PL 86-36/50 USC 3605

~~TOP SECRET~~

NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND

CRYPTOLOG

JUNE 1977

Non - Responsive



SIGINT WELCOMES INKSTAND..... 4
AG-22/IATS: A VIEW FROM THE BRIDGE..... 5

~~THIS DOCUMENT CONTAINS CODEWORD MATERIAL~~

~~TOP SECRET~~

Declassified and Approved for Release by NSA on 02-23-2022 pursuant to E.O. 13526, MDR Case #110143

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

~~SECRET SPOKE~~

PL 86-36/50 USC 3605

SIGINT WELCOMES  STAND

E12

The intelligence community has come a long way since the days of six-ply paper, MC-88 mills, headsets, and grease pencils in meeting its intelligence objectives. Automated systems now command the field in the collection, processing, displaying, reporting, storing, and management of SIGINT. Systems have been developed that are capable of identifying and exploiting

Each system was developed to contribute to the advance warning of the hostile military "threat" to the United States. We have seen these "project" systems developed, named, redeveloped, renamed, and then we have seen them meet expectations or, having failed to meet them, be phased out. Yet, through all this, many of us who have had personal contact with these systems have come to cherish them as an exciting experience to be remembered.

There is another automated system in the works which may cause many an old S&NC analyst or reporter to wish it had come along sooner. This new system is known as Project INKSTAND -- the SIGINT Surveillance and Reporting System (SSRS).

Project INKSTAND was established in early 1974 with the objective of providing for a more centralized and timely strategic and tactical warning of hostile military threats to the United States and its allies, and for the development and implementation of NSA/NSOC in-house, field, and user SIGINT surveillance and reporting. Simply stated, it establishes a centralized SIGINT intelligence collection and reporting system which will allow

The concept of INKSTAND is not new. There have been and currently are systems that can be considered forerunners of INKSTAND, some of which have been incorporated into INKSTAND. One such system is ROMO I -- an operational data system

Another forerunner, with a basic concept very similar to INKSTAND, was the IRONHORSE project[1]. Although some existing systems have been integrated within INKSTAND, new systems were required to fulfill the project objectives. INKSTAND was therefore divided into two major development efforts: RAINMAKER (concerned with the operational SIGINT Producer Systems), and PATHWAY (concerned with SIGINT User and Management Systems).

The systems developed under RAINMAKER are geared toward accomplishment of field site intelligence collection and reporting. The objectives are automatic data processing and

. Product and technical reporting will be done automatically or manually through an interface with existing station communications center networks. One such RAINMAKER system is PRITTER, a digital display system designed to provide

and subsequent product reporting. Reporting will be done through an electrical interface of the display terminal and its associated computer and appropriate communications circuits to enable an operator/analyst to build a report

entered automatically or manually through system software to meet report criteria.

will be made possible either by way of ROMO I or by a Vector General Graphic Display unit.

PATHWAY systems will be concerned with monitoring field site SSRS, upgrading computer-stored

and ensuring that this data

support NSOC. Available within the PATHWAY system is an interactive graphics display system known as SHOWCASE, which will provide

It will also provide access to certain NSA data bases.

I hope this brief description of just one of many "projects" within the SIGINT community will charge us all to keep contact with new developments that affect our missions within the total intelligence effort.

[1]See "IRONHORSE: A Tactical SIGINT System," *CRYPTOLOG*, October 1975.

~~SECRET SPOKE~~

~~SECRET SPOKE~~

PL 86-36/50 USC 3605

AG22/IATS

A VIEW FROM THE BRIDGE

[redacted] G5 ADP



The April issue of CRIPTOLOG contained a brief article by Cecil Phillips, entitled "The last Word on IATS?" As the following article attests, I guess it wasn't!
Ed.

Overview

"AG-22/IATS -- just what is it, anyway?" That was a question I first asked in 1971. In the ensuing years I have had a number of occasions to feel that I might ask the same question in the same perplexed manner. Nevertheless, AG-22 -- or AN/GGC-15(V), as it is known by its military descriptor -- is an intercept position uniquely configured to collect high-frequency manual Morse transmissions. The prototype (AFSAV-D/311) was developed in 1960 to provide the basis for machine-generated in-house technical summaries, to reduce paper-tape punching at the site following hard-copy intercept, and alleviate, if not eliminate, card-punching of traffic at NSA. The overall objectives of AG-22 remain much the same today, with perhaps increased emphasis on more timely receipt.

This paper will present an overview on how we in G use the increased timeliness of AG-22 intercepted manual Morse to meet our intelligence requirements, and my proposed outline for enhancements to the existing in-house processing system. To this end I will outline the data-flow process spanning the bridge from the point of interception to automated and analytic intervention of message units directed to G follow-on processes for analysis, decryption, and translation. As an aid to the reader, an extended glossary and a series of descriptive aids are provided in the appendices.

In its initial configuration, AG-22 positions produced 8-level punched paper tapes that were electrically forwarded to NSA. A more recent AG-22 configuration has resulted in what has since become known as the Improved AG-22 Terminal System (IATS). This was designed to eliminate the costly and cumbersome punched paper-tape operation associated with the basic AG-22 program. IATS successfully replaced the paper-tape functions on AG-22 positions by using a Honeywell 316 computer to multiplex up to 128 teletypewriter inputs. Morse intercept is then stored on a collector tape drive for scheduled batch forwarding to NSA on the IATS data

~~SECRET SPOKE~~

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

PL 86-36/50 USC 3605

circuit[1]. As an added note, IATS also has a provision to transmit selected TEBO generated digital intercept. This is accomplished by using a PLEASCOP position for input to IATS and transmission to NSA. G has plans to use the IATS circuit [redacted]

IATS Communications Processing

The normal path for IATS forwarded data is a secure error-free duplex data communications link from IATS sites into a DAYSEND (Honeywell 316) computer at NSA. Each of the six DAYSEND terminals can accept multiplexed IATS transmissions, one 512-character block at a time, from up to eight IATS sites, passing the data directly to HOLDER (Univac 494) for on-line storage and distribution[2]. HOLDER distribution to the IBM 370 complex is accomplished through a Univac 9300 computer interface using a 50 kilobaud half-duplex circuit. The schedule to HOLDER is normally bihourly and IATS data is directed to the Generalized AG-22 Processing System (GAPS) by the field-assigned File Distribution Indicator (GAP).

Thus, AG-22/IATS intercept that originates around the world [redacted] is transmitted by data link to DAYSEND and electrically forwarded to HOLDER for distribution to GAPS at least 11 times daily[3].

Generalized AG-22 Processing System (GAPS)

GAPS is a well-conceived and well-documented modularized IBM-370 software system developed and maintained by C14[4]. The main functions of GAPS are to:

- describe logical AG-22/IATS files;
- edit the records (that are forwarded in accordance with USSID 101, Annex A) within [redacted]
- schedule the execution of target-dependent processing;
- store the traffic file so that it is accessible to the required processing routines; and
- provide a full-text computer printout.

To accomplish this important task, GAPS employs an initial edit program (CONNOR) that builds the all-important AG-22 file-header record, [redacted] for each file -- all from the field-inserted operator tags within an AG-22 file. To gain processing efficiency, after the initial edit has been performed, most GAPS processing is performed on the header file only. Finally, CONNOR assigns a unique processing distribution indicator to each file, which is in turn used by the GAPS text-edit modules (CAVETOWN[5]) to determine user-required processing schedules for each AG-22 file.

GAPS is run 6 times a day -- approximately every 4 hours around the clock with the so-called "x-y" mini-options allowing for more frequent user access when required. Each of the six cycles (which are alternately referred to as "pulls") is uniquely identified by the letters A through F. The "A" transaction is run around 0600 local and begins a new transaction day.

AG-22/IATS User-Oriented Edit Modules

CAVETOWN is essentially the user-software interface with the formatted GAPS traffic file. CAVETOWN is the initial point for addressing specific office-defined processing requirements. User (OPC) processing within GAPS is controlled by the previously mentioned processing distribution indicator. These indicators also provide the basis for sorting all "like" data from a number of site sources and a number of GAPS pulls.

To maintain a strategy for user-directed processing requirements, the G Computer Applications Division (G84) developed a series of generalized and specialized modular program routines that are based on the types of editing functions needed to process G manual Morse intercept. Each module, except for the edit of [redacted] is general and is applicable to all G targets. [redacted]

Although the CAVETOWN edit modules fall within the GAPS process, they are in fact the first stage of specific office access to [redacted] The AG-22/IATS design scheme requires two distinct levels of access. The first

---

[1]The IATS computer does not, however, perform a data-processing function; it merely provides a means of storing multiplexed manual-Morse transmissions.

[2]DAYSEND is also designed to provide feedback to IATS sites. Input to and feedback from DAYSEND may proceed simultaneously.

[3]Under [redacted] for example, is forwarded to HOLDER, a file at a time for batch-forwarding to the IBM 370s), more timely distribution is effected.

[4]Detailed information on GAPS documentation can be obtained from C14 or, if you have access to an RJE terminal or the C7 IBM 370 production area, by executing a local job accounting run.
Example: //G54DOC JOB (####,000R, 310), NAME
// EXEC AG22DOC, DOC=GAPS

[5]For targets without specific identification criteria, GAPS produces a [redacted] listing (RISNER). This is produced daily by C7 or by selection from local RJE stations.

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

is batch-oriented and is highly automated using GAPS/CAVETOWN; the second is the G analyst/editor and is interactive. The CAVETOWN edit modules allow for as much automatic text editing and data discrimination as is possible[5]; analyst/editor interaction is supported by the C14 software executive editing system, GRAPHEX.

Current G Processing

Most G Offices receive AG-22 traffic listings once daily from the GAPS full-take (RISNER) output listings. As a result, for those targets that require further analysis and/or follow-on processing, the ability to process AG-22/IATS intercept on-line ends in the form of an output listing. The CAVETOWN programs, however, allow us to direct [redacted] to the required data bases: [redacted] PROD, SWINGER, and [redacted].

For a more detailed explanation of a daily operation using the G interactive in-house processing system (OTOE), see Appendix G. Interactive viewing is now accomplished by G Group analyst/editors using the GRAPHEX-based program in three distinct stages. These stages are:

Data Build: This procedure prepares merged data files by input source IAG-22/IATS and [redacted] The process creates an index file that provides pointers to the traffic files [redacted]

Data View: The inputs to this interactive program are the data file to be scanned, an index file, and a status file. [redacted] are scanned in scroll fashion and are viewed on a page-by-page basis (1920 characters). All keyboard commands and data requests to the host IBM 370 are in a demand mode with each function requiring transmission and interpretation by the host computer. For target files not selected for analyst viewing, the VIEW stage can, however, be bypassed.

Data Takeaway: This stage of the GRAPHEX/OTOE process is designed to provide the required output formats for follow-on processing and for data-base retention. Existing outputs are:

- *magnetic tape* -- for [redacted] and SWINGER (Univac 1100);
- [redacted]
- *BUILD on-line* -- for analyst rescan of selected messages.

In summary, G analysts initiate the AG-22/IATS editing process once daily, using four visual-display units. However, multiple runs can be batch-initiated by user request. The analyst/editors [redacted] and perform such functions as:

- text editing;
- deduping messages,
- adding and deleting characters, and
- adding and deleting groups and textual lines.

At the completion of interactive text-editing, the DATA TAKEAWAY program is run to provide outputs [redacted]

This, then, for the purpose of a descriptive AG-22/IATS data flow, concludes the first portion of this paper. At this time I would like to present a series of software and hardware plans for developing enhancements to the in-house portion of the G AG-22/IATS processing system (OTOE).

C Group, through the AG-22 Study Group, has staffed and developed phased recommendations for a series of front-end related AG-22/IATS improvements, including more timely forwarding and processing. The challenge to those of us in G is to produce a comparable effort to ensure that we can dynamically process more frequently forwarded AG-22/IATS traffic. What follows is a process flow that will provide the framework for event-driven processing.

Problem Statement

The nature of G targets is such that they demand dynamic identification and processing. We must, therefore, provide a reasonably automated and analyst-interactive processing system to select, identify, distribute, and process our targets as intelligence requirements dictate. To achieve this goal will require a modular-based integrated approach to processing selected traffic. The current in-house processing system (OTOE) was not designed for frequent or random analyst access to target files. G Group office requirements [redacted] The determining factors regarding user access will continue to be events; therefore, the system that supports AG-22/IATS processing must be dynamic in order to support a wide range of user access.

We now have the ability [redacted] What remains is the development of a system that will provide G analysts with timely and selective access to desired messages.

Hardware Requirements

To operate efficiently in a dynamic processing environment, G analysts will require an intelligent remote terminal subsystem with a microprocessor and programmable memory. For the system to be successful and to insure a growth capability, I cannot overstate the importance of

[5]Data discrimination is by traffic type -- [redacted]

EO 3.3b(3)
EO 3.3b(6)
PL 86-36/50 USC 3605

PL 86-36/50 USC 3605

PL 86-36/50 USC 3605

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

providing potential users with a local programming ability -- if only to lessen the need to have the host computer in a constant demand mode. Along with local programming, the future terminal subsystem will require local data storage. Each of the G target files would fit easily on flexible disks that are available on many remote terminals today. An intelligent remote terminal subsystem would allow:

- text editing independent of the host computer. An entire day's traffic file could be passed to the remote flexible disk, edited, and returned to the 370 in batch mode for follow-on processing. This would result in two transfer commands vs. hundreds.
- local paging commands, forward, backward, and random screen positioning, under local control and instantaneously.
- local screen and output listing formats for each user.
- definition, by local users, of the type of file access required, and the ability to sort on [redacted] and to select messages within files.
- storage of frequently used files for analyst inquiry.

Associated with the 3270 visual-display units is an IBM 3284 character printer which is so slow and inflexible that it is virtually never used, though needed. While we project an overall reduction in our total print requirements, by keeping more data on-line or on magnetic tape, a more flexible printer would facilitate:

[redacted]

Software Requirements

The modular identification routines in CAVETOWN provide us with the means [redacted] to changes in intelligence requirements. [redacted] can be accomplished by using analyst-provided (and -maintained) [redacted] CAVETOWN edit modules have eliminated the need to process AG-22/IATS files [redacted]

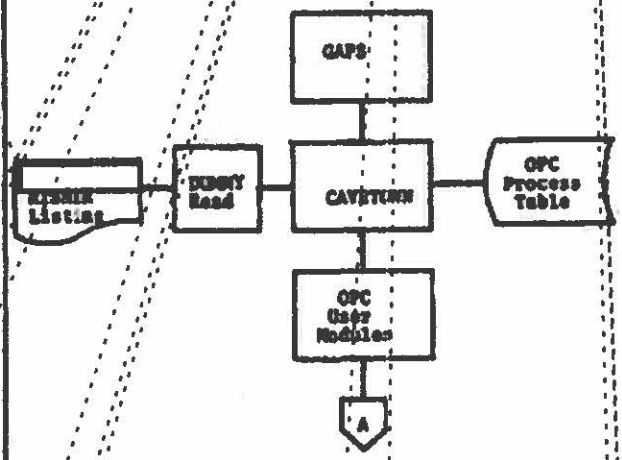
This software plan takes into consideration documented C plans for a series of upgrades to overall AG-22/IATS processing. It is with this thought in mind that the design changes to "in-house" processing must accommodate processing in closer time frames. To simplify understanding and to make for a more logical flow diagram, the "in-house" software enhancements will be presented as functional requirements and will proceed in their natural order with the narrative being keyed to the pertinent flow charts.

(*Note*: Refer to Appendix P for an overview of the existing in-house process.)

GAPS (Fig. 1a)

Initiate CAVETOWN processing for each G target by OPC schedule. This will continue to be based on [redacted] Although this portion of the process will remain batch-oriented, the time frame of data availability should decrease considerably.

1. Process through CAVETOWN user modules by OPC schedule, or,
2. Process through CAVETOWN DUMMY user module to provide output listings for targets with no specific follow-on programs.



Proposed enhancements
Fig. 1a

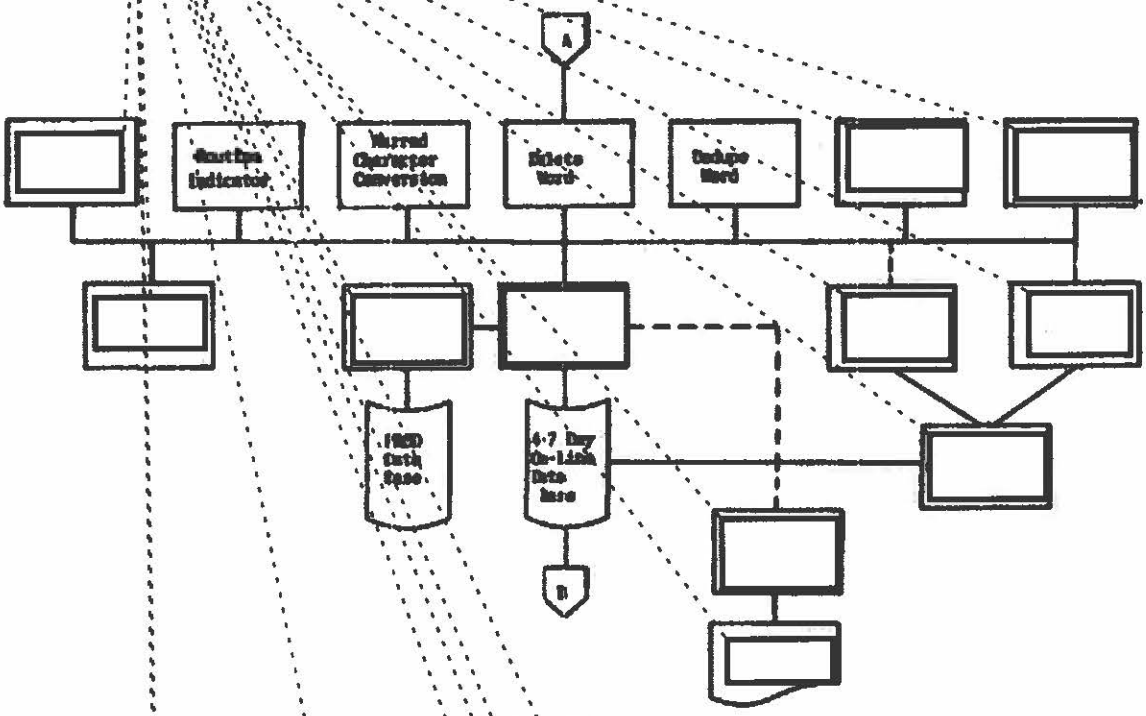
CAVETOWN (Fig. 1b)

Process all G targets in one pass according to the user schedule. The edit modules will [redacted] The routines provide

1. [redacted]
2. *output* -- by schedule, direct output to the BUILD, PRINT, or to the on-line data base (OTOE, RISNER, PROD data base);
3. *specialized edit modules*. Routines provide [redacted]

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

4. *default later* -- for those messages that fail the system recognition tests, either because of poor quality or system anomaly. Likewise, default print options would provide output [redacted] for which no specific parameters exist.



Proposed enhancements
Fig. 1b

On-Line Storage (Fig. 1c)

The principal change required and the essential functional requirements pertain to the development of dynamic file updating. As data transits from OAPS/CAVETOWN to the user files (OTOE/GRAPHEX), the file updating will have to be dynamic to allow the system users to stage data for periodic review. This would also provide a dynamic 4-to-*n* day on-line data base that is file-maintained (aged) according to the requirements of each system[8].

[redacted] Edited versions of the messages would be retained on output data bases [redacted] OAK, TABLON, [redacted] where required. By moving data storage to the front-end of the processing cycle, deduping by intercept site [redacted]

[8]Where *n* is a reasonable figure. This would allow site source deduping and sufficient storage to cover extended weekend and holiday periods.

[redacted] The projected flow process is as follows:

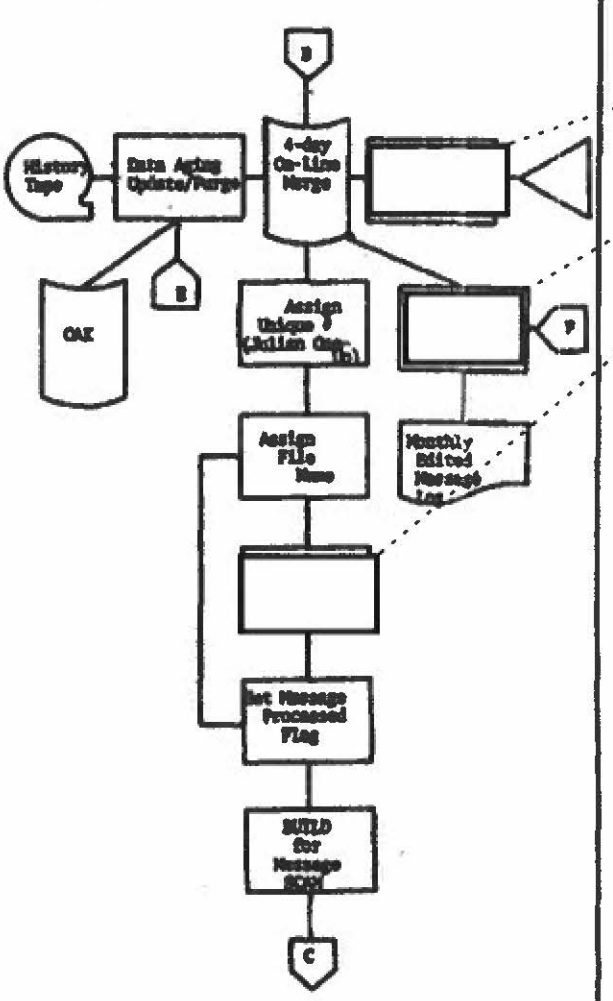
1. For accounting and machine logging, assign a one-up Julian worksheet number to each message in a given file as processed.
2. Assign access file names based upon [redacted] for analyst viewing, routing, and output.
3. Provide secondary sorts within a given file [redacted]
4. Set a message-processing flag to account for the processing state.
5. BUILD output files for data disposition.
6. Update and split off aged data.

File Staging (VIEW) (Fig. 1d)

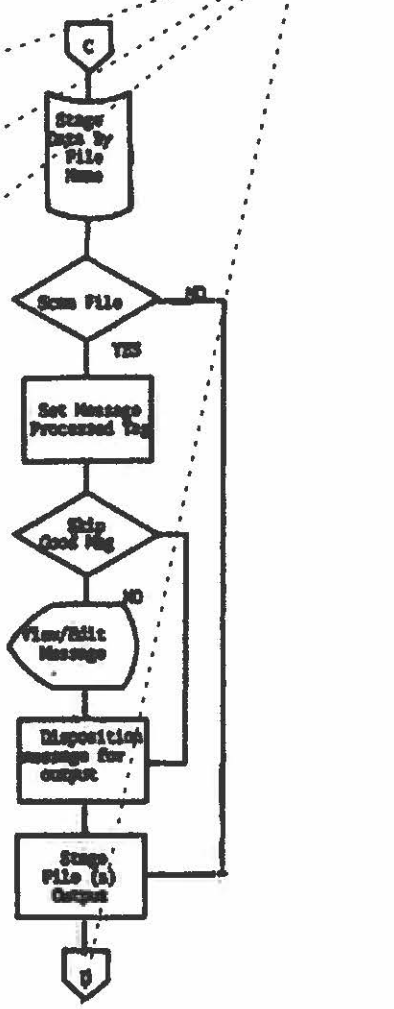
This stage would prepare the files for actual processing, based upon analyst-defined and internally-generated file requirements. Analyst access to selected files will be by file name. Files that do not require analyst/editor viewing will be bypassed. Additionally, those messages that meet the full automatic-edit criteria can be skipped if the analyst so desires. Finally,

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

all messages will be dispositioned by a tagging scheme to direct them to the desired output file.



Proposed enhancements
Fig. 1c



Proposed enhancements
Fig. 1d

Output Requirement (TAKEAWAY) (Fig. 1e)

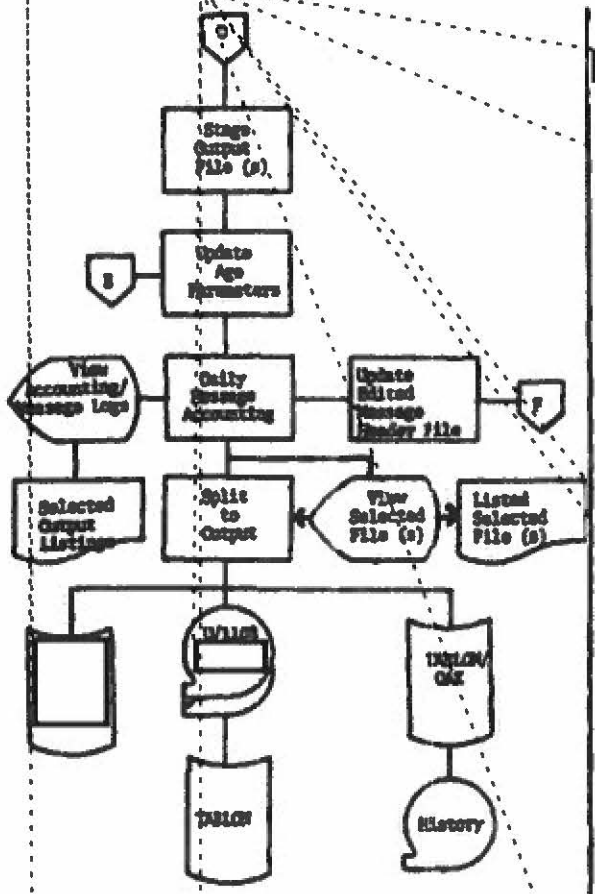
The primary function of this final stage of the interactive process will continue to satisfy office-dependent output requirements. Like the requirement to provide dynamic file access, the output stage will also have to be run as re-requirements dictate. To accomplish this efficiently will require the use of TABLON to link targeted traffic files that require follow-on processing. Longer-term storage of traffic files can be satisfied with OAK and/or TABLON, with user access and follow-on processing dictating which.

Ancillary Processing

Technical Summaries -- Just as requirements exist for user-oriented message text modules, valid requirements for technical summaries such as [redacted] exist and must be provided on required report schedules, be they hourly or daily. Even though we do not have specific requirements at this time, we can forecast the need for machine-generated technical summaries.

Daily Message Logging and Accounting Listings -- These machine-generated daily logs would reflect office requirements for daily message logging. Most analytic offices use the standard [redacted] can be met by making the required modifications to existing accounting listings. One of the functions of the improved CAVETOWN

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



Proposed enhancements
Fig. 1c

programs will be to provide fixed fielded data records which will contain the fields used for machine logging.

Edited Message File -- To provide for longer-term [redacted] for the production of periodic deduped machine-generated traffic logs. This greatly reduced volume file will allow the analyst to provide management information statistics relating to collection management.

Summation

This, then, concludes a rather lengthy description of AG-22/IATS. I began with a description of the components that link AG-22 intercepted Morse transmissions from interception through analyst viewing and concluded with a description of perceived functional enhancements. As the bibliography attests, a number of articles written in Agency periodicals address specific problems associated with AG-22 -- none, however, put into perspective the overall objective of AG-22/IATS. That objective is to: speed the [redacted] eliminate processing redundancy, provide a method for automating the extraction of essential information from Morse traffic, develop technical data bases, and eliminate unnecessary analytic intervention wherever possible. Not only are these admirable goals, but I believe we have the wherewithal to achieve them.

While AG-22/IATS [redacted] is a function of a given target, the goal of speeding traffic receipt is being resolved. Tests for half-hour forwarding and hourly forwarding are already at hand. The elimination of processing redundancy is being addressed by target-directed edit routines. Also, the more AG-22/IATS data we process interactively and keep on-line, the fewer our requirements for manual data conversion will be. The automated extraction of Morse data [redacted] and the development of technical data bases, represents an enormous source of untapped resources which still requires development. Unnecessary analyst intervention has also been greatly reduced by tailoring the target edit routines to suit the peculiarities of the traffic.

The most frequent complaint voiced against AG-22/IATS intercept is that of quality -- more specifically, the lack of good quality intercept. In truth, any analysts worth their salt can tell you when an AG-22 site experiences an operator rotation, because it is accompanied by a drop in the quality of intercepted traffic. [redacted] will develop a corps of professional intercept operators and greatly reduce these periods of annual adjustment and, hopefully, result in better copy. Nevertheless, quality will continue to frustrate the delicate balance that exists between programs and operators. "In a sense, program and operator are complementary, the program doing a better job than the operator when everything is routine, but the operator is infinitely better with any kind of variation or unique situation. To do the AG-22 job well, one needs both, and both should be as good as one can practically get."[9]

I hope this paper places a sense of perspective to, and bridges any *gaps* (no pun intended) raised by, the question asked at the outset, "AG-22/IATS -- what is it, anyway?" The use of the system and the efficiencies that we gain will be what we make it -- nothing more, nothing less. It is to this end that this paper is dedicated.

[9]Cecil Phillips, "Musings About AG-22/IATS," *C-LINERS* (C Group Machine Processing Information Bulletin), Vo. 5, No. 7, August/September/October 1975; reprinted in *CRYPTOLOG*, March 1976.

PL 86-36/50 USC 3605

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

PL 86-36/50 USC 3605

EXTENDED GLOSSARY

AG-22, or AN/GGC-15(V) — A special intercept typewriter or a data-preparation device used by an intercept operator to produce intercept page print and punched paper tape. An AG-22 equipped position would consist of a typing unit and keyboard, a paper tape reperforator, a tape winder, and a control panel.

AG-22 File — The intercept record from one intercept position of a continuous period of activity on the same communications group. It is uninterrupted by copy of activity from another communications group, until the original target is dropped, closed down, or for some reason terminated. A file includes both transmitted and supplementary data (TAGS) supplied by the intercept operator.

AGEDIT — The text-editing program developed by the GRAPHEX programming group (C14). AGEDIT consists of the functions and edit commands necessary to access, scan, and edit G Group AG-22/IATS and [redacted]

CAVETOWN — User-specific text-edit modules that reside within the GAPS process for targets that do not contain edit specifications or select requirements. Output will be in the form of the [redacted] RISNER file.

DAYSEND — Covername for Honeywell 516 computers that are being used by C as the termination equipment for all data forwarded by IATS computers.

FLEXSCOP — *FLEX*ible *S*ystem for *CO*llection and *P*rocessing is a computerized position [redacted] [redacted] uses a Univac CP818 computer in the collection configuration and another CP818 as a processor; [redacted]

GAPS — *G*eneralized *A*G-22 *P*rocessing *S*ystem -- a series of integrated computer programs written for IBM 370 computers. GAPS is designed to process the output of AG-22s and KSR-37 data-preparation devices, as well as AG-22 simulation.

GRAPHEX — A software executive system developed by C14 to support interactive alphanumeric display terminals. GRAPHEX controls display communications and interfaces with all applications programs. The host computer is an IBM 370/168; access is by the IBM 3270 series Visual Display Units (VDUs). The display terminals can operate in either local or remote mode.

HOLDER — Covername for the Univac 494 computers that are being used by C to collect and distribute all data forwarded to NSA for computer processing. The DAYSEND computer is electrically linked to HOLDER.

[redacted]

IATS — *I*mproved *A*G-22 *T*erminal *S*ystem -- a Honeywell 316 computer that will accept electrical impulses from up to 128 intercept positions equipped with KSR-37 data-preparation devices. The data collected by the computer is placed on magnetic tape, where it is held until transmitted directly over a high-speed communications line to the processing center at NSA.

KSR-37 — A special intercept typewriter or data-preparation device used by an intercept operator to produce page print and an electrical impulse that is passed directly to a computer. The keyboard and operator copying instructions are the same as those used for the AG-22.

[redacted]

OTOE — Name given to the overall G AG-22 processing system. OTOE is designed to batch-process AG-22/IATS [redacted] for interactive analyst editings.

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

PL 86-36/50 USC 3605

~~SECRET SPOKE~~

RISNER — A program that provides a full-take [redacted] listing of AG-22/IATS intercept. The program translates and formats AG-22/IATS output by using the primary and secondary operator tags.

STRAMHAT — The covername for the high-speed secure communications circuits that were procured for forwarding of paper-tape output of the AG-22 and IATS systems. STRAMHAT provides error-free communications between NSA and field sites.

TAG — Any unique, special character which is used by an AG-22 operator to flag, mark, or label data to facilitate in-house computer processing. The primary AG-22/IATS tags are:

Secondary AG-22/IATS tags are:

T3 - Used to tag [redacted]

T1, T2, T4, T6 - currently unassigned

SI Special Interest tag that will eventually be used to denote that immediate computer processing of the file is required.

TEBO — A data acquisition system that receives four digital serial-data streams, digitizes, formats, and records these streams and auxiliary data on digital magnetic tape in computer format. It may also directly interface with a computer for on-line real-time processing.

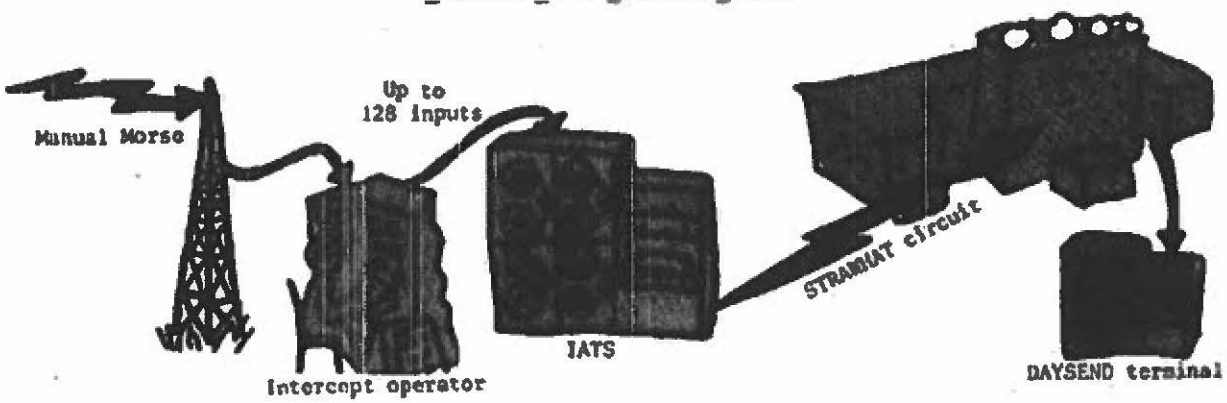
[redacted]

USSID 101, Annex A — Prescribes the voice-transcriber copying procedures when using an AG-22 data-preparation device.

USSID 101, Annex B — Prescribes the manual-Morse intercept operator's copying procedures when using an AG-22 data-preparation device.

APPENDIX A

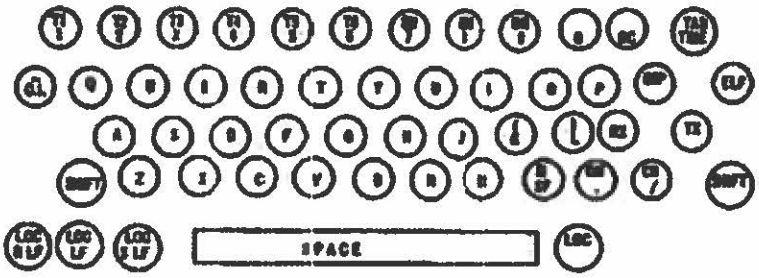
IMPROVED AG-22 TERMINAL SYSTEM



~~SECRET SPOKE~~

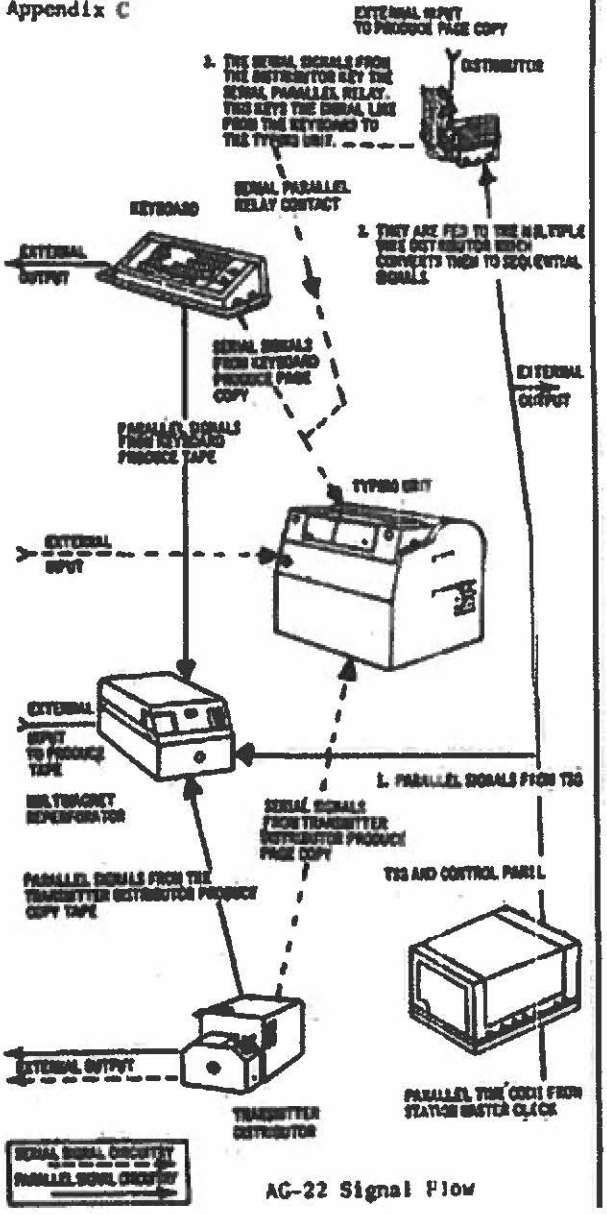
Appendix B

AG-22 - DATA PREPARATION SET



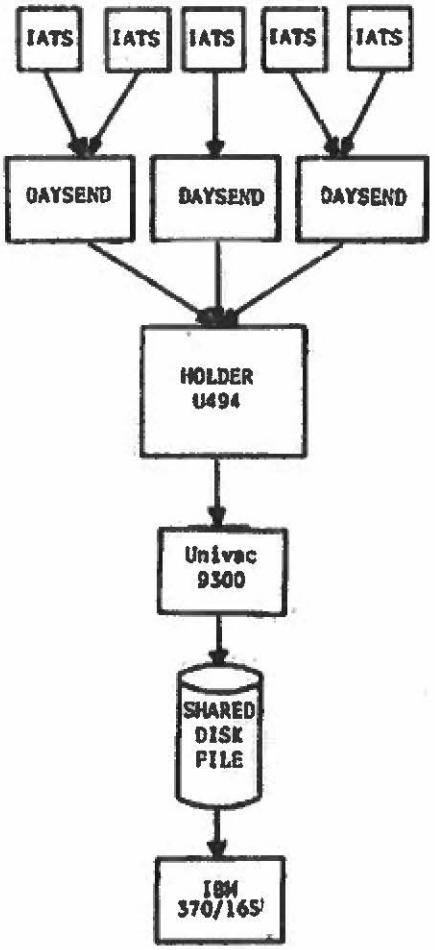
Typing Unit Keyboard

Appendix C



AG-22 Signal Flow

Appendix D



Data Flow from IATS Sites to GAPS*

*For site feedback, simply reverse the direction of the arrows.

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

Appendix E

CAVETOWN EDIT MODULES

Output Routing Indicator - To be determined [redacted] by tag:

Tag	Description
[redacted]	Magnetic tape to U1108/1110 or [redacted]
X	Drop the message from the file [redacted]
[redacted]	[redacted] and U1108/1110; [redacted]
D	Delete from the update file-accounting only
-	(Blank) Output to data base for storage only

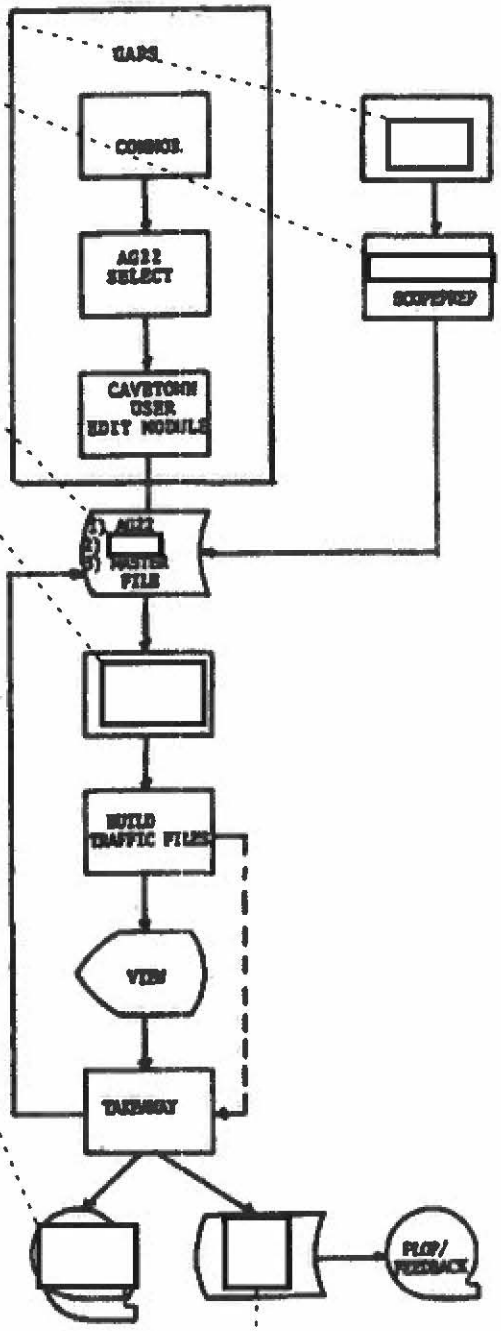
[redacted] *Conversion* - This routine is required for nonstandard [redacted] alphabets, e.g., Arabic. If required, specify the alphabet desired.

Delete Word Module - This will eliminate undesired data elements that occur within records (ST, AA, GA, OK, etc.). Place the desired terms in word-length order. [redacted]

Dedupe Word Module - This will eliminate undesired words that occur in consecutive positions within a record. This can also be specified for [redacted]

PL 86-36/50 USC 3605

Appendix F



OTOE Processing Flow

EO 3.3b(3)
EO 3.3b(6)
PL 86-36/50 USC 3605

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

EO 3.3b(3)
EO 3.3b(6)
PL 86-36/50 USC 3605

SECRET SPOKE

Appendix G

G5 DAILY AG-22/IATS PROCESSING

Perhaps at this point an example of G in-house processing (OTOE) will give a clearer picture. The following process is being used on G5 [redacted] The entire process is carried out on the IBM-370 computer.

Inputs

1. *AG-22/IATS* -- The processing cycle is once-daily, with the exception of weekends, where on-line storage retains intercepted traffic for up to 3 days. G5 analyst/editors use two IBM-3270 visual-display units for viewing, text editing, correcting, and deleting [redacted] selected by the GAPS/CAVETOWN edit modules. The selection of messages presented to the screen is based on:

[redacted]

2. [redacted] To take advantage of viewing electrically-forwarded non-AG-22/IATS intercept, [redacted] that is compatible with AG-22/IATS data. [redacted] is then merged with the daily AG-22 intercept prior to the BUILD procedure in OTOE. This step then provides the G5 analysts with a "window" into [redacted]

3. The Master File allows selected messages to be retained on-line for analyst rescan if necessary.

4. *AG-22/IATS Processing* - Scope Editing: AGEDIT is the interactive GRAPHIK program initiated in the G5 DOP where the two IBM visual-display units are located. The editors have basically two files to edit daily: [redacted] and IATS. These files have been built from IATS data coming into DAYSEND and HOLDER through the CAVETOWN edit modules; [redacted] The two files are then merged into a single standard format. The analyst/editors scan each message in the data set and hand-log each new message as it appears. They further determine whether to drop the messages or to send them on to the required output upon the completion of the edit. [redacted] Virtually all other messages which are retained involve further editing, including: correction of spells or phonetics, [redacted] Finally, material which is not [redacted] is flagged for deletion from the message. Upon the completion of the edit, the TAKEAWAY process is run and the edited messages are written off to the designated file(s). The edit of the previous 24 hours [redacted] and IATS requires approximately 5 analyst hours daily. [redacted] is performed automatically following the TAKEAWAY. After the selection is made from the [redacted] on-line data set into a CRITICOM-acceptable format, the messages are passed on-line to HOLDER and transmitted [redacted] by CRITICOMM.

Bibliography (in chronological order)

GAPS Documentation, July 1974.

"More Timely AG-22/IATS ADP Support," AG-22/IATS Processing Study Group, 8 October 1975.

Cecil Phillips, "Musings About the AG-22/IATS." *C-LINERS* (C Group Machine Processing Information Bulletin), Vol. 3, No. 7, August/September/October 1975. Reprinted in *CRYPTOLOG*, March 1976.

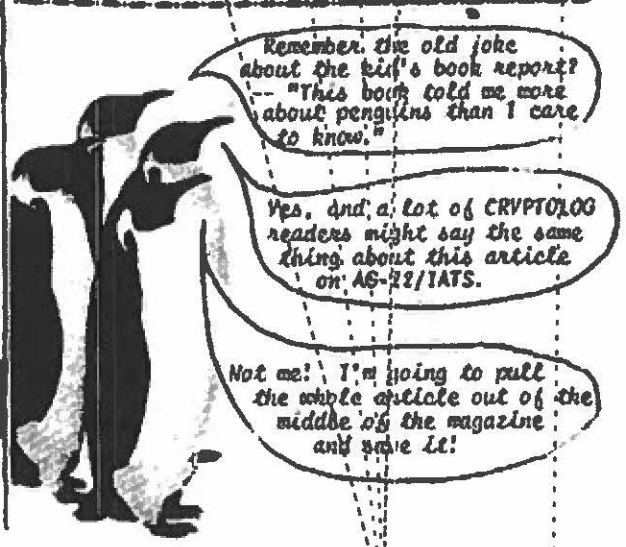
[redacted] "What's Wrong with AG-22/IATS?", *C-LINERS*, Vol. 3, No. 8, Winter 1975. Reprinted in *CRYPTOLOG*, May 1976.

"Comments as Requested (More on the AG-22/IATS)," *CRYPTOLOG*, June-July 1976. Individual comments by [redacted] Wayne E. Stoffel, [redacted] Tom McGrath, [redacted] [redacted] Frank Hyland, [redacted] and John Capell.

Bill Davis, ". . . And *Still* More Comments! (On the AG-22/IATS Question)," *C-LINERS*, Vol. 3, No. 9, Spring 1976. Reprinted in *CRYPTOLOG*, September 1976.

[redacted] "Another Word on AG-22," *CRYPTOLOG*, October 1976.

Cecil Phillips, "The Last Word on IATS?", *CRYPTOLOG*, April 1977.



SECRET SPOKE

PL 86-36/50 USC 3605