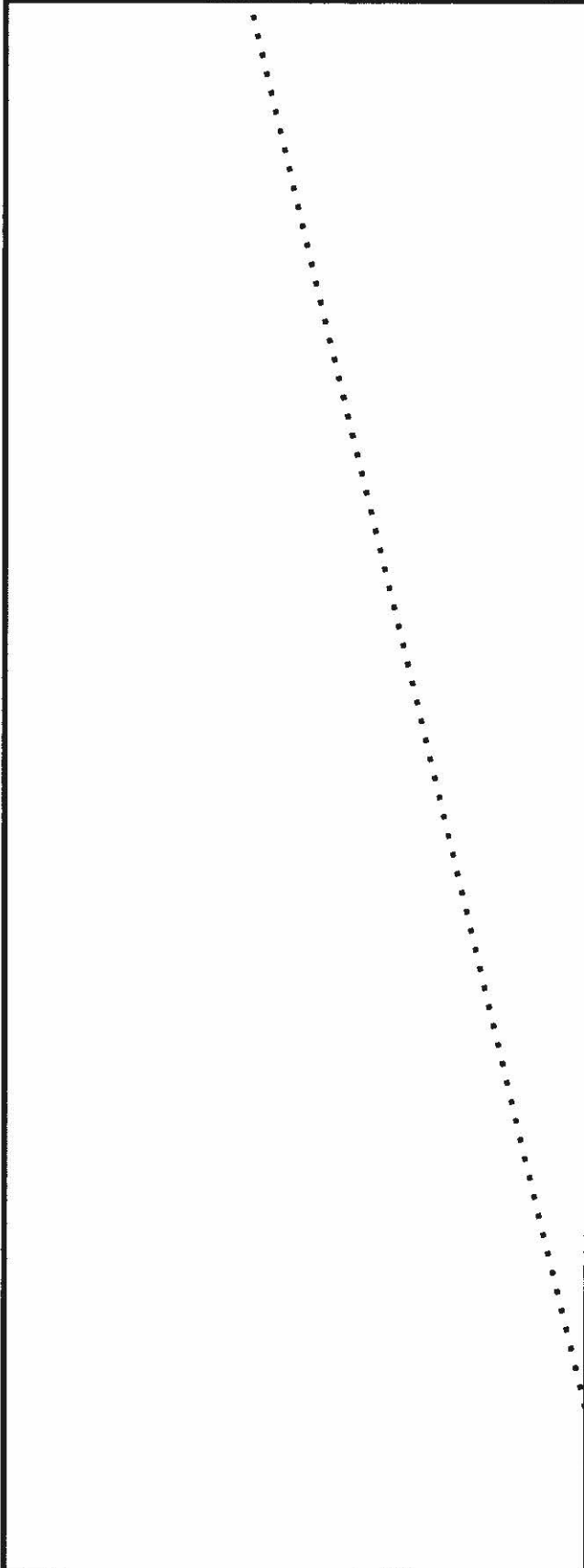
This article uses the word "garble" to refer to errors [redacted] which a skilled linguist can easily correct. We are not referring to texts made totally unrecognizable, as by static.

The volume of traffic is expected to grow beyond the point where available linguists

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And there is no reason why A Group (or, for that matter, B Group and G Group) need content itself with the kind of automatic translation  Both computation and linguistics have made great advances in the past two decades, and machine translation is an idea not of the past, but of the present and future.

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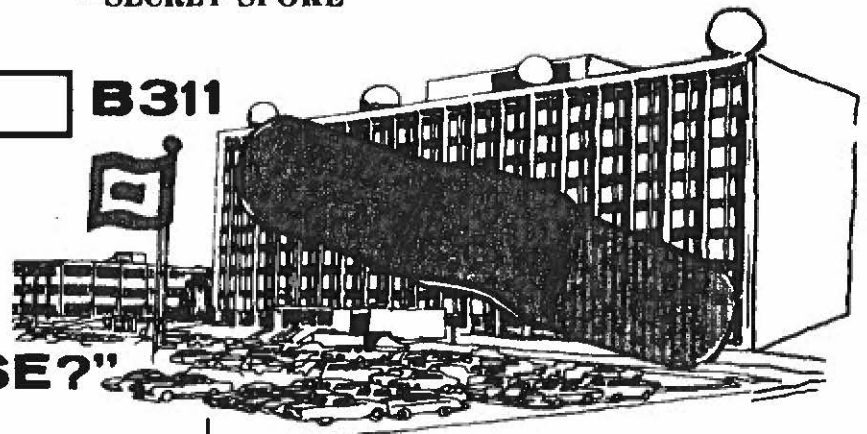
~~SECRET SPOKE~~

[Redacted]

B311

asks

# "IS THERE A DOCTOR IN THE HOUSE?"



*H*ave you heard the latest rumor? There is a terrible miasma seeping through the corridors of NSA, infiltrating, where it can, all the elements of PROD, creeping under doors, insidiously attacking all who cross its path. Do you care? You should, because it's probably affecting you even as you read this. Let me say I don't think it's just a rumor. It goes under the name "Technical Documentation Syndrome," and its constant companion is "Apathy."

For some time now I have been concerned with the lack of technical reporting and documentation, and if the examples I use appear to have a slightly oriental flavor, it's because I wear a red star on my hat and carry a little red book.

We have all heard, ad nauseum, that "Product is our bread and butter," and without it we'd be out of business. Now, I wholeheartedly agree with this. However, which comes first, the chicken or the egg?

In order to write the product, someone has to perform some analysis. In many cases it's easy for the problem-wise analysts to recognize unusual activity and to issue appropriate product, but the job shouldn't stop there, although, all too often, that's just where it does stop.

When it does, inevitably, back come the questions:

[Redacted]

The answers to these questions should be found in the technical documentation of the problem, but are they? The answer to *that* question usually is that no report was ever written. If you're lucky, and if the analyst hasn't been transferred (or has become so cross-trained on

different regions that he's a generalist, not a specialist), you can get some answers. You can try to use the hand/machine records (which can be pretty cryptic if you have no standardization and don't read Sanskrit). You can set up a task force to reanalyze what's already been done, but not documented. You can swallow, if you're not too concerned about your problem of wanting to throw up, the old well-worn phrases you hear from many management-level people (including, unfortunately, even section chiefs), such as "I just didn't have the people," "You can check through old technical messages," "You can always go to the data base," "I didn't see any reason to waste time writing that up" (although it was worth a product!), "We can't afford that luxury," or "It's too ambitious a program." As those who know me can attest, I get highly emotional and extremely vocal when I hear that kind of rationalization from people who should know better.

Unfortunately, you don't find analytic conclusions, ideas, and opinions in data bases. In most cases, you don't even find the correct data! People tend to forget that data bases are frequently uncorrected and are good only if the analyst puts the information in as it happens, not when lightning strikes in the form of an irate supervisor (there are a few good ones left).

If we actually insisted that analysts take the time to write up an activity as soon as it's over, we could save untold, and I think very costly, man-hours now spent in reinventing the wheel. We don't act anymore. But, boy, do we ever react!

Other answers include old cliches, like "How would I know? -- I didn't work this region then," or "I think I remember we saw that in the year one, but no one wrote it up," or "How do you expect me to find it? -- we threw all those old records away."

When the documentation is not available, how much time and energy is wasted in trying to recover the information? If it becomes necessary to recheck analysis for any reason, where do you go to get the answer? It would be logical to look in a technical report, but, remember, the key word here is *logical*.

~~SECRET SPOKE~~



~~SECRET SPOKE~~

How sweet it is on those rare occasions when you can go to your favorite CREF person and request a copy of a TSR or Working Aid which is maintained in the library for posterity and, incidentally, for use! (If you remember to include T1213 on your distribution list, that is.)

To illustrate the point another way, take only one of the not so hypothetical questions.

No one knows, for example, if you don't document your technical information,

Let me hit you over the head one more time with the hammer, and touch lightly on two other things all at the same time. While much of what has been said so far has been addressed primarily toward the traffic analyst

The customer is continually concerned with right? Right! If I said "wrong!", the article would end. But I'm not through yet!

If these haven't been put into a permanent data base that can be manipulated, or technically documented in some fashion, you could end up saying in a product report,

(We have done similar things, you know -- much to our chagrin -- but don't ask me to prove it, because I can't find the documentation). Think of the flap time we could have saved for a rainy day if we could have looked up these kinds of messages in some technical vehicle. We did start this once, but who can find it now?

This type of information, along with other goodies,

When we're flush with people, you may -- just may -- find these data in technical (and product) reports, but when the crunch comes and people are needed elsewhere, these two problems (unless extremely high-interest areas of the

moment) go right down the tube. If and when you take another look, because it wasn't always documented, it's time to find the ole wheel again.

I've hardly scratched the surface and there's much left unsaid -- a lot of which involves the section-level supervisors doing their primary job. They should train their people on their problem, explain the reasons for the necessity of logging certain information and what it means, take the time to answer questions (not foist them off with "I don't have time now"), be enthusiastic themselves, review to see that things are done correctly and in a timely manner (like right then, not next year, if ever), and document the results. I've known cases where something different was not logged anywhere because a so-called analyst thought, "Well, my case never did that, so it must be a mistake or a garble. I don't think I'll say anything or even write it down. Who'll know or care a hundred years from now?" Yep! It's a mistake all right! Boy, is it a mistake, and believe me, friend, I care!

Do these same problems exist in other areas of the Agency? (I've heard of this technical syndrome elsewhere.) Are they being swept under the desk or the black cloth? Or are they patronizingly shrugged off with "Well, you just don't see the big picture"?

To me, the big picture involves taking that nitty-gritty technical stuff and documenting it so I can provide the customer ultimately with good sound (product) reporting, put in perspective (based on the subject) for the customer, before he asks for it, not after. I want to instill in the analysts the reasons why technical logging and reporting are not just "busy work," but the true foundation of our existence -- being able to say, "I have the technical facts to back up my product words -- where I can find 'em when I need 'em!"

I have spent too many man-, woman-, whatever-hours writing wrap-up, seven-year, etc. product reports based on redoing or trying to redo the technical analysis to support what's being said. When someone says "term study" to me, I want to go into a corner and suck my thumb.

What is the answer? What can we do about it? We can insist on solid technical documentation. We can and should establish guidelines for technical reporting the same as we have for product -- "you will report when. . ."

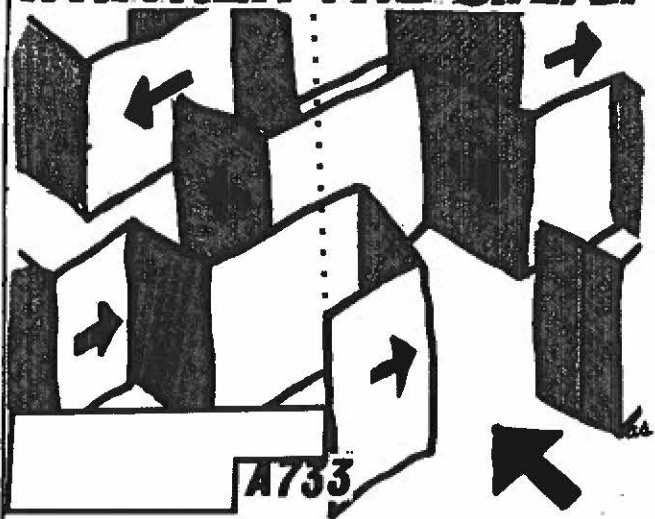
If you've read this far, and think all of this sounds like a cry in the wilderness, it is! HELP! I'm tired of being the only nag!

P.S. Before I get off my soapbox, I would like to pose one final question: Isn't it interesting that part of the professionalization test for Traffic Analysis is writing a TSR?

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# WHITHER THE S.R.A.?



*The following article represents the personal and professional opinions of the author and should not be interpreted as an official statement on the part of the Panel.*

J.T.W.

This is a short paper ambitiously aimed at resolving a controversial question: To what end does the Special Research Analyst (SRA) serve in the U.S. SIGINT system? There are more SRA people in the U.S. SIGINT organization than in any other single SIGINT career field, and the question of what constitutes the substance of their work is surrounded by a sometimes vigorous debate. An official definition exists, but does not seem to have taken hold. It somehow appears easier to define what a linguist does or should be expected to do -- or to describe the duties of a traffic analyst, cryptanalyst, telecommunicator, engineer, etc. -- and get a general agreement. Still, whither the SRA?

Being the military member of the SR and IS (Information Science) Panel and working at an SR assignment in A7 (Office of Operational and Strategic Studies) has motivated me to try to come to grips with what it is that SRAs are bent towards. The idea is to get at the function by trying to get at the results: what is the SRA supposed to produce? Regrettably, convictions of those who are certain they know what an SRA is differ from others who are like-minded. This is distressing in its administrative ramifications. What follows is a contribution, rather than a fixed proposal -- one which could further confuse the issue. In part it is aimed at the person who aspires to be an SRA, or who believes he or she already is one.

The SRA produces intelligence by *analysis* and by one or more forms of *reporting*, of which the end product is but one. As in the case of

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a person suspected of a crime, the SRA must be shown to have motive, means, and opportunity. Analysis and reporting is the means and the opportunity.

Reports can take several forms: They can be oral, written, graphic (pictorial), or combinations of those media. The actual form is not as essential as the substance of the report. Importantly, the SRA produces signals intelligence. Roughly speaking, about 85 percent of intelligence resources are expended in collection and processing prior to the final production process. For the most part, the active SRA works within that "15 percent" area where final production is performed.

All intelligence is of two broad kinds: reconstruction and estimation. The former feeds the latter, often directly. All analyst (TA, CA, SA, etc.)/reporters are in the business of reconstruction. In connection with the above rather uncomplimentary analogy, this is the analyst's motive: the analyst is impelled to reconstruct something. It is the specific shape of that "something" which differentiates among the various kinds of analysts. This occurs simply because that shape, and dimension, is translated into different results according to the means and opportunities -- the discipline at hand, whether TA, CA, SA, language, or SRA. What the TA is actually about is the reconstruction of a target communications entity; the CA is supposed to reconstruct a crypt system; the SA wants to re-create a signal. They are taking what they can discover about various aspects of a target and reconstructing it according to its actual construction. Explicitly and implicitly, each kind of analyst is motivated to reconstruct one or more aspects of a target reality. In a sense, this is model-building. There are few, if any, cases where reconstruction results in total fidelity. The objective is to come as close as possible. To do so ultimately requires a broader knowledge than one based on actual SIGINT sources themselves. To get close to the most unachievable truth requires viewing the target -- and the analytic effort -- in perspective and in context. So-called "collateral" is useful in this respect. Many vantage points are useful, but, whatever these methods, it is necessary to penetrate the target -- to see the world as the target sees it.

Accordingly, what is the SRA motivated to reconstruct? What aspect of the total target does the SRA endeavor to model or rebuild? My idea, from studying my own work and that of my colleagues, is that the SRA is about the reconstruction of the target's "system." By that I mean that the SRA is trying to "put it together" in something closely akin to the way the target puts "it" together. Man is a constructive animal, even in his destruction. He is forever making wholes of parts, or trying to. Analysis

should not be structured or undertaken to divide that which the target is trying to put together. It is not reconstructive if it does that. The target is always trying to bring something about, and the SRA's product should try to reconstruct whatever his target is constructing. Because the SRA is rebuilding a "system," it is vital that the SRA have a good, working grasp of other aspects of total target reconstruction: TA, CA, SA, language, and so forth. Of no less importance is the SRA's fundamental grasp of collection and information processing. The SRA's efforts to reconstruct target construction will be limited in the extreme unless these other reconstructive aspects are grasped.

Military target reconstruction at the "SRA level" is a facile example. There are numerous other good examples, but I am more familiar with this one. The SRA working a military target is trying to reconstruct, in various product forms, a target military event or operation, in itself a kind of "system" having input, throughput, and output. The event is something the target is constructing, and the SRA should be reconstructing. A more specific example, extant in target reality, would be a military exercise. The SRA working that kind of problem wants to reconstruct the exercise. This cannot be done without prior reconstruction of target communications in their various traffic, signal, cryptographic, language, and other aspects to the degree necessary to permit final production by the SRA. In this progression, the SRA enjoys no vaunted role, only the unceasing responsibility to reconstruct a live (and, hopefully, lifelike) event.

Finally, I think that, in a real sense, the SRA is wont to reconstruct target decision-making. In the example of military exercise reconstruction, the SRA should aim to put into his product a feeling for a target general officer's decision and directions to his forces. Remember, I said "a feeling." I do not imply that the SRA is necessarily an artist in the conventional sense. What I have in mind is that the SRA is trying to get at target decision-making and the event results of that decision-making. By reconstructing events, the SRA is trying to cast some light on the nature of decisions conditioning the event. Beyond this point, analytical intelligence work crosses over into the business of estimates, which is something in addition to and beyond reconstruction.

I hope that these brief reflections are helpful. This is my own view, which does not necessarily represent the position of any authority in the Agency, and I would not want it construed as such. I am merely trying to get a handle on the nature of the SRA's work by linking SRA motives with SRA means, opportunities, and products (reconstructions).

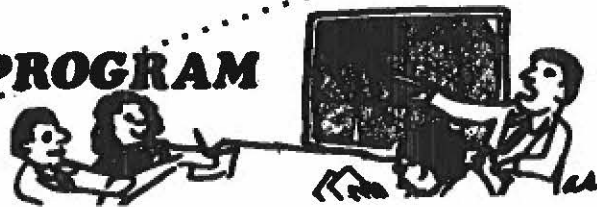


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# THE THAI SEMINAR PROGRAM



G92



A new training program in Thai language for preprofessional and postprofessional NSA linguists may provide a useful model for similar training in other languages. Although it has been in existence only since September 1976, three courses have already been conducted, and planning is underway to set up an Indonesian program along the same lines. In addition, one Thai seminar participant whose current assignment involves French (and who is under pressure to attain certification in French) declared, "This is exactly the type of course we need in French!" So there may be a French version soon, as well.

The purpose of the Thai program is to provide opportunities for preprofessional and postprofessional Thai linguists to participate once each year in a continuing education program, to grow in the language, to increase their knowledge of Thai cultural background, to discuss language problems which may be bothering them, and to receive periodic professional stimulation through immersion in the Thai language.

The program is designed to offer intermediate and advance training as a follow-up to the Thai Basic Course. Currently eight seminar-type courses -- two intermediate and six advanced -- are available. However, one advanced seminar on current affairs may be taken repeatedly, since the study material is always different.

Seminar sessions are held once a week for 12 weeks at a remote facility with a native instructor. Each session lasts 4 hours, during which all discussion is in Thai language.

Required reading assignments on Thai cultural subjects (sometimes supplemented by additional reading materials) are given one week in advance. Each student is assigned responsibility for making an oral report to seminar participants on a portion of the required reading. Everyone may discuss the oral reports, describe language problems they have encountered, and ask questions or contribute experiences related to the subject.

Instructors are native Thai speakers. Their job is to:

- offer criticism or correction when students misspeak;
- answer student questions regarding either subject matter or language;
- moderate the seminar; and
- stimulate discussion if conversation lags.

Because the amount of discussion generated by different topics varies considerably, other

teaching techniques are used to supplement discussion, such as having students read aloud or transcribe from dictation.

Besides the obvious advantages of this kind of program for maintaining and improving language skills, two points seem to me to deserve emphasis. First, this program significantly improves prospects for a professional career in Thai language. For the past 20 years neither advanced training nor periodic professional stimulation has been available to the Agency's Thai linguists. With the addition of this program and the equally new Thai segment of the Foreign Language Cassette Series (FLACS), in which cassette recordings of Thai radio and television programs and verbatim transcripts are provided to the linguist for self-study purposes, the junior Thai linguists of today can look forward to considerable help toward the professional growth of their language skills. Second, since, for a variety of reasons, highly skilled linguists in Third World languages often change jobs to become managers, reporters, programmers, linguists in other languages, etc., it behooves the Agency to provide the incentive and means for these people to maintain their skills during periods when their primary focus lies elsewhere. Again, the Thai seminar program and FLACS are steps forward to correct the previous lack of means. I hope that some day the Agency will do more than talk about effective incentives for maintaining language skills not currently used on the job. Perhaps satisfactory completion of an annual seminar course of the type described above might serve as the basis for an annual monetary award or a QSI. What is needed at the very minimum is a policy statement directing supervisors to encourage linguists, especially professionalized linguists, to attend such seminars. In our Thai program we have been successful in attracting three professional linguists currently working in jobs unrelated to Thai language and one whose job is only slightly related. However, some of these people feel their participation has been unenthusiastically or perhaps even grudgingly accepted by their supervisors. This kind of attitude must change.

There is wide recognition these days that improvements in the language field are very important to the Agency. Even though there are numerous facets of "the language problem" that deserve attention, so that what we touch on here is a small part of the whole, of one thing we can be confident: The Thai seminar program is a step in the right direction.



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