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Editorial

Style is an elusive thing. I remember a coworker who had an elegant way of speaking, but when I tried to analyze how he did it, I could never pin down anything central or basic. It just seemed that he had a good grasp of a lot of peripheral details. The only way I can describe him is to say that he never spoke in "rough draft." And I envied him for that ability.

What brings my coworker to mind is a question of style that has been bouncing around here at CRYPTOLOG. What kind of a magazine do you, the readers, want?

We get feedback, of course. On the very same day, we received one note that wondered why we don't put in the weird and nutty titles any more, and another that thanked us for switching to titles that were clean and easy to read. Call that a draw.

Here is a specific question for you about CRYPTOLOG. At one end of the scale, there are the clean, crisp page layouts with lots of white space and a generally "glossy" look, which is to journalism students what structured programming is to computer students. At the other end of the scale is what someone has called "early Whole Earth Catalog." Where should CRYPTOLOG be on that scale? What do you think? Let us know.

WED

Note:
The January 1983 issue may be late in arriving, because of its size. It should be changed from "January" to "January-February" and from "No. 1" to "No. 1-2"

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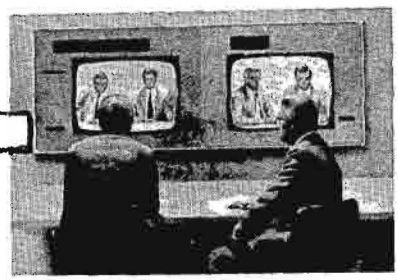
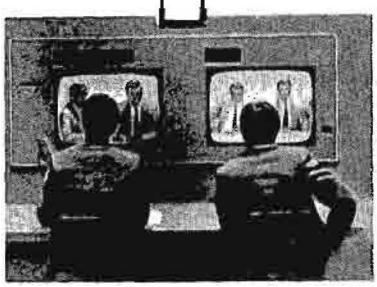
VIDEO TELECON-FERENCING AT NSA





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INTRODUCTION

(U) As early as the 1880s the concept of electrically transmitting and receiving transient visual images through the air as electromagnetic waves had been explored. Paul Nipkow, a German scientist, pioneered a scanning device in 1884 that sent pictures short distances. By 1928 scientists had perfected Nipkow's invention. On September 11, 1928, an experimental television station, W2XAD, provided visual stimuli which were meshed with the audio track of radio station WGY to present the first production on television. In 1936 the National Broadcasting Company (NBC) was the first to combine the audio and visual signals into a single transmission medium.

(U) Today the concept of transmitting and receiving visual images is not unlike that of yesteryear. However, its magnitude and applications are far more sophisticated and extensive. The emphasis today is placed on television to operate in a two-way, full-duplex configuration which will allow groups of people in geographically separate locations to interact in both the audio and visual modes simultaneously. This technique, referred to as Video Teleconferencing, is currently being used by a number of corporations, government organizations, and educational institutions as a substitute for, or supplement to, travel.

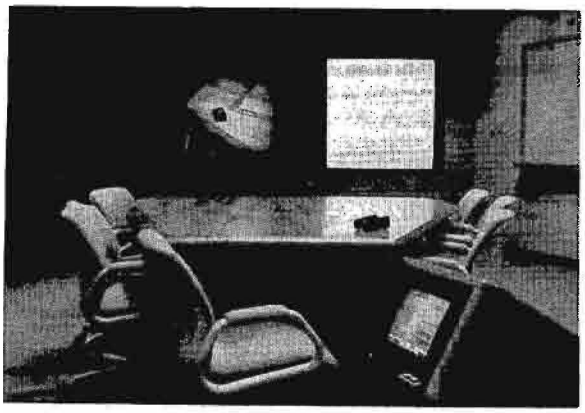
(U) With the costs of travel escalating and government funding declining, it is time for the National Security Agency to research and analyze the feasibility of adopting Video Teleconferencing for use in selected Agency applications.

BACKGROUND

Concept of Video Teleconferencing

(U) Video Teleconferencing is a means of conducting a visual and audible conference between two or more groups of people who are geographically separated, while maintaining all the realism of a face-to-face meeting. In addition to allowing the other participants to be seen and heard, video conferencing can permit in its system configuration the simultaneous exchange of hardcopy and graphic information. Video Teleconferencing is a relatively new term in the field of communications; however, the original process of transmitting and receiving audio-visual signals was developed in the late 19th century.

(U) Face-to-face conversations between people is considered by many to be the most productive communication tool. Because of geographical separation, time constraints, and travel costs, face-to-face meetings are not always practical. Implementation of a video



conferencing system could provide a reduction in undesirable travel, greater flexibility in scheduling meetings, and better structured, higher quality conferences.

(U) Studies in the use of video teleconferencing suggest that, "Video conferencing is effective for task-oriented meetings that are short, structured, have a specific purpose and involve a limited number of participants who know each other."[1]

Video Teleconferencing as a Replacement for Travel

~~(C)~~ In recent years the cost of travel has increased at an annual rate of 35 percent.[2] NSA is not immune to those escalating costs in travel. In 1981, NSA's expenditures for temporary duty (TDY) trips, both Operational and Maintenance (O&M) and Research and Development (R&D), totaled $13.8 million.[3] Putting this astronomical figure into perspective, it equates to $865.00 for every civilian employed at the NSA headquarters (15,953).[4]

(U) Many major corporations are adopting video teleconferencing as a substitute for travel in an attempt to offset soaring costs. Atlantic Richfield, for example, estimates that its annual travel expenses have risen from $20 million to $50 million in recent years. These awesome figures have persuaded Atlantic Richfield to adopt video teleconferencing with the hope of cutting corporate travel costs by 20 percent. Westinghouse activated a video teleconferencing link between Baltimore and Edwards Air Force Base in California in late 1982. Sperry Univac, another major corporation, has been using freeze-frame video since 1978 between its headquarters in Pennsylvania, Minnesota, and Utah.

(U) The saving in travel funds is a major consideration for these companies. In view of NSA's huge travel expenditures for 1981, the adoption of video teleconferencing should be considered. However, the monetary saving is not the only benefit to be realized in adopting video conferencing. Meetings can be scheduled more frequently and on shorter notice since travel time associated with such meetings could be reduced. Attendance is more flexible. Many more participants, who otherwise might be unable to attend a face-to-face meeting, would be allowed to take part. The "catch-up" syndrome, time required by travel participants to catch up on daily tasks that have built up during the TDY period, could be eliminated. These latter benefits are difficult to quantify monetarily, but they remain justifiable considerations in the decision to implement video teleconferencing.

Psychological Aspects of Video Teleconferencing

(U) Although video teleconferencing could provide a more elaborate means of conducting geographically separated meetings while, at the same time, proving to be an invaluable asset in corporate savings, its implementation may create obstacles that participants must overcome to to achieve total effectiveness. With the introduction of video teleconferencing as a replacement for the actual in-person assemblage, one must be able to present oneself and one's environment. Some may find it difficult to project ideas in a natural manner while in an artificial setting. Recent studies suggest possible video conferencing difficulties if the participants are strangers or of differing ranks and grade levels.

> "...when only a voice channel is available, communicators create an image of the person speaking, which while it may not accurately represent that person, is complete in itself. A low definition video representation may be sufficient to interfere with the information of such an image while being too ambiguous to create a satisfactory image in its own right. Maintaining friendly relations, is reported as being less difficult, suggesting that the video image is sufficient to act as a reminder stimulus if the person is already known, although people using teleconference for regular meetings still experience the need to meet face-to-face about once every.three or four meetings."[5]

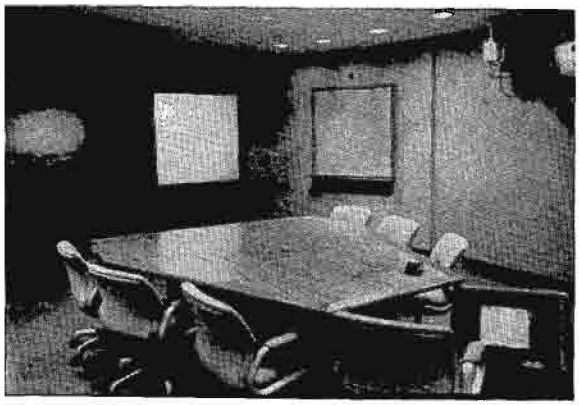
(U) During video conferences, first impressions are made via auditory and visual channels exclusively. The initial handshake and

working lunches would be eliminated through video conferencing usage. Some may find these factors a boon or a hindrance, depending on past conference experiences and conference goals. Subtle mood changes and all other sensory modalities would likely be lost through the video conferencing approach. It has been said that, "People don't like to change the way they do things. They like to press the flesh, watch the fellow's reaction to what they say, swap stories and all the rest."[6]

(U) The video teleconferencing method of communcating would allow for immediate feedback of material presented, as well as allow for group dynamics to take a part in the decision-making. Aetna Life & Casualty is reported as having realized more efficient video teleconferencing sessions than face-to-face meetings in some instances. The conferees appear more determined and eager to capitalize on the video conferencing facilities once they are scheduled. Thus, less time is spent on small talk. Results of recent psychological surveys evaluating the acceptance of video teleconferencing versus phone meetings, revealed video conferencing to be more suitable for cooperative tasks and not applicable when the opinions are the participants are at variance.

> "...teleconferencing was both effective and acceptable for meetings involving information exchange, routine decision-making, and cooperative problem-solving, but not as good for getting to know people, bargaining and negotiation tasks involving serious conflict."[7]

(U) In addition, these survey results indicated the majority of video users can accomplish meeting objectives efficiently through the use of a video teleconferencing system.



(U) The psychological aspects of video teleconferencing may take some getting used to, even after the technical elements and financial milestones are eliminated. However, with increased use of video teleconferencing, it is believed that any personal psychological barriers that may exist will be diminished.

TECHNICAL CONSIDERATIONS IN ADOPTING VIDEO TELECONFERENCING

Design Elements

(U) "Providing a Video-conferencing system design that will satisfy the user's requirements of meeting efficiency and effectiveness is a big order."[8] The general design of a video conference room is more or less straightforward. Its basic layout is not unsimilar to that of a local television studio comprising an eye-appealing environment, cameras, microphones, monitors, and a control console. To enhance a video teleconferencing operation, the inclusion of additional equipment would be required. This additional equipment could include facsimile equipments for the simultaneous exchange of hardcopy documentation, telephones for private voice exchange and coordination, video recorders for future reference of the proceedings, and an electronic blackboard for graphic depiction of information. A teletypewriter terminal should also be given consideration in the design effort. This could eliminate the need for facsimile. The principal objective of the facsimile and teletypewriter device(s) is to provide a means of transmitting quick copies of documents held at one end of the system so that all conferees can pursue and discuss in detail the same document at the same time. Still another device that should be considered, at least at the NSA headquarters, is a computer terminal. This terminal would be most desirable as information or date pertinent to a particular subject under discussion during a meeting may only be available from computer data bases.

(U) Although the design effort can incorporate a multitude of additional equipments to enhance the success of the conference, the primary goal is to provide a clear picture and good fidelity between the participants. It is imperative to perfect these areas so that they closely resemble a traditional face-to-face conference.

Transmission Techniques

(U) Various means of holding "electronic" meetings are available to corporate managers today. One type of electronic meeting which

is receiving the most attention is the video teleconference. Implementing a video conference system relies heavily on the availability and cost of suitable bandwidth to meet the particular needs of the company. The two conventional modes used for video conferencing today are wideband video conferencing and narrowband video conferencing.

(U) Wideband video conferencing is teleconferencing combined with the use of a one-way or two-way wide bandwidth (1.544 megabits or above) communication link to transmit and receive simultaneous motion or real-time television pictures. Narrowband video conferencing is the use of one or more narrow bandwidth (less than 1.544 megabits) communications links to transmit and receive still or freeze-frame television pictures.

(U) A variety of firms, both foreign and domestic, are frequently mentioned in current literature as being heavily involved in providing wideband video conferencing. Some of these companies include Nippon Telephone and Telegraph (NTT) of Tokyo, Northern Telecom (NT) of Toronto, International Telephone and Telegraph (ITT), Radio Corporation of America (RCA), and Satellite Business Systems (SBS). There are three wideband full-motion video teleconferencing configurations available. They are:

[] full-motion one-way video;

[] full-motion one-way video/two-way audio; and

[] full-motion two-way video/two-way audio.

(U) Full-motion one-way video is suitable for educational meetings where basic information is being presented to conference participants in remote locations and complete interaction is not necessary. Full-motion one-way video/two-way audio allows transmitted presentations to a group of conferees at a remote location or several locations with the ability for complete audiointeraction. This form of video conferencing is used for education, sales, training, or any other meeting that presents information to a widely dispersed group of people.

(U) Full-motion two-way video/two-way audio is the most complete form of video teleconferencing. Total interaction, both visual and audio, by participants in this configuration is the closest thing to a face-to-face meeting. Wideband video most closely resembles the traditional face-to-face gatherings and provides immediate feedback on presented information. The facial expressions and all other movements of the speaker and conferees are there for all to see. This mode of operation is not unlike that of television today. "There is a feeling of psychological presence,"[9] with wideband video.

(U) Narrowband video conferences use bandwidth that cannot pass video information fast enough to support motion pictures. Since narrowband video links normally travel over ordinary voice-grade telephone lines, their use represents a less costly investment with regard to bandwidth required. These lines can transmit video signals at an average rate of one frame every 70 seconds. This type of system is commonly referred to as "slow-scan" or "freeze-frame" television. The use of the narrowband method in establishing a participant's presence provides sufficient psychological feedback for continuing information on the overall situation at other locations.

> "Pictures transferred under these conditions are somewhat poorer than the full video [wideband] we have all experienced in live television. In a conference situation, slow-scan [narrowband] picture transmission is very often adequate and useful, depending on the live interaction required."[10]

(U) Studies of both narrowband and wideband video systems revealed that some subscribers of narrowband video are still satisfied that the freeze-frame image is adequate. Others feel that full-motion video, realized through the wideband technique, is required to establish a user presence and provide a more productive and effective meeting.

Single and Multi-Point Conferences

(U) Another consideration when implementing a video teleconferencing system would revolve around the selection of either single- or multiple-point configurations. The magnitude of the organization and the diffuseness of its field headquarters and stations would be primary considerations in this decision.

~~(C)~~ A single point-to-point schema would allow for video communications between two locations only, such as NSA, Fort Meade, with Hq NSAPAC, Pearl Harbor. This arrangement is depicted graphically in Figure 1. Such a system limits participants as well as conference station locations. However, a strategically located studio in the Pacific or European theaters linked with NSA Headquarters would allow for easier access by field station managers and other participants from nearby field stations than would travel to Fort Meade.

(U) A multiple-point conference configuration entails the selection of three or more field stations. These stations can be, but are not necessarily, confined to the same geographic area. This mode of operation would provide the means of conducting business with more participants on an extended spectrum simultaneously. For example, consider a multiple-point conference arrangement connecting NSA, Fort Meade, and Hq NSAPAC, Pearl Harbor, with field stations [redacted] The NSA Fort Meade junction would serve as the nodal point or controlling facility for all of the conferences. Possible multiple-point system schematics are shown in Figures 2 and 3.

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NSA APPLICATIONS OF VIDEO TELECONFERENCING

Considerations in Implementation

(U) Prior to any decision by NSA management to implement video teleconferencing systems, careful and thorough analysis must be conducted to ascertain the following:

[] Could travel expenditures be reduced to offset the procurement and maintenance costs of the system?

[] Could mission elements realize a marked increase in productivity through the use of video teleconferencing?

[] Could NSA employees adapt to the use of video teleconferencing as a replacement for face-to-face meetings?

[redacted]

[redacted]

Table 1 ~~(C)~~

~~(C)~~ If NSA elects to adopt video teleconferencing as an alternative to travel, it is possible that the Agency could realize a savings similar to that projected by Atlantic Richfield of 20 percent annually. Using this hypothesis, NSA might have realized a savings of $3.8 million by the end of 1982 if a video conferencing system had been fully operational. Savings by the end of 1983 could reach the $5 million mark. However, in any given year that the system is tasked for implementation, the majority of the majority of the initial travel savings would be consumed in procurement, installation, and training costs. But, given a two-year operational period from the time of the initial operating capability (IOC), NSA would begin to realize a substantial return on its investment. A minimal portion of the yearly return, estimated at 15 percent per annum, could then be applied toward the operational and maintenance (O&M) costs of such a system. Savings in travel at a rate of 20 percent annually (Atlantic Richfield) and the estimated operational and maintenance costs of 15 percent per annum to be realized by NSA with the adoption of video conferencing are shown in Table 2.

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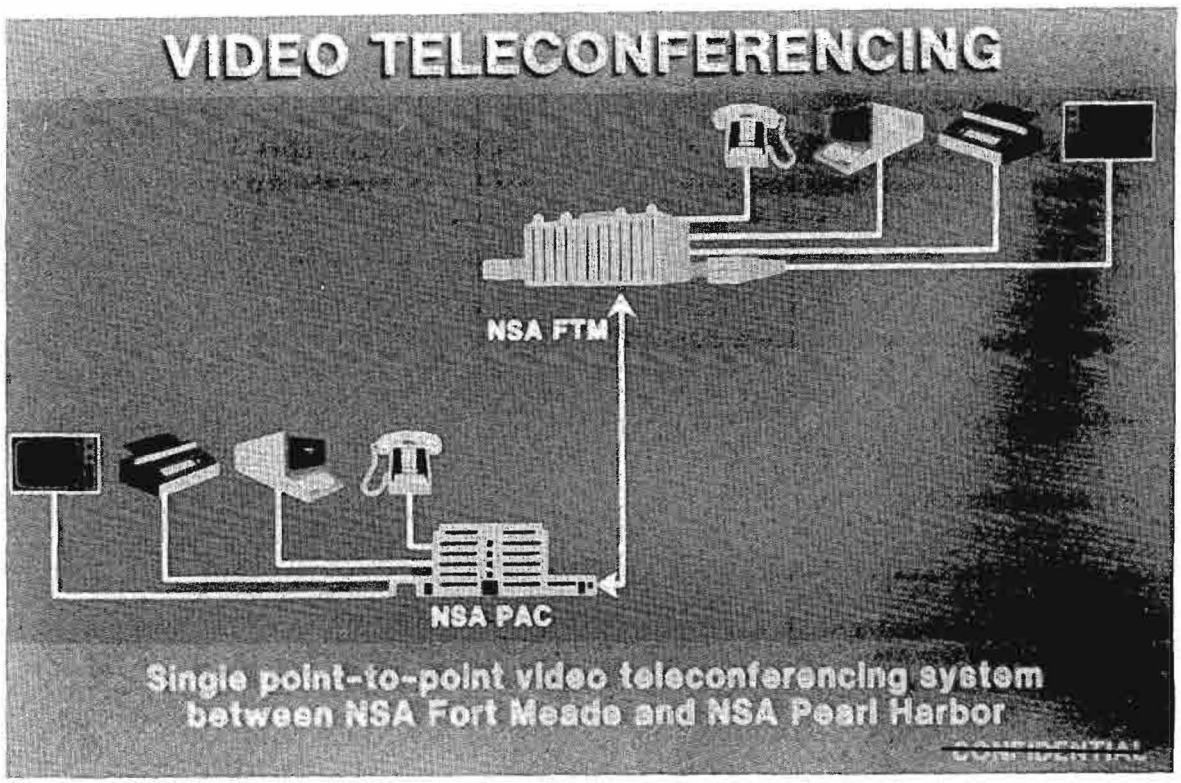

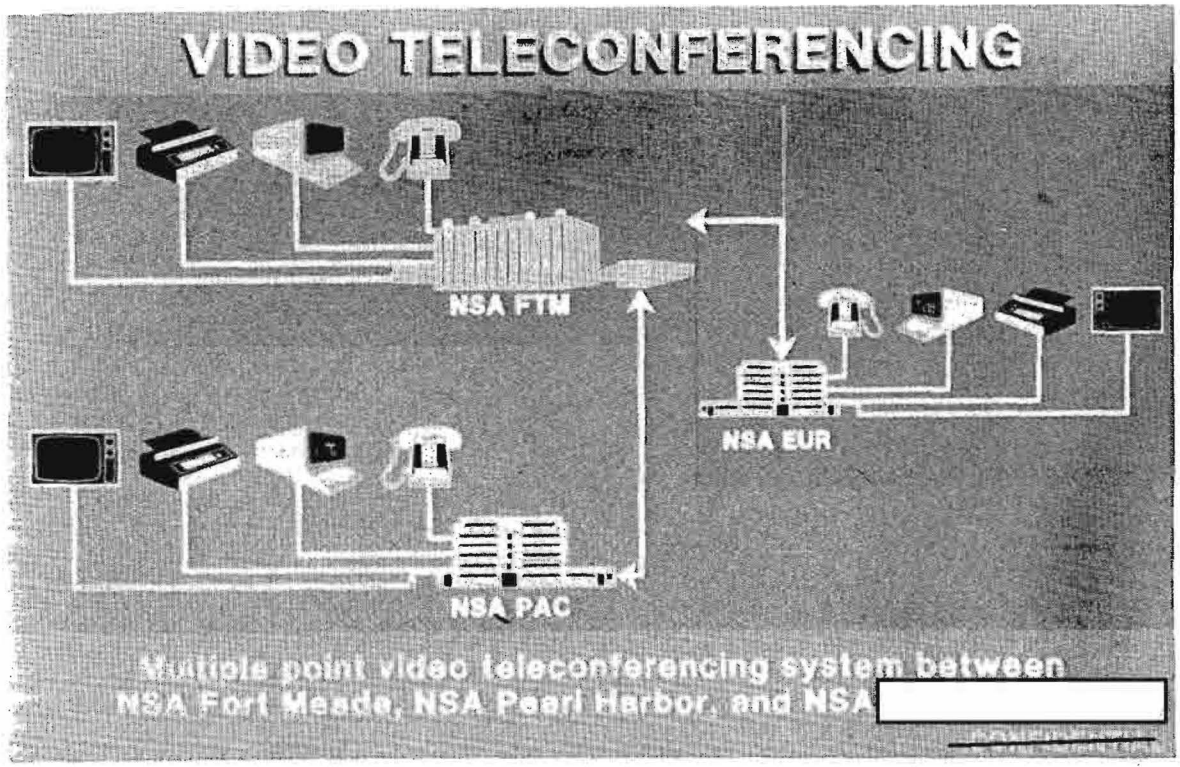

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Table 2 ~~(C)~~

(U) If NSA communications were entirely dependent on written messages, instead of video teleconferencing or travel, each project worker would have to be concrete and specific in his or her project presentation and explanation. The real-time feature of video teleconferencing would be lost through travel and written messages. Video conferencing would eliminate some of the formal written communique. Chances of having all needed personnel at a video project meeting would be greater. Users would have at their disposal a means of presenting the target area graphically. Productivity, then, should definitely be an outcome of structured, well organized, timely video teleconferencing.

(U) A study conducted by Satellite Business Systems (SBS) indicates that 54 percent of video users were as successful with business meetings through video conferencing as they were through face-to-face meetings, 31 percent were not as successful, 10 percent were more successful, and 5 percent were much less successful.[12] A total of 64 percent of video users proved to be as satisfied or more so with the use of video conferencing than with face-to-face meetings.

(U) It is impossible to predict the NSA user acceptance or rejection of a video system. It can be expected that some individuals at NSA will be reluctant to accept video teleconferencing as a new communications tool and a replacement for face-to-face meetings. They may question video's structured, impersonal nature. Some at NSA may not function as efficiently under the time constraints imposed by video. Still others may miss the change of pace and morale enhancement provided by travel.

(U) However, if NSA video participants' opinions parallel those of users in previous studies, it could be expected that a majority of video users would be satisfied with conference results using this new method of communications. User acceptance may be enhanced through practice sessions, frequent use, positive reinforcement, and a relaxed atmosphere.

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The meeting isn't over yet!

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Advantages & Disadvantages in Adopting Video Teleconferencing

~~(C)~~ Up to this point, few negative aspects other than the possible psychological barriers to NSA Participants have been cited. It is necessary that additional shortcomings for NSA be mentioned. Scheduling conference times to suit wide time-zone differences between NSA Headquarters and European or Pacific field stations is a major stumbling block. Participant flexibility is crucial in such situations.

This figure may be discouraging, but still an overall savings in travel would be realized. Finally, conference participants who are not fully prepared for scheduled video conference time would create an immediate loss of money, time, and productivity. It then becomes essential for NSA management to alert all conferees that such waste will not be tolerated.

(U) Although many of the advantages to be realized through the adoption of videoteleconferencing have already been expounded on through studies of corporations' successfully use of the video link, they must be restated in terms of NSA usage. Cost efficiency, timeliness in decisions, improved work coordination and productivity enhancement may all be possible for NSA. In addition, more employees would be able to attend and more flexible meetings would result.

Resources (Bandwidth & Equipment)

(U) To establish a video teleconferencing system at NSA Headquarters and other sites, it would be necessary to reserve exclusively one existing conference room at each. The permanent features of the room would include, but are not limited to, fixed-position cameras, a facsimile device, telephones, a blackboard (preferably electronic), a computer terminal (for use at Headquarters) interfacing with one of the major NSA complexes, television monitors, and microphones. It would also be necessary to modify the room to ensure proper acoustics. At the present time, the actual video equipment is available at the Agency, but its use is reserved exclusively for the NSA television production studio. Other needed equipment presently exists at NSA, but it also is currently on use to satisfy in-house production and mission requirements. Therefore, procurement action for all video teleconferencing and associated equipments would be necessary. Once purchased, this equipment would be dedicated for the sole use of NSA video teleconferencing. Identical equipment would be required at all selected video conferencing field stations. In addition to video conferencing equipments, communications interfacing equipment would be required to transfer signals. This equipment includes cryptographic devices to secure transmissions, modulators/demodulators, multiplexers, expanders, translators (transceivers), and line drivers.

Financial and Manpower Analysis

(U) Types of video teleconferencing system arrangements are numerous and varied. A number of components determine the actual system cost. The variants include television production, length of broadcast, audio system, number of receiving locations, projection equipment, and the actual conferencing room. A basic slow-scan configuration consisting of a transceiver, a camera with appropriate lenses, black-and-white monitors, and associated accessories for one location costs approximately $25,000.[15] This particular system would provide freeze-frame video with a high resolution of 78 seconds, switchable to a medium resolution of 35 seconds. In contrast, a full-motion (real-time) video color system's cost would begin at approximately $50,000 per location.[16] Initial video system costs do not include transmission medium expenditures, operator training, or the interfacing communications equipment. Prices remain fairly consistent between specific equipment suppliers, such as Videonet Incorporated, Colorado Video, and American Satellite. For NSA to determine the amount of funding required to install a dedicated video conferencing system, an in-depth study of desired equipment would be necessary. Only after specific equipment is selected, could a total system expenditure be finalized.

(U) It is estimated that one trained television production technician would be needed at each location.[17] NSA currently employs 6 to 10 skilled television production technicians at Fort Meade. Their expertise in the video area could possibly provide in-house training for future video system controllers. However, field station personnel would be required to travel to NSA, or trained technicians could be sent to various video-established locations to provide the needed production training. Fellowship programs could be established, which could also allow NSA staff members to become educated in the area of video conferencing production. There are too many variables, beyond system and bandwidth costs, at this time for a bottom-line dollar figure to be rendered.

Immediate & Long-Range Applications

~~(C)~~ An immediate application of video teleconferencing at NSA could connect NSA Headquarters with the Friendship Annex and various government agencies in the Washington DC area. Bandwidth is presently available for such communication links. To introduce video at NSA, it is recommended that both slow-scan and full-motion capabilities be utilized independently on a trial basis. The Agency would then be able to evaluate system functioning and determine future video teleconferencing needs.

(U) If video is evaluated as a reliable and productive NSA communication tool, future applications should include connections with NSA field headquarters in Europe and the Pacific. In time, it is not unrealistic to expect that with favorable acceptance of the video link, video teleconferencing connections could multiply to include numerous selected NSA field stations worldwide.

CONCLUSION

(U) It becomes apparent through researching the field of video teleconferencing that it is, in fact, a tremendous communications tool which can be used for the enhancement of conference productivity and travel reduction. It is hoped that NSA will approach video teleconferencing with total openness. As this research has shown, many managers from a wide spectrum of corporate disciplines are using video teleconferencing today and are realizing increased productivity as well as reduced travel budgets. Monetary savings with video teleconferencing is considered to be the most popular for its use. Across-the-board dollar

figures can be produced to support a video system. Savings of time have also been found to be a major asset gained through the use of a successful video teleconferencing system. Management's efficient use of time is at the heart of productivity. Through video teleconferencing, quicker and more efficient response times and decisions are realized. Therefore, savings in time can always be regarded as a credible justification, along with monetary savings, for the implementation of video teleconferencing. It cannot be overemphasized that, for management, video teleconferencing can provide shorter, more productive meetings with less turn-around time on projects.

(U) With the adoption of a video teleconferencing at NSA and selected field stations, there must be a total commitment on the part of the Agency to the concept of video conferencing. Favorable attitudes toward teleconferencing must also exist. A clearly defined conference format must be developed and adhered to, to ensure system success. Highly reliable communication links and easy-to-use and accessible video conferencing equipment must be provided. A quality video teleconferencing system could possibly convert doubters into avid users and possible advocates. Increased productivity will likely be an incentive for increased video system use. Although it is not realistic to expect all travel to cease, closer scrutiny of travel requests should be conducted. This would be necessary if NSA is to realize a positive return on its investment in a video teleconferencing system.

(U) When all the facts concerning video teleconferencing are weighed, I think that the scales will tip in favor of NSA's adoption of a video teleconferencing system.

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17. Interview with Tim Gately, Television Production, National Security Agency, Fort George G. Meade, MD, 25 October 1982.

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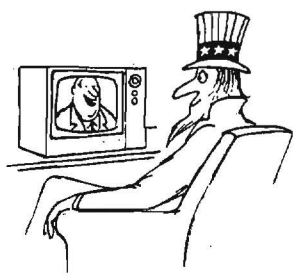

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IS THE GLASS HALF EMPTY OR HALF FULL?(U)

by [redacted]

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(U) Being prone to kicking dead horses, I decided that the title for this article should be based on the well-worn philosophical anecdote of the pessimist who perceives a glass of water half-empty, while the optimist is certain that the same glass is half-full. Of course the fact I am basically lazy, and that this title met my self-inflicted requirement that nothing should be overtaxing to my thought processes, played some role in helping to select the title. My one problem with it is that I have a difficult time convincing myself that a glass with any amount of water deserves contemplation at all. As with all of us, I am most happy with a glass that is all full or all empty. Unfortunately, reality is rarely represented in clear-cut choices and that blasted, undefinable glass is always there to make life difficult.

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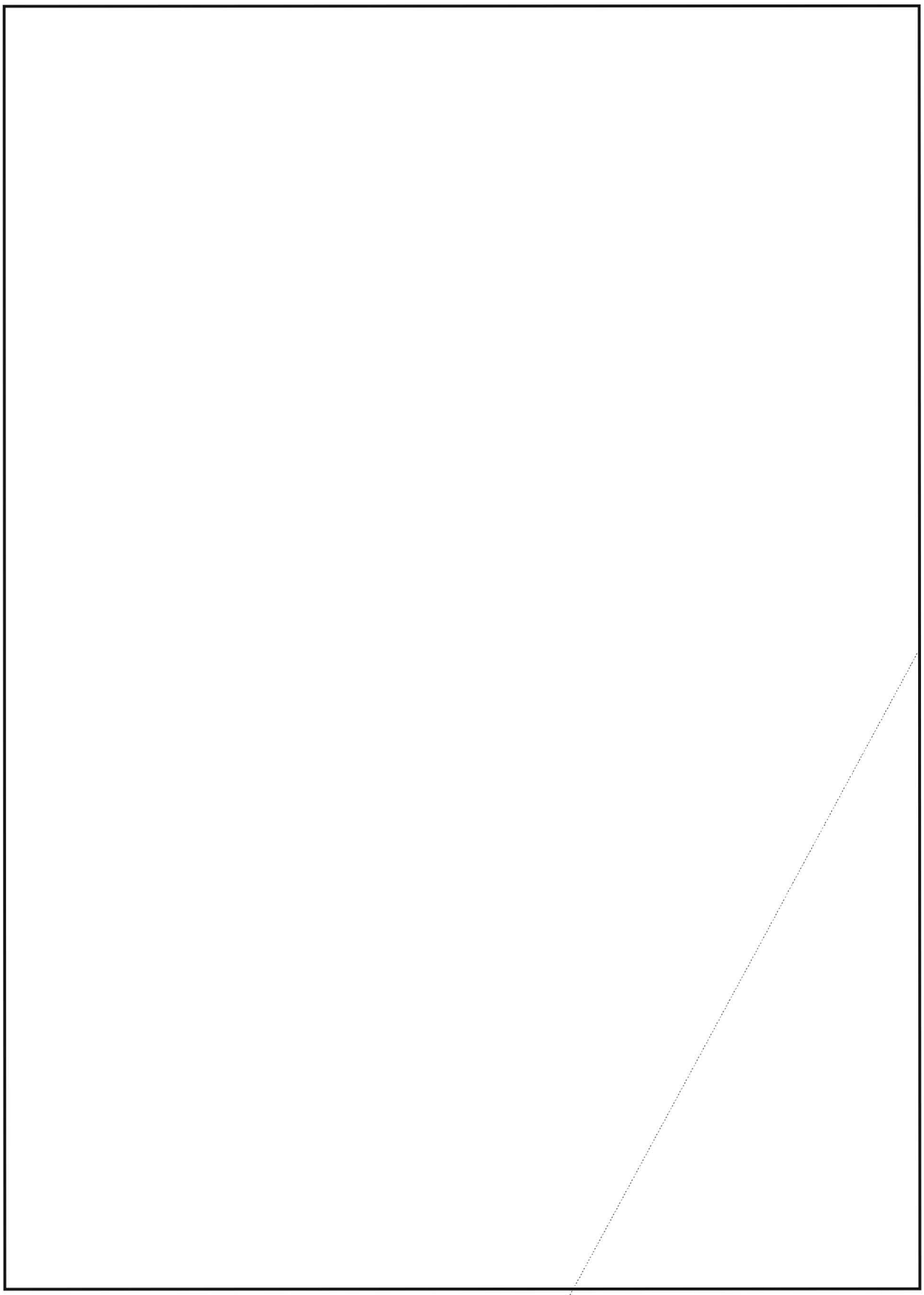

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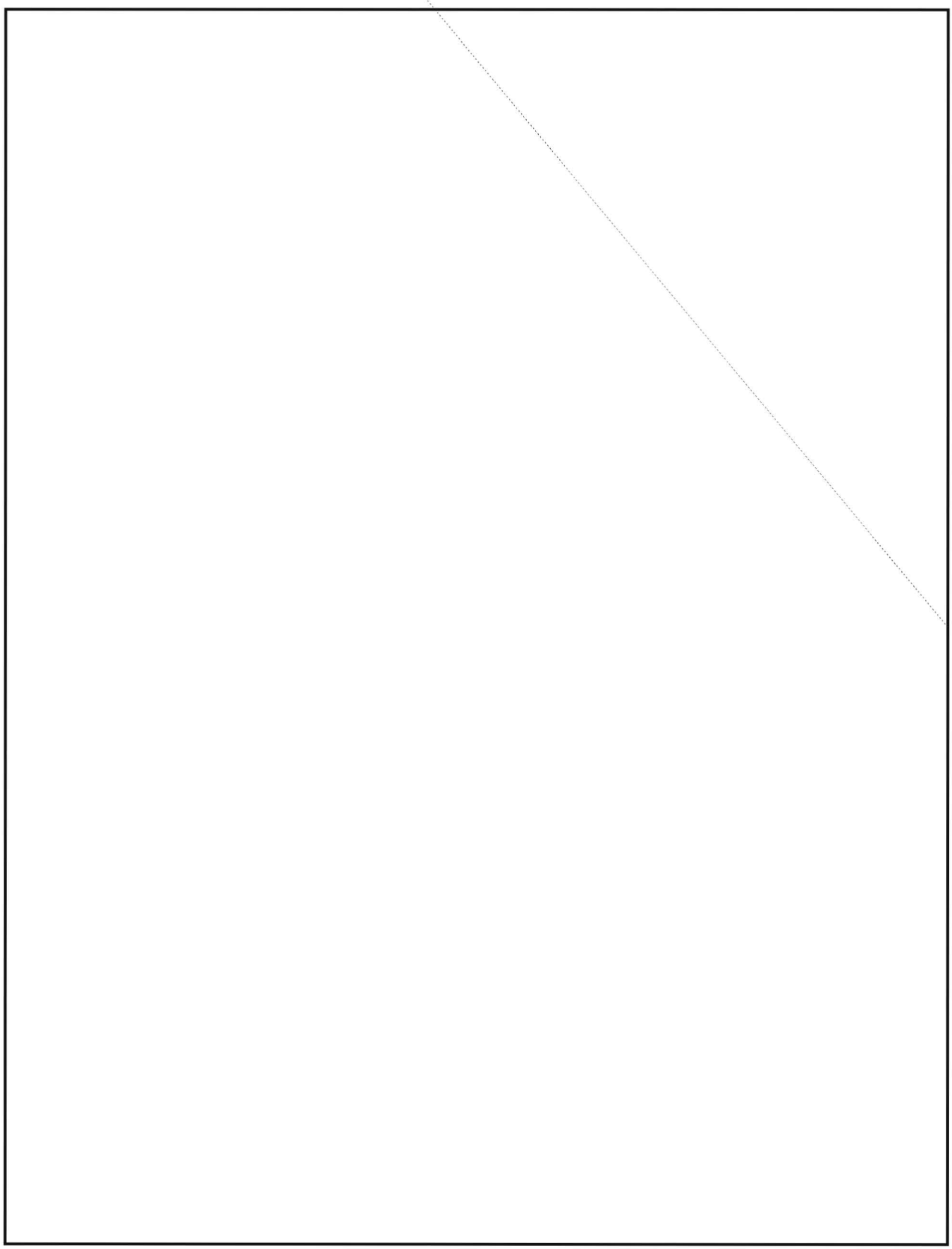

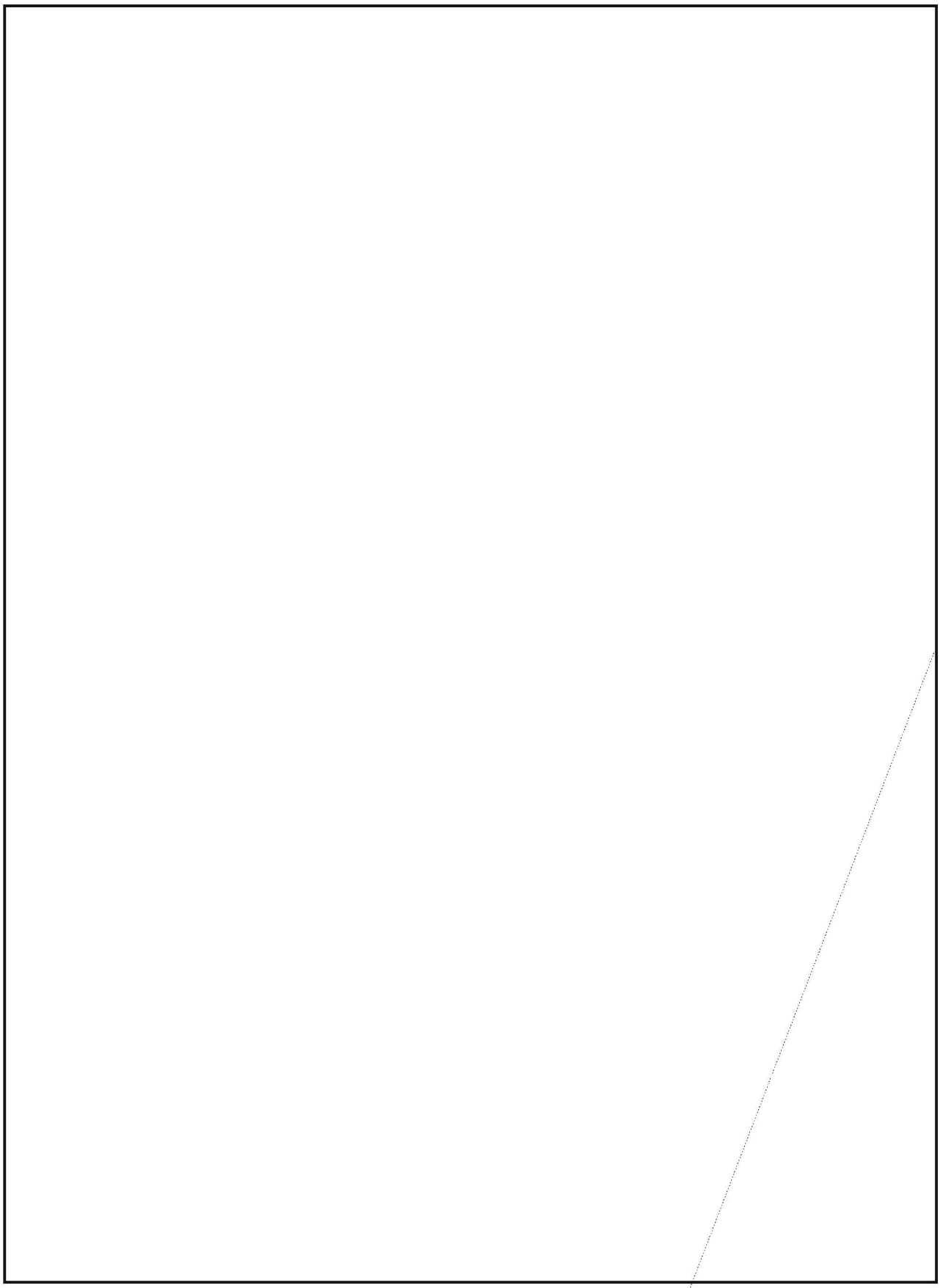

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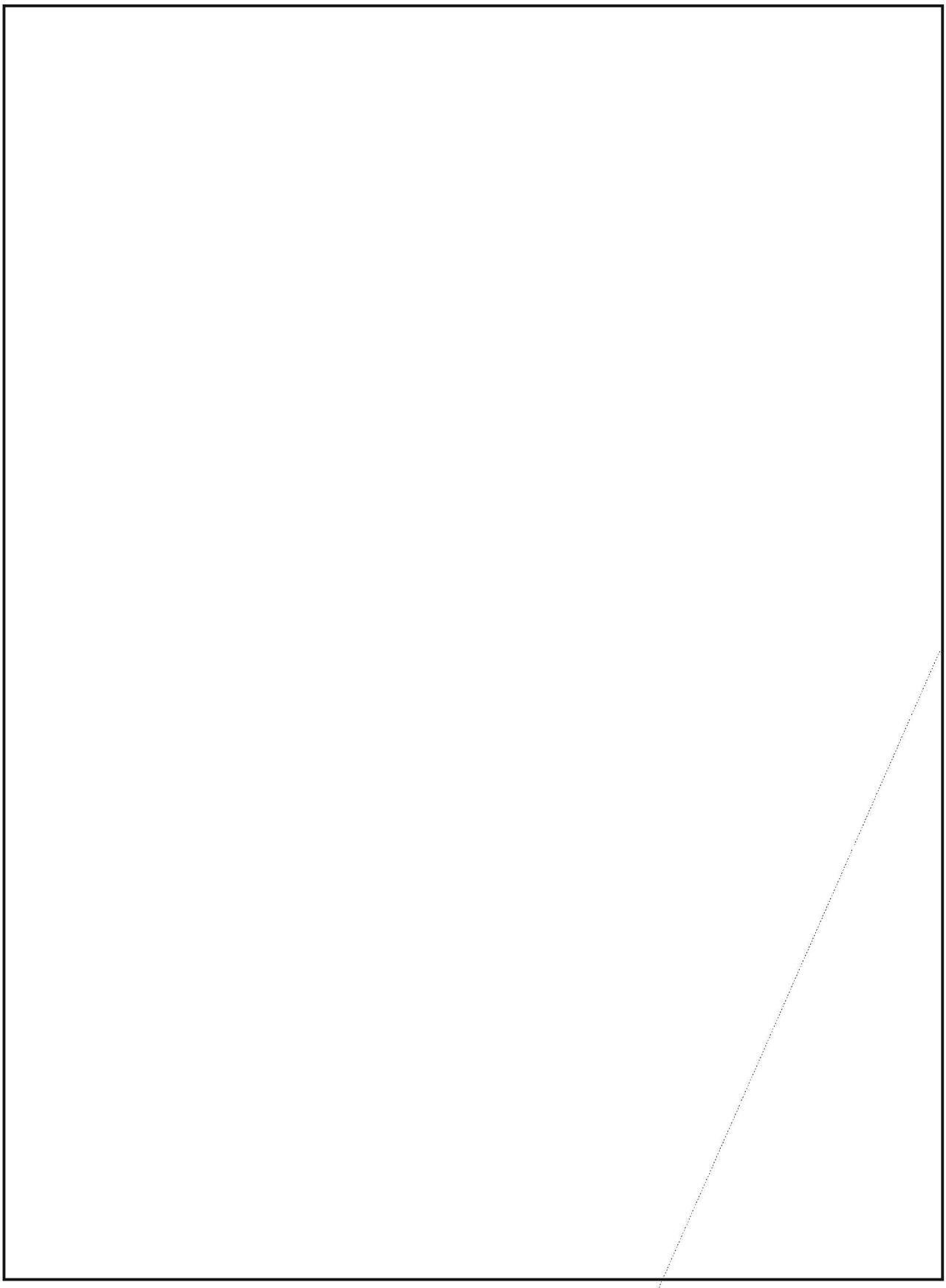

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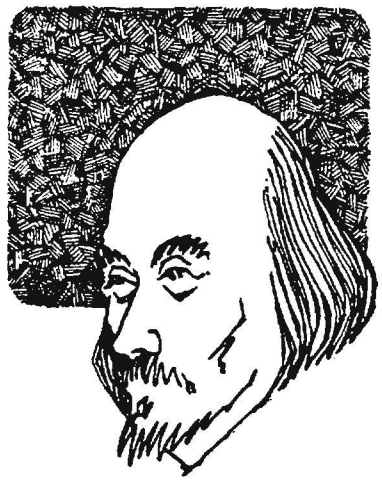

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[redacted]
Dec 78 [redacted]
Jan 79 SOLIS: A Vehicle in Search of an Engine

[redacted]
Apr 81 Traffic Analysis: Specialty Without Portfolio

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[redacted]
Jan 77 Letter: Mason Article

[redacted]
Oct 78 A Method for Measuring Negative Intelligence

[redacted]
Nov 74 Purity of the Russian Language--Slavophiles vs. Westernizers

[redacted]
Jul 79 Source Protection: Our Agency's Insurance Policy

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[redacted]
Sep 77 Speaking of Logging ...

Kenny M.M.
Jan 77 Letter: [redacted] Article
Jun 78 Minnie's Mini

[redacted]
May 75 Codeword or COMINT Channels?
Jul 77 Classification Corner
Sep 77 Classification Corner: XGDS-2
Sep 77 XGDS-2 (Classification Corner)
Oct 77 Classification Corner: Who Said?
Jan 79 It's Party Time!

[redacted]
Oct 76 Language Skill File

[redacted]
Sep 78 [redacted]

[redacted]
Nov 75 When Censorship Backfires
Jan 76 Lenin and State Prizes: Now You See Them, Now You Don't!
May 79 Chapenko, Shapenko: What Difference Does It Make?

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[redacted]
Aug 76 Initiatives in SIGINT Reporting

[redacted]
Dec 82 Development and Correlation of Indicators

[redacted]
Jul 78 Letter: [redacted] Article
Jan 80 Between The Lines of Your Performance Appraisal

[redacted]
Nov 74 Reflections on a Translator's Conference

[redacted]
Sep 78 A Matter of Style

Landi W.E.
Apr 77 Letter: Mason Article

[redacted]
Oct 78 Back to Square One!
Jan 81 Translator In Your Pocket

[redacted]
Nov 77 Language Processing Forum
Feb 82 Native Scripting of Languages

[redacted]
Apr 80 AIT

Lasley D.
Jul 79 Gears of the Mouth

[redacted]
Nov 77 Objective Satisfaction Score: Collection Performance

[redacted]
Jul 77 Letter: [redacted] Article

[redacted]
Dec 74 A Proposal for Calendar Reform

[redacted]
Jun 77 Letter: [redacted] Letter

[redacted]
Mar 82 But Life Is Supposed To Be Hard
Sep 82 More Free Goodies

[redacted]
Mar 79 Computer Operating System Vulnerabilities

[redacted]
Jan 75 The Yawn of the Computer Age or When Your Terminal is Terminal

[redacted]
Sep 76 Foreign Publications Procurement Program

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[redacted]
May 82 Letter: [redacted] Article

[redacted]
Nov 77 [redacted]

[redacted]
Oct 79 Another Source

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[redacted]
Dec 81 TIDE: A Brief History

[redacted]
Sep 74 Golden Oldie: King Eusyb and Queen Deodi

[redacted]
Feb 82 A Time for Change

Lutwiniak W.
May 78 The Future of Cryptanalysis
Jan 79 Letter From the Publisher

Lutwiniak W., [redacted]
Jan 81 SIGINT In The 80s: Two Views

[redacted]
Sep 82 Letter: Kudos

[redacted]
Sep 76 Semantic Voids: Don't Shoot the Translator

Mason F.O.
May 75 TA, Handmaiden of CA
Jun 75 More on Squaring the Page (A Crypto-TA Function)
Aug 75 Abdul and His 40 Tanks
Oct 76 A Vexing Agency-Wide Problem
Nov 76 Answer to 'Vexing ... Problem'
Jan 77 Where Were We?
Apr 82 Golden Oldie: Tracks in the Sands of Time

[redacted]
Jun 75 Professionalizing in Computer Systems

[redacted]
Feb 75 Basic Patterns of [redacted] Codes and Ciphers

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[redacted]
Apr 77 Letter: [redacted] Article

[redacted]
Mar 77 An Overview of Project [redacted]

[redacted]
Jan 78 'Bodyguard of Lies' (Book Review)

[redacted]
Oct 79 The 2000-Year-Old Transcriber
Apr 80 What To Do About 'FANX'

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[redacted]
Jun 76 Comments on the AG-22/IATS

McGrillies J.R.
Apr 77 Letter: Mason Article

[redacted]
Jul 77 Match Them Up!
Jul 77 Puzzle: Match Them Up!
Nov 77 How Many African Countries Can You Spot?
Apr 78 +Conoces Bien la Geografia?
Oct 78 Know Your Geography
Feb 79 Know Your Geography

[redacted]
Aug 75 Linguists -- We Need An 'Experts Yellow Pages'!

[redacted]
May 78 Callsigns and WARC-79
Jan 79 The Return to HF
Dec 81 The 1981 URSI XX General Assembly
Jan 82 HF - The Rebirth
Jan 82 Video Encryption: A Report From EASCON 81
Feb 82 Gayler-AAAS, 1982
Feb 82 Software - AAAS, 1982
Mar 82 Meteorburst Communications
Apr 82 Review: The American Magic
May 82 A History Lesson
Jun 82 Amateur Spread Spectrum
Aug 82 AFCEA 82 and ICC-82: New Crypto Devices
Sep 82 Normandy: 1944
Sep 82 SIGINT: 1990, Part One
Oct 82 SIGINT: 1990, Part Two
Nov 82 SIGINT: 1990, Part Three

Meyer W.P.
May 76 A Simple Cipher Story
Sep 76 Another Cipher by ...
Dec 78 a/k/a Sam
Aug 82 I Remember
Nov 82 An Old Timer Is One Who

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[redacted]
Feb 82 KRYPTOS: A New Society

Miller D.E.
Aug 75 The Voynich Manuscript-Third Theory
Nov 76 Golden Oldie: The Things They Say
Mar 78 An Idea for an Article
May 79 Transcriber-Analyst Relations

Miller K., Isaac L.
Apr 78 Looking at Mr. [redacted]

[redacted]
Feb 79 Literature Search On-Line

[redacted]
Sep 76 Is There Life After Certification?
Nov 76 Clarity, Thy Name is Qualifier
Feb 78 By-Lines Don't Cost--They Pay!

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[redacted]
Oct 76 Language Skill File

[redacted]
Jul 79 Shootout at the SIGINT Corral

[redacted]
Apr 79 Letter: Gurin Article (Feb 79)

[redacted]
Dec 76 The French(fried) Connection: Gino the Genie

[redacted]
Jun 78 Celtic Languages Today

Mountjoy M.
Sep 74 Cryptanalysis and Code Recovery
Jan 79 Golden Oldie: On First Opening Kenney's 'Statistics'

[redacted]
Nov 76 TEXTA 'Word Seek'
Mar 78 Word Seek

[redacted]
Sep 76 TIPS is Still Alive and Well
Mar 79 Data Standards Without Tears: A Comment
Jan 82 Data Field Naming/Coding Conventions at NSA

Murphy A.I.
Jan 76 Leo in October
Jun 76 Letter: [redacted] Article
Jan 82 The Literary Bends
Mar 82 Letter: The Literary Bends Article

[redacted]
Jul 77 Tool Languages

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Murphy T.
Oct 75 Automation of a TA Process
Jun 76 The [redacted] Collection System

[redacted]
May 75 Letter: [redacted] etter
Jan 77 What If the Linguists Disappeared?
Jun 78 [redacted]

[redacted]
Oct 75 Linguists -- You Have an Expert to Call!

[redacted]
Nov 78 Never on My Watch

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[redacted]
Nov 77 A Proposed Cure for the Time-in-Grade Syndrome
Apr 78 Accentuate the Negative
Mar 79 Let's Not Lose Our TA Skills
Jan 80 There's a New World Coming - Are You Ready
Apr 81 Middle-Age Spread

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[redacted]
Apr 77 Letter: [redacted] Article

Nolte W.M.
Mar 82 A Brief Treatise on Five Laws of Telephonic Communications
Mar 82 Old Phone Books Never Die

Nolte W.M., [redacted]
Jan 78 An Early NSA Proposal for Satellite Remoting

[redacted]
Jun 76 Comments on the AG-22/IATS

[redacted]
Oct 75 1972-1973: A Vietnam Odyssey

O'Neill K.
Mar 76 Letter: Proud and Bitter Memories Article

O'Sullivan P.A.
Jun 79 Letter: 'Sixth Language'

[redacted]
Mar 78 A Proposed Cure for the 'Performance Syndrome'

Oliver D.B.
Jan 75 The SIGINT Users' Handbook or: What's an ISHTAR?

[redacted]
Aug 79 On Coming of Age at NSA: Confessions of an Ex-Linguist

[redacted]
Oct 82 Golden Oldie: The Reality of Communications Changes

[redacted]
Jun 76 Comments on the AG-22/IATS
Feb 78 Collection-Support TA is Not for Everyone
Oct 78 Continuing Professionalization

[redacted]
Dec 82 Does Anybody Here Remember PURPLE?

[redacted]
Sep 77 The [redacted] Seminar Program

Pattie M.T.
May 76 What Language Problem?
Jun 78 As I Was Saying Two Years Ago ...
Oct 78 Letter: [redacted] Article
Nov 78 Data Standards Center
Feb 79 Letter [redacted] Article (Dec 78)
Feb 79 Well, Maybe a Sniffle or Two...
Jun 79 ... Mr. Pattie Replies

[redacted]
Jun 76 Comments on the AG-22/IATS

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[redacted]
May 79 Project HELIPAD: An Epitaph

[redacted]
Oct 82 What's The Good (Pass)Word?

Phillips C.J.
Mar 76 Musings About the AG-22/IATS
Mar 77 A View of the Central Computer Complex in the Late 1970s and Early 1980s
Apr 77 The Last Word on IATS?
May 77 Universes, Galaxies, Stars, Bars, and Other Concepts
Apr 80 Data Flow--Challenge of the 1980s

[redacted]
Nov 82 COMSEC Challenges

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[redacted]
Feb 75 The Faithful Echo--The Role of the State Department Interpreter

[redacted]
Mar 82 A Personal Computer: A Current Cryptanalysis Support Tool

[redacted]
Sep 77 [redacted]
May 82 Burst Answer

[redacted]
Apr 82 Partial Machine Translation: Final Report

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[redacted]
Jul 75 RAPIDTRAN: [redacted]
Oct 75 Language Lessons Learned: A Personal Memoir
Mar 77 Letter: Bunker Interview
Sep 78 What's In a Non-Name?

[redacted]
May 79 Run This Through Your Transcription Machine

[redacted]
Oct 74 Character Building in the People's Republic of China

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[redacted]
Aug 76 Yes, Don, There is an ELINT!

[redacted]
Apr 75 A Comm Change at Ramasun Station

Reiskis A.
Jun 79 The Baltic Encoders

[redacted]
Sep 77 Another Last Word on IATS
Jan 81 KITTIWAKE
Jun 82 Letter: Editorial Comment
Jun 82 Letter: Shell Game Article

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[redacted]
Nov 75 Golden Oldie: Blue Russian

[redacted] Lutwiniak W.
Jan 81 SIGINT In The 80s: Two Views

[redacted]
Mar 78 Letter [redacted] Article

[redacted]
Apr 80 P16 Language and Cryptologic Library

[redacted]
Jun 76 Comments on the AG-22/IATS

[redacted]
Dec 81 In Pursuit of: Faster Horses, Younger Women, Older Whiskey and More Money
Dec 82 Shell Game: AJSQUE

[redacted]
Sep 74 AFRIKAANS--Language in the News
Sep 74 AMERIND--Language in the News
Sep 74 HEBREW--Language in the News
Sep 74 Language in the News
Dec 74 Language in the News
Jan 75 The Case for COMINT Readers
Jul 75 Too Many Garbles
Dec 77 [redacted]
Oct 78 Puzzle: Who and Whom?
Jul 79 Letter: CRYPTOLOG Art
Mar 82 [redacted]
Oct 82 Not Secret Anymore

[redacted] Santiago-Ortiz R.A.
Aug 74 The Language of Beisbol in Everyday Talk

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Rosenblum H.E.
Oct 77 Partners in the Exciting Future of SIGINT

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[redacted]
Dec 76 Graphic Names

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[redacted]
Mar 76 To Pull a 'Ponyal'

[redacted]
Feb 78 [redacted]

Salemme A.J.
May 76 Scraps from the Editor's Desk
Sep 76 Machine-Produced Aids for the Linguist, Part I
Oct 76 Machine-Produced Aids for the Linguist, Part II
Apr 77 Flash! 115th SRI Located!
Aug 77 Expletives Deleted?
Jul 78 I Remember SPELLMAN
Mar 79 NSA-Crostic No. 23
Apr 80 LIME-A, OHIO; LEEM-A, Peru

[redacted]
Dec 82 Shell Game: PWB WHEN

[redacted]
Jan 80 LIP

Santiago-Ortiz R.A.
Aug 77 Telling It Like It Is

Santiago-Ortiz R.A., [redacted]
Aug 74 The Language of Beisbol in Everyday Talk

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[redacted]
Aug 74 Calling All SRAs! -- SRA Symposium

Sawyer E.L.
Nov 78 WEDDING BELLS and That Old Gang of Mine
Mar 79 Pursuit of the [redacted]
Dec 81 Sleep Well: Your SDO Is On Duty

[redacted]
Feb 78 [redacted]

[redacted]
Jul 78 The Soviet General Staff

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[redacted]
Feb 78 First Lady of Navy Cryptology

[redacted]
Jun 76 An Evaluation of a Scientific Chinese Machine Translation
Oct 77 Classification Corner: A Bigger Picture
Nov 78 Formatting PL/1 Source Code
Jun 79 Teaching Computer Science To Linguists

[redacted]
May 77 The Polyhedral War

[redacted]
Jul 78 Has It Ever Been Translated Before?

[redacted]
Nov 75 [redacted]

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[redacted]
Jan 79 T-Vision: The Reference Analyst's Medium of the Future

[redacted]
May 77 Plain English

[redacted]
Jul 77 Letter: Subscription

[redacted]
Oct 76 Letter: [redacted] Article

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Jul 79 Letter: Linguaprivia P.L. 86-36

[redacted]
Apr 76 Computer-Aided Transcription [redacted]

Smith F.
Mar 78 Some Background on the C/T Merger

[redacted]
Jun 76 'Right On, Vera!'

Snow D.
Sep 76 The Bible and the Washington Monument
Oct 77 Human Factors and the Use of Microfiche Readers at NSA
Oct 78 Reduction Ratios in Micrographics

[redacted]
Jan 80 CIRC: An Intelligence Data Base

[redacted]
Jun 82 Letter: Personal Computer Article

Snyder S.S.
Nov 77 Letter: [redacted] Article
Feb 82 A Wail, A Complaint, and a Melange

[redacted]
Jun 76 How Things Have Changed!

[redacted]
Apr 75 Letter: Exinterne Articles

[redacted]
Aug 79 Letter: Buckley and [redacted] (Jul 79)

[redacted]
Dec 77 [redacted]

[redacted]
Jun 76 Notes on Translation from the Chinese
Dec 76 What's In a Name?
Aug 77 Postscript to 'Dating Game'
Sep 77 JPRS Language Reference Aids
Nov 77 Backing into Language Acquisition
Jan 78 COMINT, COMSEC, and Hilbert's Tenth
Jul 78 Tell Me I'm Just a Sinobibliophobe

[redacted]
Dec 78 A VIP Tour through the Attic of NSOC

[redacted]
Mar 82 Towards Better System Development

[redacted]
Aug 79 Letter: [redacted] Letter (Aug 79)

[redacted]
Jun 77 Letter: Mason Article

[redacted]
Jun 79 [redacted]

[redacted]
Oct 75 1972-1973: A Vietnam Odyssey

[redacted]
Aug 82 An Old Problem

[redacted]
May 78 TA Implications of FCC Proposal

[redacted]
Jan 75 How Clean Does a Data Base Need to Be?
Jun 76 Comments on the AG-22/IATS
Jul 77 CAA News: What Ever Happened to the CAA?
Aug 77 CAA News: What Are They Up to Anyway?
Sep 77 CAA News: Whom?
Oct 77 CAA News
Nov 77 A Little TA Problem
Nov 77 CAA News
Jan 78 Letter: [redacted] Article
Jan 78 What Ever Happened to COPES?
Mar 78 The Hand Is Not Quicker Than the Eye
Apr 78 Telephone Problem Here
Sep 78 [redacted]
Nov 78 A Small Problem
Mar 79 Letter: Data Standards
Apr 79 A Somewhat Larger Problem
Jun 79 Traffic Analysis of the Future
Aug 79 CAA News
Aug 79 Letter: Screening Radiation
Apr 80 A Traffic Analyst Looks at Computers
Dec 81 TEXTA: What Is It? Where Is It Going?
Apr 82 Shell Game
May 82 True Base: Two Tales
Jun 82 A Personal Footnote
Aug 82 Shell Game
Oct 82 Answer: An Old Problem

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[redacted]
Jun 77 Letter: [redacted] Article
May 79 Where Do Good Transcribers Come From?

[redacted]
Aug 75 Processing [redacted] Communications

[redacted]
Feb 75 Replacement of the GUPPY Library

[redacted]
Nov 81 The PPC Is Coming!

[redacted]
Oct 79 Letter: [redacted] Article (Aug 79)

Tetrault E.W.
Oct 74 Even a 5-year-old Child ...
Feb 75 Letter: Exinterne Articles
Apr 75 Language in the News
Apr 75 Machine Course for Linguists

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Jun 75 Where Does 'Does' Come From?
Aug 76 Research in Speech Perception (Dr. Ruth Day)
Apr 77 Letter: [redacted] Letter
Feb 79 In Defense of The Indefensible: Notes on the Russian PQE

[redacted]
Nov 74 Guidesmanship--or How to Write Technical Manuals Without Actually Giving Anything Away
May 77 Choose Ye!
Jul 77 ZBB? What In the World Is That?
Oct 78 Will It Really Do the Job?

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[redacted]
Oct 75 Computers, Comms, and Low-Grade Ciphers: [redacted]

[redacted]
Aug 75 A Fix for the Language Problem?

[redacted]
Oct 78 [redacted]

Tiltman J.H. EO 1.4.(c)
Dec 75 A Personal Comment on Winterbotham's 'The ULTRA Secret'

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[redacted]
Apr 80 [redacted]

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Tinsley R.L.
Apr 78 ATA Letter to President Carter

Tiren D.J.
Mar 82 Letter: A Toy Problem

[redacted]
Jun 76 Transliteration or Cyrillic?

[redacted]
Feb 75 Review of 'Guide to Russian Technical Translation' by Salemme
May 76 A Soviet View of NSA

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[redacted]
Aug 79 Language Proficiency Certificates for Military Personnel

[redacted]
May 75 Letter: [redacted] Letter
Mar 77 [redacted]
Jul 77 Bookbreakers Forum
Jan 78 [redacted]
Jun 78 Bookbreakers Forum
Apr 80 ... And In A More Modern Vein
Apr 82 Bookbreakers Forum On Machine Aids

[redacted]
Aug 79 CMI News

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[redacted]
Oct 78 Data Security and Human Error

[redacted]
Apr 75 Oral Reporting: A New Challenge for NSA

W.E.S.
Jan 78 CAA News
Feb 78 CAA News
Mar 78 CAA News
Apr 78 CAA News
May 78 CAA News
Jun 78 CAA News
Jul 78 CAA News
Sep 78 CAA News
Oct 78 CAA News
Nov 78 CAA News
Dec 82 Shell Game: Counter

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[redacted]
Jan 75 UNNA, [redacted]

[redacted]
Jul 75 The Warsaw Pact [redacted]

[redacted]
Oct 82 Leadership: A Personal Philosophy

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Webster J.B.
Sep 74 Project CARRIAGE: Worldwide HFDF Modernization Plan

[redacted]
Jun 77 AG-22/IATS: A View From the Bridge

[redacted]
Oct 74 Letter: [redacted] Article
Dec 75 What Are We About? (Fragments, Figments, or What?)
Apr 76 Letter: Comments on [redacted] Letter
May 76 Some Principles of Cover and Deception
Apr 77 The 'Ice Age' and International Security
Sep 77 Whither the SRA?
Nov 78 Cast a Double Shadow: The Trojan Horse of SIGINT
Jul 79 Naval Readiness: A Basis for Comparison

Wigglesworth D.
Dec 77 Conversation With a Micrographics Pioneer

[redacted]
Jul 79 EXPERT

Wiley E.
Oct 75 The Do Xa Pads
Jan 82 Letter: Stairwell Society Article

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Williams D.H.
Dec 75 The Great Soviet Shipbuilding Mystery
Jul 77 Dating Game
Sep 77 NSA-Crostic No. 9
Jan 78 NSA-Crostic No. 11
Apr 78 NSA-Crostic No. 13
Jul 78 NSA-Crostic No. 16
Sep 78 Letter: Salemme Article
Oct 78 NSA-Crostic No. 18
Nov 78 NSA-Crostic No. 19
Dec 78 NSA-Crostic No. 20
Jan 79 NSA-Crostic No. 21
Feb 79 [redacted] and a Little Bit of Luck

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[redacted]
Oct 81 Technical Support Catalogs

[redacted]
May 78 Project UTENSIL: The DDO Data Dictionary/Directory

Wolff H.E.
Aug 74 Cryptolog A Letter of Introduction

[redacted]
Aug 82 All I Ever Wanted To Know About DES

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[redacted]
Aug 74 Right-to-Left Text Sorts Are Not Impossible
Feb 75 Letter: Citizens of World Puzzle
Feb 79 P.S.

[redacted]
Nov 77 Language Processing Forum
Feb 82 Native Scripting of Languages

[redacted]
Jan 80 Analysts of NSA, Arise!

[redacted]

[redacted]

(U) PAC-II is a project planning and control system developed by International Systems, Inc. PAC-II was designated the Agency standard automated project management system by memorandum DDPR/006/81 and is intended to help Agency project leaders with planning, scheduling, resource allocation, budget tracking, task assignment, over/under projections, etc. PAC-II allows inter-task dependencies and includes extensive facilities for playing "What if?" The system includes a 5-year scheduling capability and provides for tailoring the defaults to specific work schedules, holiday patterns, skill mixes, etc. More than 40 standard reports (Gantt charts, budget summaries, projected completions, etc.) are available. There is no Agency software development involved in PAC-II.

[redacted]

STUDENTS!

(U)

(U) On 29 November 1982 NCEUR announced its Independent Study Program as a way to facilitate the enrollment in and completion of National Cryptologic School (NCS) independent courses for cryptologic personnel in Germany. This is to cut the lag in mailing time between the NCS and sites in Germany. The NCEUR Training Office will also issue NCS Course Completion Certificates to individuals who satisfactorily complete an Independent study course obtained from NCEUR.

(U) Also available from NCEUR will be Russian and Czech videotapes to support language refresher and development training as well as videotapes on equipment maintenance, operations, collecions, management, security, etc.

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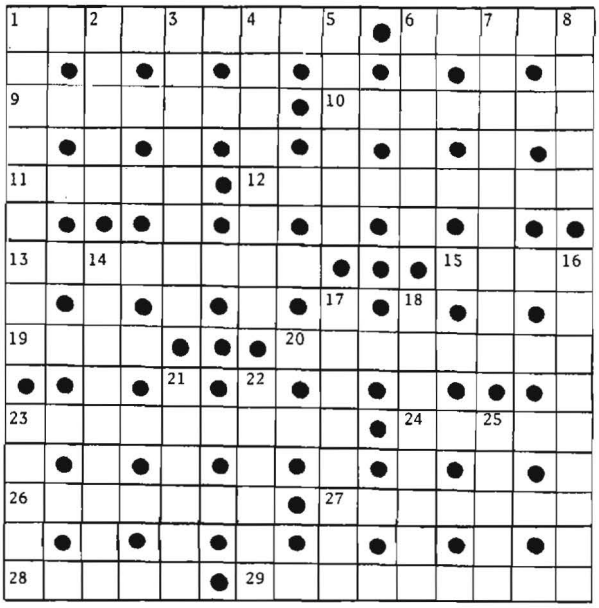
CRYPTIC CROSSWORD #3

by [redacted]

P.L. 86-36



ACROSS

1. Smelly end of Tylenol production plant? (9)
6. Dad gets directions for the chess pieces (5)
9. Foul ram demolishes baby food! (7)
10. Little Miss Fabray eager for Chinese material! (7)
11. To sample a delicacy has inner appeal (5)
12. Dreamers' series of mental impressions (9)
13. I bounced wildly, then became frozen in place (8)
15. Frantic Omani prince shows lack of consciousness (4)
19. Cozy retreat for shooters (4)
20. We heard you teamed up with insane printer to be lewd (8)
23. Do some Irishmen nickname ships? (9)
24. In back, half dancer is comparatively more fastidious (5)
26. The obvious ten dive over! (7)
27. Loose ends trail behind! I am returning for young ladies! (7)
28. Finger that one! (5)
29. Traitors see danger all around! (9)

DOWN

1. Children averse to March, April and May? (9)
2. Counterfeit following valley (5)
3. Telephoned Reagan, we hear, to make pot (8)
4. Topless new developments bring forth applause and more applause! (8)
5. Roy is scuffling with Ned over there! (6)
6. It's pleasant without 80 mixed-up discussion groups (6)
7. We sent hot mixture to the grinder! (9)
8. Goes under the basins? (5)
14. Becoming more dignified, Neil G Motley captures backward German city (9)
16. Stars take chances on seat collapsing! (9)
17. Snacks center for the new students? (8)
18. Conveying the band into Crosby? (8)
21. The most sage is found in states beyond the Rockies (6)
22. The dog is in the Somerset terminal! (6)
23. Five hundred perused *A Great Anxiety* (5)
24, Doctrine of Celsius' grass (5)

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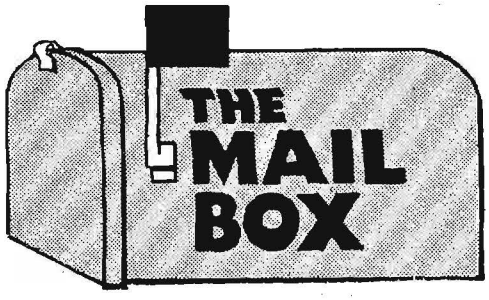
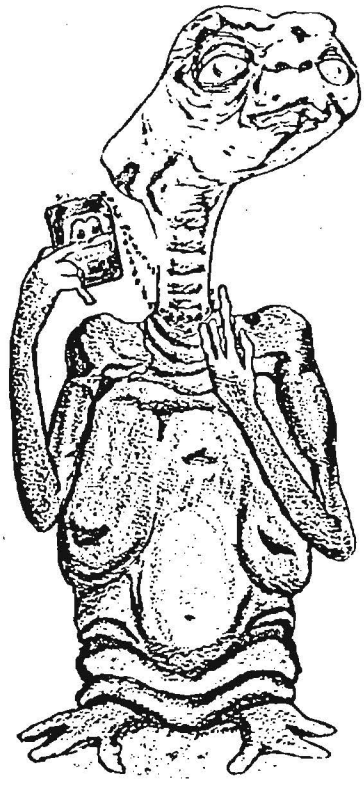


You may have thought that some of your coworkers behaved like beings from another planet, and there may very well be some *extra-terrestrials among us!* As a matter of fact, the new edition of the Agency telephone directory lists 25 ETs on the NSA payroll.

Of these 25 ETs, 22 are civilian (14 men, 8 women) and 3 are in the military (2 in the Army, 1 in the Navy). It should be pointed out that 23 of the 25 aren't really 100% ETs since they have middle initials and three of them have "Jr." tacked on to the end of their names, but there are two persons listed with pure "E.T." initials:

[redacted] P.L. 86-

However, [redacted] is on a field assignment, so [redacted] of Q4 is the only "real E.T." in the NSA Headquarters complex. That's quite an honor and we congratulate him. We just hope that now that this item is appearing in Cryptolog, he doesn't get a spate of notes on his desk saying, "E.T., phone home!"



[redacted]

Cheers,
[redacted] P14 (working in B111, x5741s)

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EO 1.4.(c)
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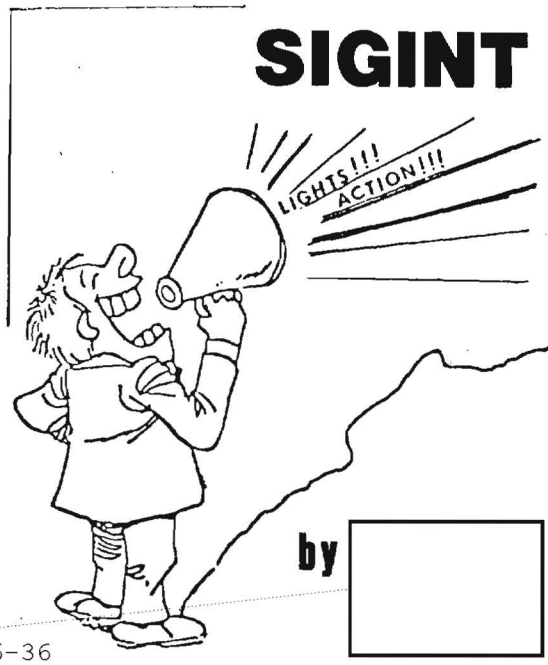
SIGINT CHALLENGE

A SCENARIO (U)



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by

W3

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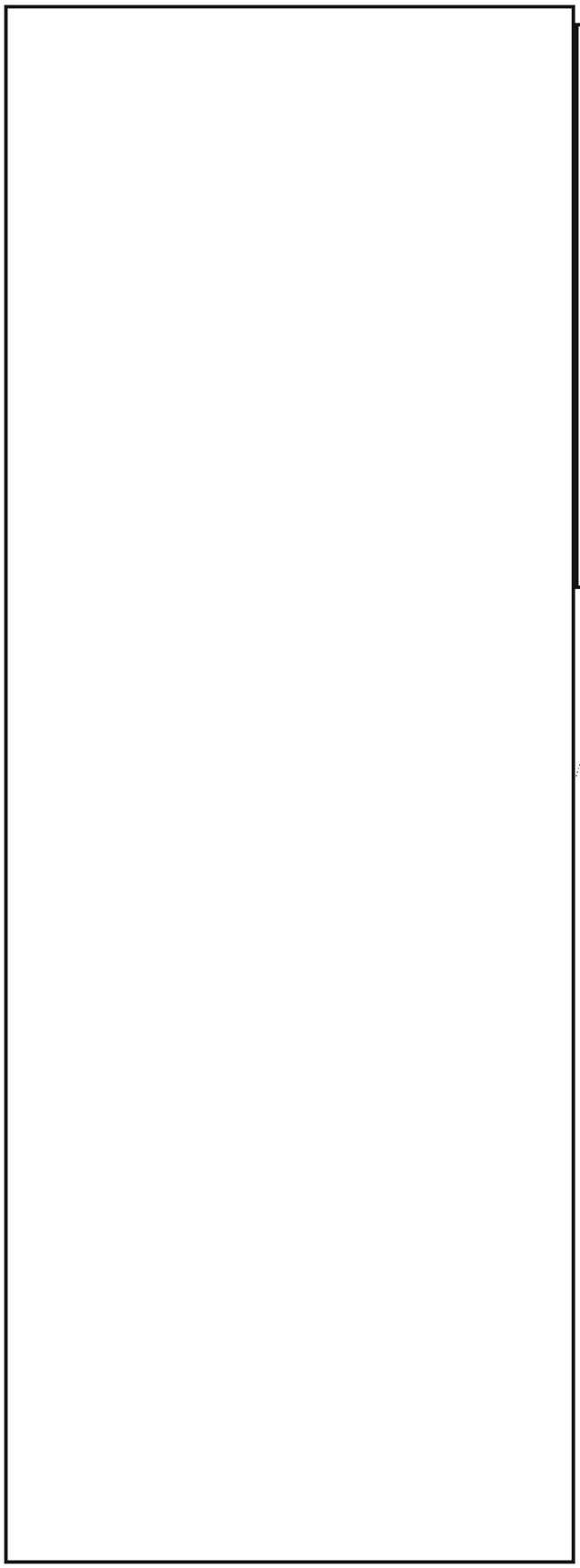

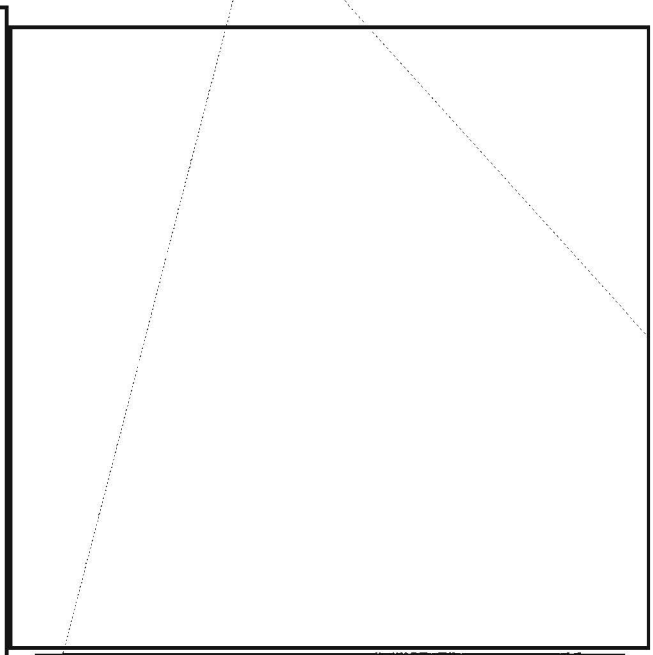

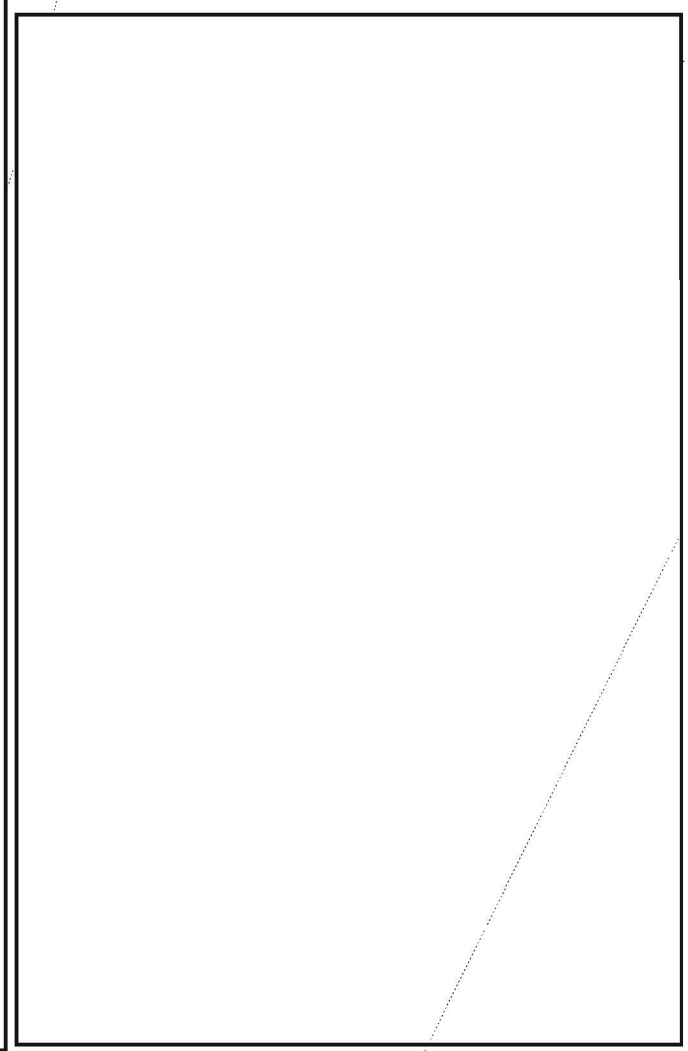

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MORE ON PASSWORDS (U)

by [redacted] P13 P.L. 86-

I have received a number of interesting responses to my comments on this topic in the December 1982 issue of CRYPTOLOG. It is apparent from the thoughtful and detailed comments of Computer Security professionals that they take this issue seriously, and see an urgent need to respond to user needs. But where are the spokesmen for the user side? The folks in Computer Security seem very ready for constructive user input, but they can't operate in a vacuum. Without ideas and, yes, maybe a bit of pressure from users, they will naturally continue to put efficiency and ease of implementation first, and who can blame them? Too many users tend to regard passwords and access restrictions as an act of God, kind of like a bad cold, that just happens to us and that we can't have anything to say about. Yes, we will always have to have some restrictions, but the WAY THEY ARE IMPLEMENTED AND IMPOSED can be influenced by informed and constructive user input.

We have a great variety of systems, and they make use of a number of different methods to protect files and programs from unauthorized access. As you can see in the contributions below from various readers, each applies only to certain limited cases. It seems as if we need to take a closer look at computer systems throughout the Agency and study the kinds of passwords, identity checks, physical access restrictions, etc. that they employ to preserve security, and look particularly at the impact each restriction or class of related restrictions has on the user. Maybe this has been done already; it would make a very good professionalization paper! If any reader knows of a study of this sort (a survey of all or some subset of file protection techniques, and their impact on users), please let me know. How many different sets of rules have we just for composing passwords, for example? I bet there are nearly as many different sets of rules as there are software systems (at least operating systems). How can we find out which of these burden users the least, while still providing the requisite security? Some of the comments below suggest specific changes in the form of passwords (e.g., the use of long phrases instead of single words). Unfortunately, we have no real way to decide whether these changes will, in fact, improve matters for users. Like so much else about human factors, this is an area where we need a lot more hard data. Intuitive guesses on the part of programmers are surprisingly often far off the mark when it comes to imagining what is easy or hard for end-users to do or remember, because programmers have had to (and have chosen to) develop a special cast of mind that sets them apart from non-programmers.

Let's hear from some more users out there! What do YOU think of these ideas the Computer Security people are proposing? Do you have some ideas or experience that can throw some more light on the subject?

HORROR STORY

"I loved your comments on passwords. I will pass along my horror story that resulted from [redacted] suggestions. Being a good, security conscious person, I promptly

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changed my password to one more complicated. It was a good one that would baffle any vicious attempt at penetration. All went well until the next time I tried to do some work at the terminal. It was late in the day, and I had to wake up the Delta Data. Every time I tried to login, it refused to recognize me: said my password was not correct and threatened Gestapo action (even called me 'naughty' - that made me mad). To abbreviate this long story, my PWB [Programmers Workbench] system will not accept passwords with numeric or special characters in 'load' mode. So, I went back to my comfortable, vulnerable old alpha style password. The system and I are friends again."

SOME THOUGHTS

"Use of computers may involve two distinct types of security problem:

"A. Protection from legitimate users of the system whose access to certain data is to be restricted.

"B. Protection from illegitimate users of the system who endeavor to gain access to certain data by the use of an identity (sign-on and password) that is not theirs.

"In the case of A, a procedure with which I am familiar calls for a system protection word to be associated with each created file. This word contains four units of four bits each. The four bits of a unit give Delete, Execute, Write, or Read privileges when zero; they deny the same when one. The four units relate to the system, the user (who created the file), the group (a limited number of users), and the world (all legitimate users who are not members of the user's group). In this way, control is maintained over who may do what with the data in any specific file.

"In the case B, to which your article mainly seems to address itself, it is pointed out that an increase of security in the sign-on and passwords procedure seems to require an equal increase in legitimate users' inconvenience. One simple change that would increase security but not inconvenience would be to eliminate the use of initials in sign-on procedures. An illegitimate user (or 'spook') who wanted access to your files would probably sign on as MDI with a good chance of success (at least on [one system]) and only then would have to consider some procedure for generating possible passwords via the computer itself. If the sign-on is ITSELF a password, the recovery of someone else's sign-on could not easily be done, as each sign-on trial would need to be typed in until the spook could find one accepted by the computer. Thus password first, then initials, would be more secure than the present initials plus password process; and password 1, then password 2 would be still better. Indeed, any one could make this change right now (if the system being used has no restrictions on the length of the sign-on or the password). But establishment of a specific policy excluding use of initials would be desirable.

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"A sufficiently clever systems programmer could, of course, dig out any information residing in the system, including protection bits and passwords, but measures against such a type of snooping will have to be taken up for discussion at another time. I am limiting myself for the present to the topic raised in your article."

P.L. 86-36 [redacted]

[This comment highlights two of the different points in the user dialog with a system where access restrictions come into play: i.e., 1) login, or sign-on; 2) file access. Additional possibilities are 3) access to data base management or other applications packages; 4) access to operating system or file system mechanisms (e.g., "superuser" passwords on UNIX systems); 5) access to related groups of files (e.g. M204 "file group" passwords). From a human factors point of view, the context within an on-going user dialog with the system is also important: how many steps has the user already had to go through before he must give this password? How complex have previous steps been? How many more steps must he go through, and how complex are they, before he can begin work? How often must he go through all the steps in a working day? How fast or slow is the system response between each step of his login and access to resources? It would be a mistake to look at a single "frame" of the dialog in isolation, and consider only the system's prompt for a password and the user's response, without looking at the surrounding context. -MED]

IT'S MORE FUN WITH PASSCODES
OR: SQUASHING/ENCOURAGING CREATIVITY

I enjoyed your article about passwords, and agree that creative passwords can SOMETIMES be so hard to remember that you have to write them down. Then you have less security than you WOULD have had with a more memorable password.

However, with a bit of creativity, (and a lot of inspiration from your article), I was able to conjure up a password that was at the same time memorable AND a scrambled mess of lowercase, uppercase, numbers and symbols. It was actually FUN to make a clever password!

Now I find that the cftp program (used to transfer data from one machine to another) will not function if a password contains either CAPITAL letters or punctuation marks. Not fun. Rather than remain frustrated, I picked a less clever password again. Isn't it bad psychology to squash a user's efforts like that?

We need to think about some programming standards here ... cftp can probably be modified to accept fancier passwords. For that matter, passwd (the UNIX program for setting a new password) can probably be modified to reject passwords that are all lower case (or all upper case), or to reject passwords that contain NO letters or symbols.

Finally, a weird idea that just MIGHT encourage creation of undecipherable passwords. Try this the next time someone knocks at your front door. Don't open it. Yell out "What's the password?" Chances are, your visitor will try common words ... "apple?","banana?","cranberry?". When your NEXT visitor arrives, cry out "What's the code?" Perk up your ears, 'cause he's going to try things like "murffle-87Z", "78rpm", and "DAH-di-DAH-dit". This should tell us something. Ask a person for a PASSWORD, and you get a WORD. Ask him for a CODE, for a PASSCODE, for an ACCESS CODE, and he stops to think of something unusual (and enjoys doing it). On UNIX, the word "password" would have to be replaced at login, and in the passwd program, and in a few other utilities.

[redacted] P.L. 86-36

UPDATE FROM [redacted] P.L. 86-3
HUMAN FACTORS OF PASSWORDS

"A SAD Dilemma.

"The recent remarks on Good (Pass)Words vs User Friendliness deserve some comment.

"The first full sentence on page 8 says that 'our lives are a lot easier if our password is 1) short, 2) easy to type, and 3) easy to remember". This order should be reversed. The password must be easy to remember. If you cannot remember it, you cannot type it, easily or otherwise.

"The comments about the difficulty of remembering VKJRD and like values are correct. Passwords made up of large alphabets are called for in situations where the password is limited in length. Short passwords are common in computer systems that store unencrypted passwords. If a password is to have any strength it must be of sufficient length or be made up of choices from a big alphabet.

"Currently, work on a new login for UNIX is underway. The specifications are:

"The password will be 8 or more characters; up to a maximum of 40 characters.

"Of all the characters, six or more will be unique.

"These specifications will permit pass phrases such as:

"Low flying bees eat wax beans

"I own cherry trees and crab grass

"If the user can accept using phrases, then sufficient strength can be obtained by using sufficient length for the pass phrases. This scheme does not increase the demand for computer storage if the pass phrase is encrypted and collapsed into 11 bytes regardless of length.

"The user's selection of the pass phrase will be inspected only at time of creating (when passwords are changed) to see that the password is 8 or more characters long with six unique. Because a user could choose abcdefg as a password or could switch back to a previously used password, the old password will be captured. The security officer will review captured passwords to see if a user needs counseling on password choices.

"The central distribution of passwords that are difficult or impossible to pronounce or remember is unacceptable. I agree that the pass phrase should be as usable as possible consistent with the need for protection.

"There is a human factors element to a well designed and properly functioning password system which deserves some comment. The password authenticates the user to the system. It prevents anyone else from masquerading as the user. It protects the work of the user from damage. It prevents anonymous use of the computer. This encourages all users to be responsible citizens in the community of computer use.

"There are alternatives to passwords, but they are worse. Each individual has a unique pattern of blood vessels on the retina visible through the lens of the eye. The pattern could be used as an identifier. But how could the identifier be forwarded over the telephone to a trusted fellow employee? Emergencies do arise.

"If a password is remembered, it is easy to type. I doubt that a non-typist will use a terminal very long. As for passwords should be short; sorry about that, they must be long enough to be secure."

[redacted] (29 December 1982) P.L. 86-36

A RESPONSE FROM THE COMPUTER SECURITY CENTER

GOOD (PASS)WORDS VS HUMAN FRIENDLINESS

"1. Reference your article.

"2. As a regular user of computing systems I share your concern that password systems be user friendly. Wearing my other hat, as Chief of Standards and Commercial Products Evaluation at the DoD Computer Security Evaluation Center, I am quite concerned that passwords be chosen and used in as secure a fashion as possible.

"3. An approach to the dilemma between user friendly passwords and secure passwords is to

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stop focusing on the word WORD in PassWORD. There is no real reason why the authentication sequence for a computer log-on could not be a PHRASE - one typed in lower case letters with embedded blanks (if one chooses). This suggestion opens new realms for passphrases which are easy to remember, easy to type, plus long enough to be not practically attackable by simple analysis means. Any source of written material at hand provides candidate passphrases which are far more secure than one's initials, name spelled backwards, license plate number, radio amateur callsign, wife's name, project name, etc. which appear frequently in the set of user chosen passwords in use today. Phrases like 'ordered bifocal glasses', 'simple analysis effort' or 'do we need to depend' all suggest themselves as passphrases from your recent Technical Notes. Real security in passphrases (or passwords) comes from being chosen at random from a large set of possibilities. The phrases such as 'including the electrons', 'larger than a gimlet', 'around which cable' or 'outspoken plain and blunt' were all drawn from the dictionary on my desk.

"4. We who work in computer security realize that the user of the system is the real key to system security. The user's needs must be taken into account when security measures are devised and put into place. There is real room for creative thinking in the area of meeting users' needs and maintaining and improving computer system security. Let's break out of the past shallow thinking (use passphrases instead of passwords) and apply our talents to making things better for everyone."

[redacted] (4 January 1983)

MORE ABOUT PASSWORDS AND...HUMAN FACTORS?

"We have a rebuttal! [redacted] has published a rebuttal to an article about the password compromise that appeared in the October issue of CRYPTOLOG. It seems that Mary thinks that passwords that are: long, use upper and lower case, are selected from a large alphabet, (special characters, punctuation, etc.) are a pain in the human factors... neck? Mary's point of view is that passwords are just one more obstacle between the user and the computer. Mary states that life is a lot easier if our passwords are: 1) short; 2) easy to type; and 3) easy to remember. Hmmmm..seems to be a conflict of interest here. There is no question that we must use passwords that are reasonably secure. Admittedly, however, we cannot ignore the human factors issues while pursuing this goal."

[redacted]

(Excerpted from COMPSECNEWS, January 1983)

CENTRALLY-ASSIGNED PASSWORDS

"Some years ago I identified what I consider a near-perfect trade-off between security and convenience with respect to the assignment of passwords. At that time the CESSO was assigning new passwords to the users of their facility. The principal mechanism was a program which could effortlessly generate 8-character alphanumeric passwords in an approved fashion. The CESSO's plan was to run off a sheet of several hundred passwords, and then arbitrarily assign one to each customer.

"Noting that the password assigned to me was onerous, I asked for a sheet of 1000 passwords from which I could choose a better one. While the CESSO acceded to my wishes for myself and my team members, there was unwillingness to make this a standard practice. There were a number of objections, most of which I could not appreciate, one being that it would be wasteful to run off 1000 passwords and 'waste' 999.

"Nevertheless, each of us found within our own list of 1000 potential passwords some string that was 'personally memorable' and did not need jotting down--despite being random and, for all intents and purposes, meaningless.

"Passwords are a fact of life, but their burden can be lightened significantly without compromising security.

"My experience--and I suspect yours as well--has taught me that the cost and complexity of user convenience is often less than it first appears; the payoff, whether large or small, is often longlasting."

[redacted] (9 February 1983)

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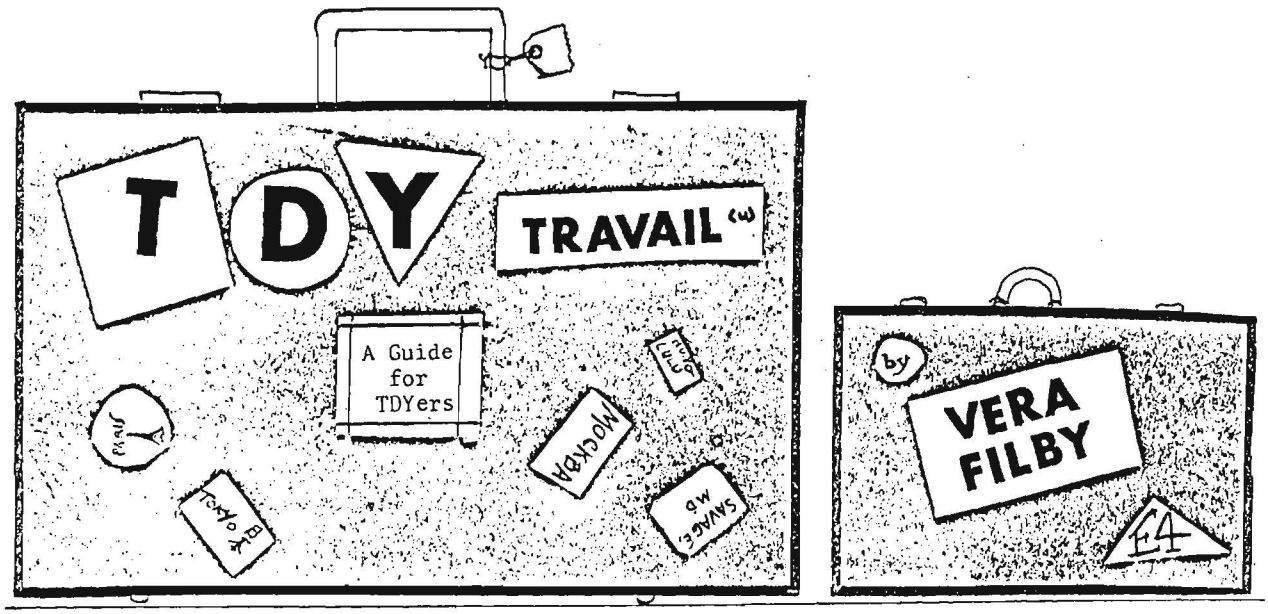


If you have not traveled on TDY (Temporary DutY) lately, or if you are now contemplating your first TDY assignment, there are many facts that you should know and actions that you should take. Knowing what to do and doing it in time can prevent unpleasant surprises, hassles, snafus, and disappointments. The key factors are time and your personal attention. Do not assume that "Admin" or "Management"--or somebody--will handle everything in good time while you just wait to be told what to do. You may have to do it yourself. Here are things you should know.

Rules and Regulations

You probably have better things to do with your TDY preparation time than to study TDY rules and regulations, but you should know that you can find them in the Personnel Management Manual, NSA/CSSPMM Part VII--Series 700 (Travel Regulations). For general assistance, your key component has a central travel activity, and the Travel Management and Support Branch (M62) will answer all your travel questions. Ask them.

Travel Arrangements

Nothing can happen before M62 receives a copy of your planning message. This is a message prepared according to a prearranged format by your home element announcing your itinerary, schedule, mission, and clearances to the commands and installations you will be visiting. M62 needs at least 30 days, and preferably 45, to do its part; the field activity you are visiting may need as long as 30 days for the paperwork in preparing for your visit. M62 will select the best bookings within the range of allowable options, including, when available, Category Z, which is a class of services quoted by certain airlines for government use. If you have complications, such as traveling with your spouse or taking annual leave in conjunction with TDY, discuss this with your M62 representative so that she can make the most favorable arrangements and suggest how best to take advantage of whatever airline bargain gimmicks may be in force at the time.

Advance Preparations for Arrival

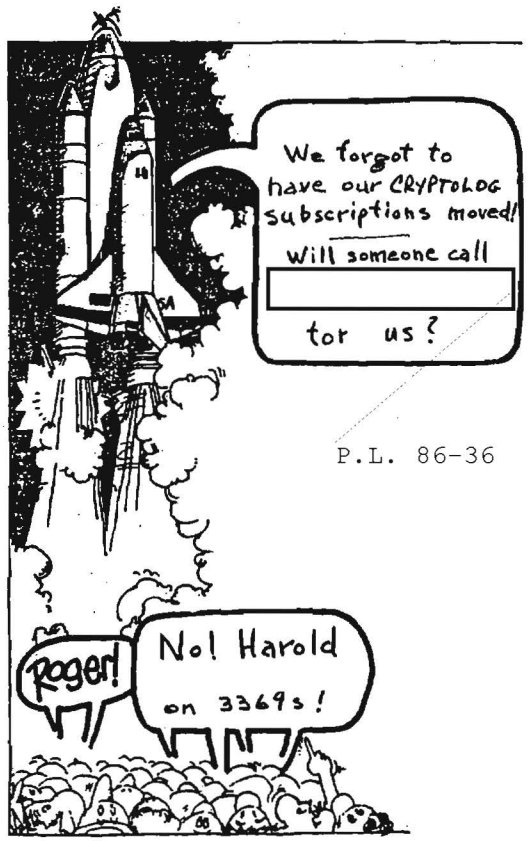
If you are sending equipment, briefing notes, or anything else you will need when you get there, make sure you allow enough time. Check the Armed Forces Courier System (ARFCOS) schedules. Make sure you get back the Receipt for Transmittal, Form A1295, which is attached to packages for shipment.

Keep handy the names and telephone numbers (home and office) of your points of contact. If you are to be met, be sure that your time and place of arrival are known. Messages don't always get through, so make some contact yourself (OPSCOMM, phone call, letter--whatever you can). You may find yourself alone in a foreign country where you don't

speak the language, with a pile of luggage to look after. You must be ready to cope with a situation like this. If you are not to be met, then be sure you know how to get from the airport to your destination, which may be many miles away. What modes of transport are available? Taxi? Limousine? Bus? Train? Some combination of these? If you are arriving at night or on a Sunday, are they running then?

Passport

Probably you already have a passport. This is not good enough. You need an official passport because you will be traveling on government orders. Go to M624 and apply for it as soon as possible. Your passport number should be included in your TDY planning message or a later message. This will assist you in on-base processing at locations where responsibility for security is shared by the United States and the host country. When you return, your official passport will be taken away from you and filed for possession, don't let your passport lapse.



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Shots

For some destinations, shots come in series, so find out how much lead time you will need to have them--and to recover from having them, if shots bother you. You don't want to go chasing around airports with a sore arm. Depending on where you are going, you might assume that you don't need shots--and you might be wrong! You will be traveling on an official passport and additional rules apply. The Medical Center, M7, will know the answers and give you the proper shots.

Travelers' Checks

Buy your travelers checks in good time to avoid being rushed at the last minute. There may be restrictions, depending on where you are going. Ask your travel representative.

Money

When you finally pick up your orders--and this can happen at a panic-stricken last minute!--you will be presented with a large sum of cash. This is your travel advance. This could happen on a holiday, Saturday, or Sunday or in the evening, when you would have no way of safely stashing it in the bank. Be prepared to deal with this possibility in whatever way suits you best. You may have it held for you if you wish.

When you change money from one currency to another, note the exchange rate and copy it down. Rates change from day to day. Be sure to have small change in the foreign currency with you when you arrive. You may need it for tips, snacks, telephone calls, or toilets.

Accommodations

Will you be staying at a hotel? In the BOQ? In base housing? Will transportation be available, or will you have to get to your destination from a distant hotel every day in a hired car? Ask. You need to know. If you know you will be driving a rental car in a foreign country, determine in advance what the restrictions are. You may need a local or international driver's license ($10.00 at AAA offices). And be sure you know which car rental company holds your booking.

Records

When you leave, you will receive your tickets, travel orders (Form DD1610) in multiple copies, and travel voucher (Form DD1351-2) with carbon copies. An examination of the travel voucher form will convince you that you will need to keep records of all your expenses. Do this as you go along. You will have enough to do when traveling just to keep track of today, never mind trying to remember which meals you paid for or what taxi rides you took yesterday.

If you cannot get quarters on a military base, make sure that you get a statement of nonavailability from the base billeting office. Without it, you may have to pay for off-base quarters yourself. Be careful not to lose any tickets, bills, or receipts. If you get a chance, have them copied and send the copies home. When you get back, you will have to turn in your completed forms with all your documentation.

Security Briefing.

For overseas travel you will need a briefing on security. Find out when these briefings are scheduled well enough in advance so that you can attend on a day convenient for you. You will be busy in the days just before you leave, so do what you can ahead of time.

Travelers' Guides

The State Department, the US Customs Service, and other organizations publish brochures and pamphlets with tips for travelers. When you pick these up, take a look at the publication dates. Rules change. Make sure that the advice you are getting is current.

Trip Report

When you get back, you will probably be expected to write a trip report. Find out in advance the type and amount of detail that will be wanted so that you can be thinking about it and making notes.

The Assignment

Now with all the preliminaries disposed of, you're off. You will almost certainly find your TDY interesting and rewarding, well worth all the initial (and subsequent) bother, which, with a lot of attention and a little luck, can be held to a tolerable minimum.

Have a good trip!

Author's note: My thanks to [redacted] of M62 for her advice as well as to friends in P1 and my E41 colleagues [redacted] for their suggestions. Brian has a last word: "Take a good book and maintain your sense of humor.")

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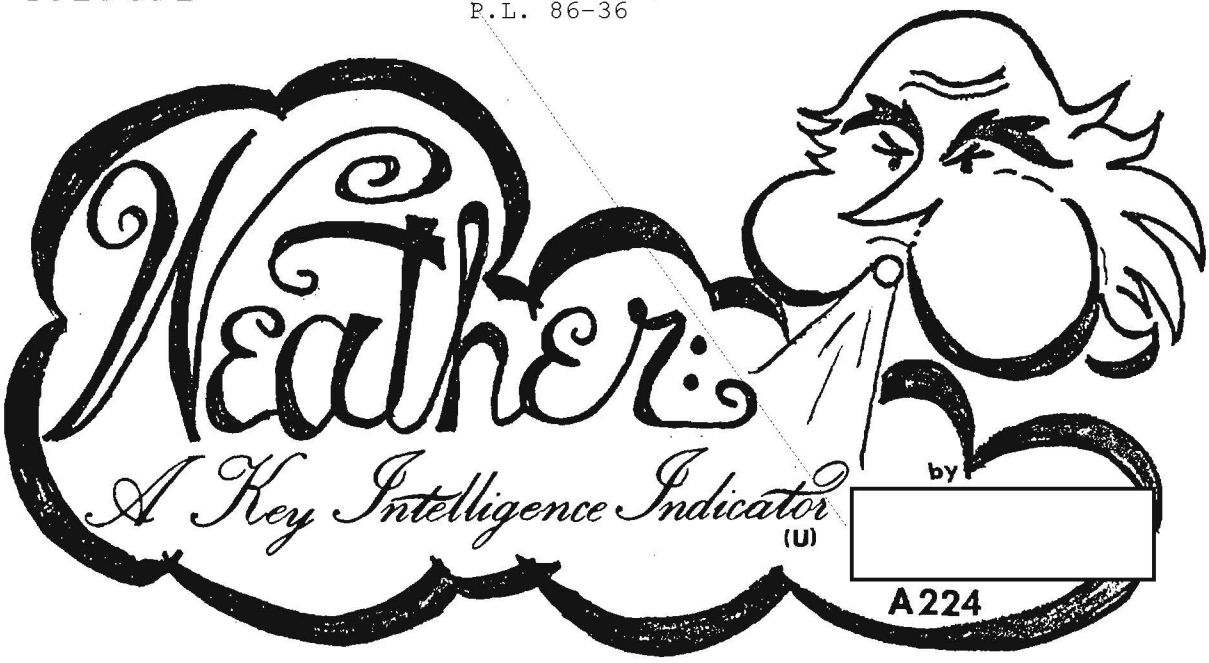

~~(S)~~ We have all heard the old saying, "Everyone talks about the weather, but no one does anything about it." Yet, hardly a day goes by that each of us does not watch or listen to a weather report on television or radio. Regardless of whether or not we believe the forecast, we all tend to make plans accordingly. Just as weather forecasts tend to influence our personal activities, so the same types of weather information influence military commanders in planning their operations. This dependence on weather support by the armed services can yield unexpected intelligence information and, indeed, is used daily by Agency weather analysts

~~(S)~~ The progress of scientific knowledge and modern technology continues to call attention to the critical need for all-source environmental information from potential enemy nations. This data is required to more accurately assess a nation's success in developing, deploying, and operating new weapons systems and to study the influence of a nation's weather on the capabilities, disposition, and mobility of friendly or unfriendly military forces.

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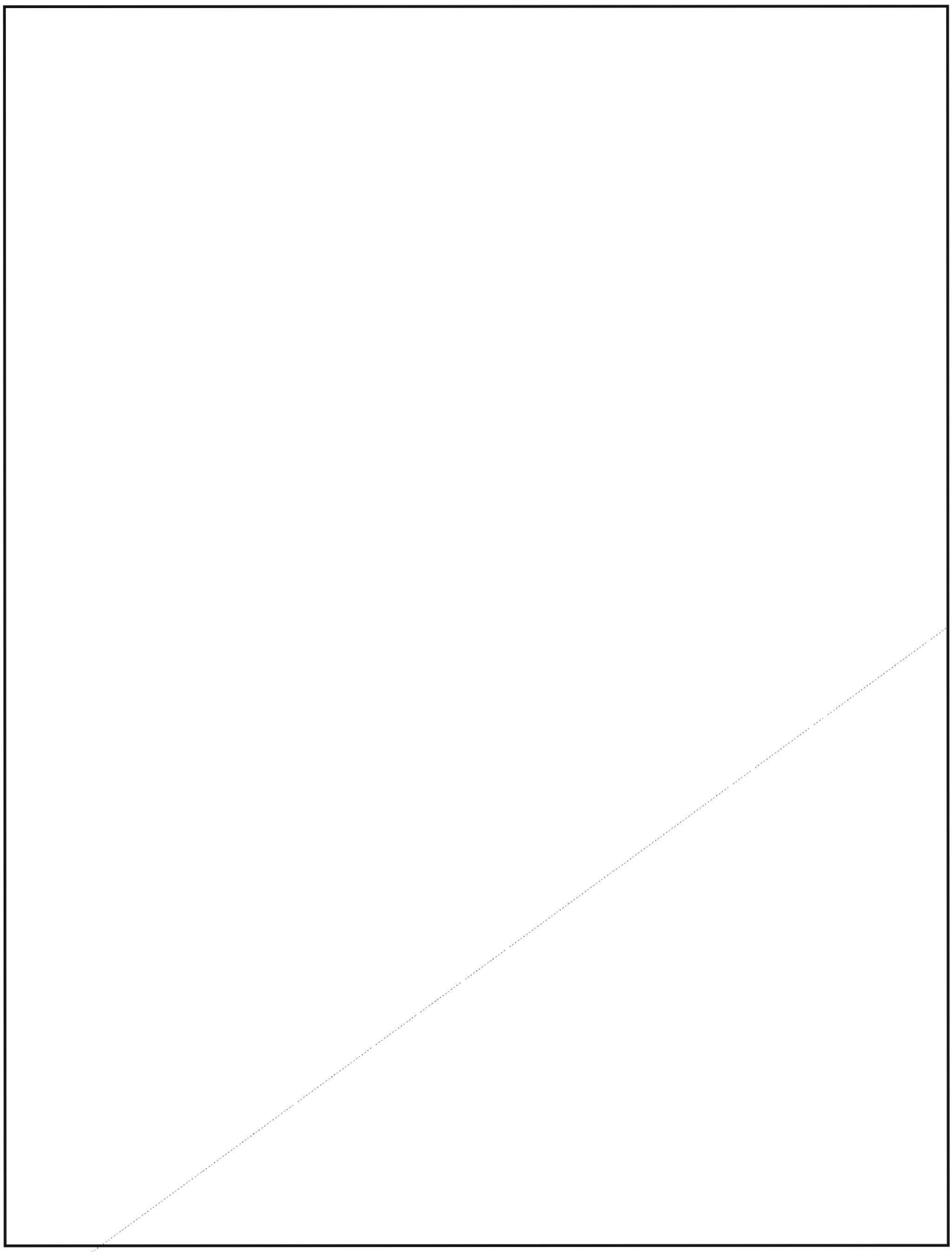
~~SECRET~~ ~~HANDLE VIA COMINT CHANNELS ONLY~~



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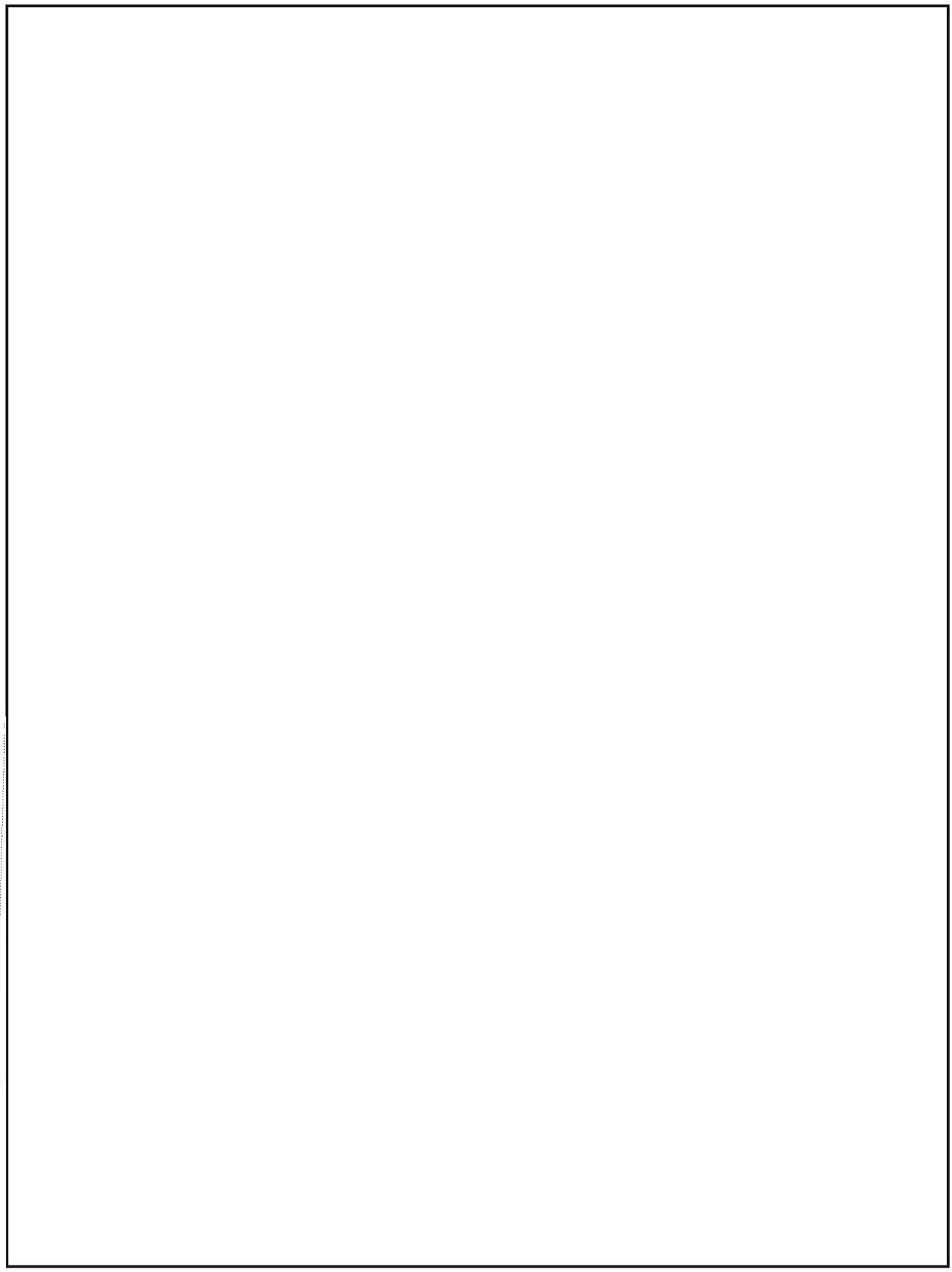

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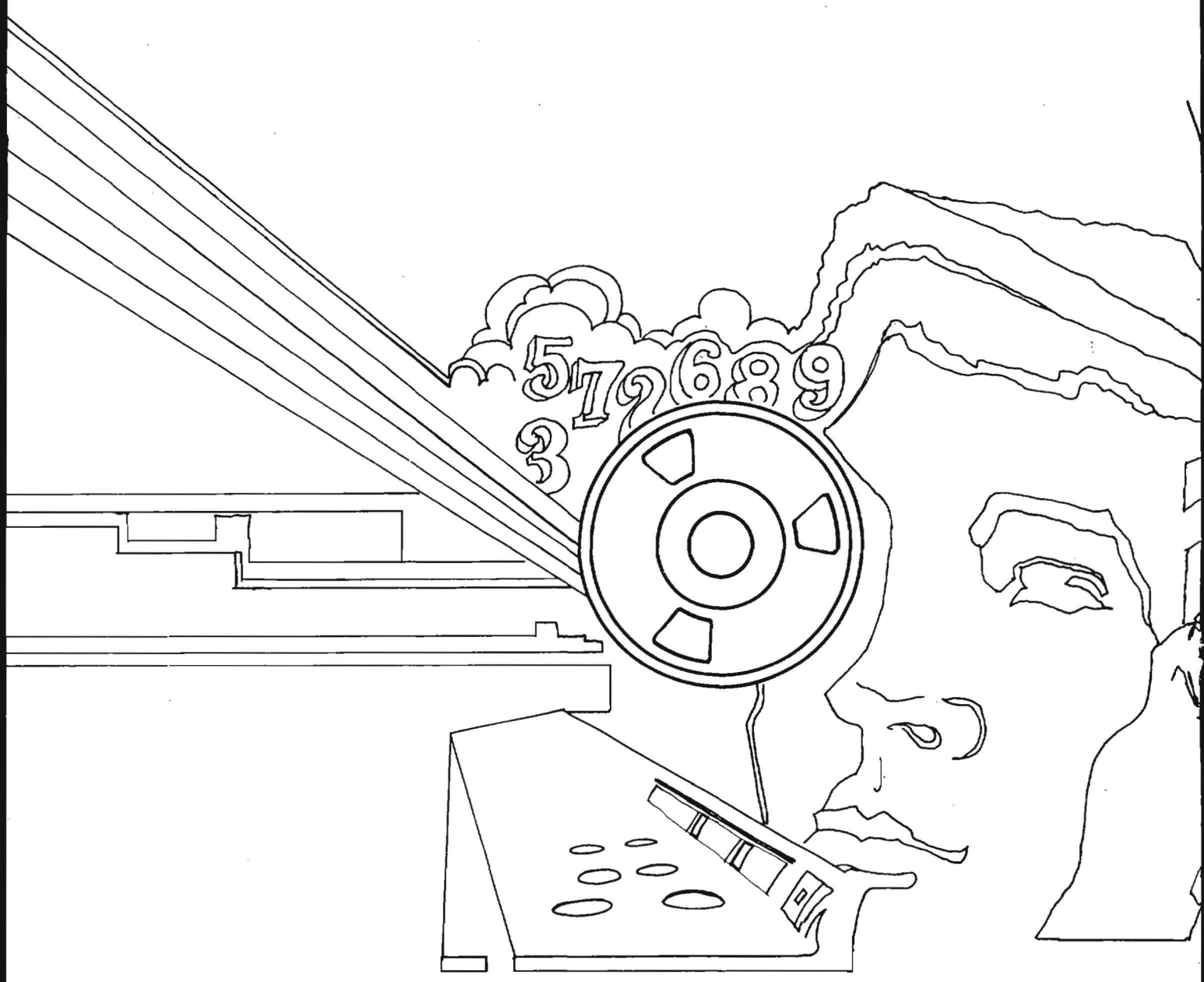

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