

GBPPR 'Zine



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"I had no contact with the governor or his office, so I was not aware of what was happening. It's a sad day for Illinois. Beyond that, I don't think it's appropriate to comment."

"I know he's [Obongo] talked to the Governor and there are a whole range of names, many of which have surfaced and he's has a fondness for a lot of them."

--- Top quote is from Barack Hussein Obama (a.k.a., Barry Soetoro, a.k.a., Barry Obama, a.k.a., Barack Dunham, a.k.a., Barry Dunham) at a December 9, 2008 press conference. Bottom quote is from David Axelrod on the November 23, 2008 edition of FOX News Sunday discussing the Magic Negro's "replacement."



And Patricia Blagojevich was pulling in \$100,000 a year "working" for a "charity," but let's talk about Sarah Palin's parking tickets instead!

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Activation and deactivation are via TTY input messages.

5.163 Every 4 seconds, the RADR feature is activated. A test call is generated on a randomly selected incoming trunk. Attempts to establish a connection which take more than 3 seconds between the incoming test call and a receiver are termed delays.

5.164 The program is entered every 4 seconds from system operational control software to determine test results of the previous test call, if one occurred. A check is first made to see if RADR has been inhibited. If so, control is returned to system operational control software; otherwise, another check is made to determine if a test was performed during the last 4-second interval. If so, traffic counts associated with the test call are administered. After processing the test results, including the setting of the TOC02 flag if the threshold value was exceeded, control is returned to generate a trunk network number for the next RADR test.

5.165 Entry is made every 100 ms from system operational control software to generate a suitable trunk network number. If a satisfactory trunk network number is not found or until the 4-second entry to simulate the seizure occurs, a total of 120 trunk network numbers are considered before a test call is skipped.

5.166 Every 30 seconds an entry is made from system operational control software to update the signal distributor points on the network management indicator circuit for RADR failure percentage display.

5.167 Hourly, an audit of the up-down failure counters and result registers is performed. Only those registers of valid receiver types are audited. The purpose of this audit routine guarantees that the up-down counter containing the number of test failures in the last 50 tests are correct.

5.168 Every 5 minutes, entry is made from the network management program to determine if any threshold values have been exceeded in the last 5-minute interval. If so, a request is made for printing an NM17 output message. The exception indicators are zeroed and control is returned to the main program.

MASTER CONTROL CENTER SOFTWARE

A. General

5.169 The master control center software contains programs which administer the input and output functions associated with the following master control center control and display panels:

- 1A Control and Display Panel
- Trunk and Line Test Panel
- Supplementary Trunk Test Panel
- Auxiliary Test Frame
- Manual Test Trunk Panel.

5.170 The master control center group of programs monitors the state of keys, lamps, and switches via flip-flops and scan points in the processor peripheral interface frame. These flip-flops and scan points are arranged in two matrices: the control and display matrix, and the scanner and signal distributor matrix. The recognition of a state change results in the reporting of the change to the proper client program that performs MCC-associated display action.

B. Master Control Center Software Interface

5.171 Manual actions performed by the craftsman at the MCC and the control panels are detected by the common control and monitor program (MCCM) via the matrices. The state change information is reported to the appropriate program.

5.172 The software interface between the master control center software and other system software is depicted in Fig. 42.

5.173 The system control software enters the MCCM program every 100 ms to verify switch changes and perform 1-second scans. This entry also controls the 1-minute work, if any, such as flashing lamps and printing messages pertaining to power status.

5.174 The MCCM program is entered from the fault recovery software when:

- (a) Out-of-service lamp is to be lighted
- (b) Out-of-service lamp is to be extinguished

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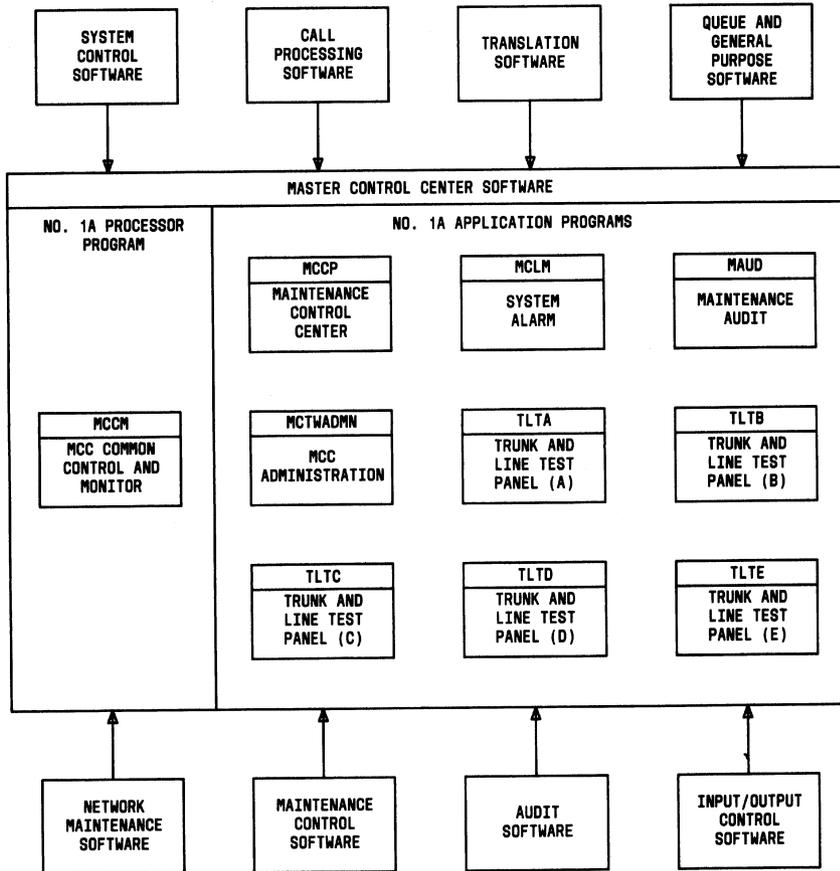


Fig. 42—Master Control Center Software Interface

- (c) Unit is to be restored.
 - Overload data
 - Translations data
 - Scan point data.
- 5.175 The MCCM program interfaces with the application programs via the process application transfer table. The MCCM program interfaces the application programs to obtain the following information:
- 5.176 The system control software enters the maintenance control center program (MCCP) every second for updating the lamps on the panels.
- 5.177 The call processing software is interfaced to

perform the routines which will process the test call, such as digit analysis and ringing.

5.178 The translation software is interfaced to provide translations on the test call requested at the panel.

5.179 The queue and general purpose software is interfaced by the master control software whenever a change of state is detected on the test panel key.

5.180 Whenever a failure is detected on a signal distributor by the network maintenance software, the master control software is interfaced to provide a TTY printout.

5.181 The audit software interfaces with the master control software to provide scheduled audits.

C. Master Control Center Software Function

5.182 The MCCM program is organized into two functions for the administration of key requests, lighting and extinguishing of lamps, and operation of switches. These functions are initiated once every 100 ms by the system control software. The operation of keys on the master control console panels are detected by a periodic scan of the control and display matrix. The recognition of a state change is reported to the client program.

5.183 Scan points and signal distributor points are periodically scanned for state of changes in switches. If fault recovery action is required, the change of state is reported to the appropriate fault recovery program. The MCCM program administers the lighting and extinguishing of the switches and out-of-service lamps.

5.184 The MCCM provides TTY output messages when there is a power alarm, power off, and power restoral.

5.185 When a diagnostic has been completed by the fault recovery software, MCCM is reentered to determine if the unit can be restored. If the diagnostic is not completed within 7 minutes, MCCM extinguishes the ACK lamp on the panel and prints a time-out message to inform the craftsman that the acknowledgment has timed out but the request is still in progress.

5.186 The MCC lamp routines detect changes in the control and display matrix and update the

corresponding item in memory. After memory is updated and if the MCC is in service, the data is set up for the peripheral order. The order is then sent to the client program to perform the lighting function.

5.187 When a key change is detected by the MCCM periodic scan of the processor peripheral interface control and display matrix, a transfer is made to the client program to serve the key request. After the key request is processed, the client returns to MCCM, and the scan action is continued.

5.188 The MCCP program performs the administrative actions on the keys and lamps on the No. 1A system status panel. It provides TTY output messages which support the key and lamp operations.

5.189 System alarms are initiated and reported by the system alarm program (MALM).

5.190 The maintenance audit program (MAUD) performs audits which ensure that the supervisory programs report the changes of nontrunk ferrets.

5.191 The administrative functions performed by the MCC administration program (MCTWADMN) are:

- (a) Service routines: Perform application function for the MCCM program.
- (b) MCC control and display: Makes reports of status changes in the control and display matrix and processes certain key requests on the system status panel.
- (c) TTY input message response: Responds to TTY input messages pertaining to program control flags associated with the system status panel.

GROWTH SOFTWARE

A. General Purpose

5.192 Within any given ESS switch central office, the wire center may have a unique set of engineered equipment. When the office grows, the amount of equipment changes. Since it would be expensive to rewrite the program every time an additional frame of equipment is added, the basic program (generic) is designed to treat all informa-

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tion about quantities of office equipment as data which can be changed as the office grows. Growth programs provide the required operations to change this information as the office grows. These programs maintain uninterrupted telephone service during relocation of new equipment and other system upgrading which either replaces or disables normally operating equipment. Growth programs also provide operations necessary during the cutover of a central office. Refer to Fig. 43 for an illustration of the interfacing of the growth software subsystems.

B. Network Growth Program

Primary Functions

5.193 The primary functions of the network growth program (NETG) are as follows.

- (a) To respond to certain input messages from the maintenance TTY by making the specified switching network frame maintenance busy
- (b) To respond to other TTY requests by restoring to service a specified network frame previously made busy
- (c) To print out on the maintenance TTY hourly, or on demand, the identification and busy/idle status of those frames of the switching network which are affected by make-busy messages.

Principles of Operation

5.194 In response to a frame make-busy input message, NETG will busy-out all the network B

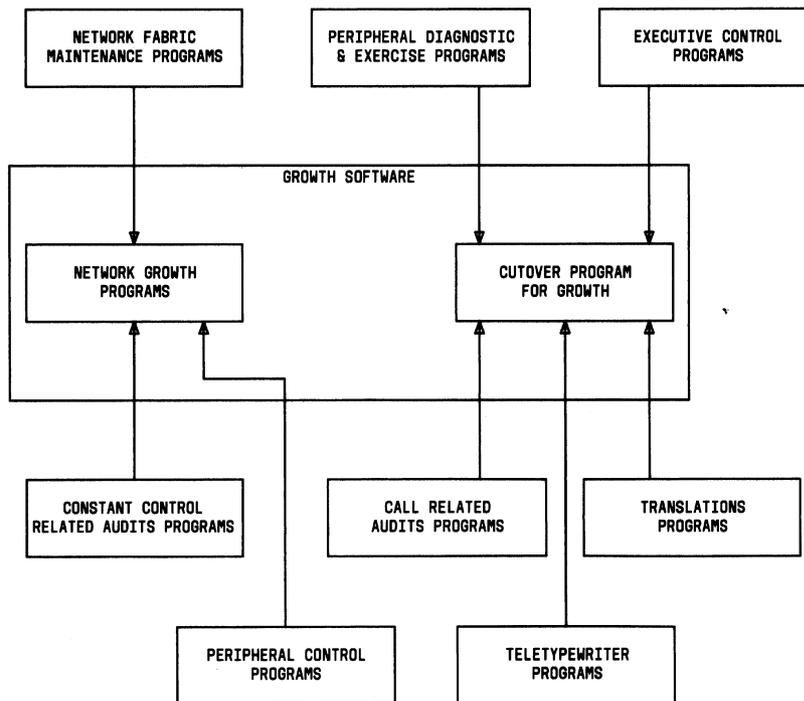


Fig. 43—Growth Software Subsystems Interface

links associated with the specified frame. When a TTY message is used to make busy a network frame, no network connections can be made through the specified frame after the input message has been accepted, although all calls already connected through the specified frame are not affected.

5.195 When a connection between any two network terminals is to be established, the network hunt program (peripheral control) examines a flag word which is set when any frame in the office is maintenance busy. If the flag is not set, the patch can be hunted in the normal way. However, if a frame is out of service and it is associated with one of the networks under consideration by the network hunt program, the appropriate routine in NETG will modify the A-, B-link busy/idle word to make busy all the B links associated with the busy frame. If the call involved a line to trunk path, and either the line switch frame or trunk switch frame associated with the line or trunk was maintenance busy, the path would be blocked. If a junctor switch frame on one of the networks was maintenance busy, then the call may not be blocked since paths may be available through other junctor switch frames.

Input/Output Program Control

5.196 Via a TTY input message, the network fabric maintenance program determines that a frame is to be removed from service and then transfers program control to one of four routines in NETG, depending upon whether the input request is to make busy one trunk switch frame, one line switch bay, one line junctor switch frame, or one trunk junctor switch frame. If the input message is valid and specifies a frame present in the office, a message signifying acceptance of the message and execution of the action requested will be printed on the TTY. If the message is invalid or specifies a frame not present in the office, an appropriate message signifying rejection of the message will be printed. Any frame which has been made busy can be restored to service by typing a TTY message. The particular message will result in a transfer to one of four routines in NETG, depending upon whether the input request is to idle one trunk switch frame, one line switch bay, one line junctor switch frame, or one trunk junctor switch frame. As before, acceptance or rejection of the message is shown. A TTY message will be printed in response to a request for the status of the network status via the TTY. The message will show, for any network frame affected by a make-busy message, the busy/idle status of all the switch blocks on the frame.

Audit of Out-of-Service Tables

5.197 The NETG program contains its own audit routine which serves three basic functions as follows:

- (a) To check the validity of the contents of the flag word, the network indicators, and the out-of-service tables, correct when necessary and print error messages to help trace problems
- (b) To check the out-of-service data and print out the status information when requested via a TTY message as well as hourly on request from network fabric maintenance
- (c) To check the out-of-service data after the processing of a TTY message to restore to service. The response to a message to restore to service is such that only the contents of the out-of-service tables are changed; the network indicators and the flag word are not touched. This updating job is left to the audit routine. Any discrepancies encountered by the audit will be cleared up and error messages will result.

There are two entry points for the audit routine. The first entry point is for audit 6, whereby idle messages are handled. This entry is used to print a TTY message indicating the status of any network frame, whereas the other entry is used to print hourly and other status messages. Basically, the audit routine restores to the idle state any data which contains conflicting information.

C. Cutover Program for Growth

Primary Functions

5.198 At times it is necessary to transfer groups of subscriber lines from one central office to another. The primary instance of line transfer occurs when a new central office replaces an existing office. In order to maintain uninterrupted telephone service when such a transfer occurs, subscriber lines must be connected to both the old and the new offices (where the old office is the one being transferred from, and the new office is the one being transferred to) for a period prior to cutover in order that line connections to the new office can be tested while switching functions for these lines are performed by the old office. These lines must be kept functionally isolated from the new office and serviced by the old. The cutover

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program for growth (SACT) provides this isolation. It also provides the mechanism for effecting immediate change of state of lines from isolated (inactive) to supervised (active), or vice versa. The SACT routine provides the capability of accessing isolated lines from that certain test facilities. The cutover program provides the office with the capability of reverting from a post-cut state (state of office after cutover has occurred) to the precut state (state of office before cutover has occurred). This capability is provided to ensure service to lines in the event of trouble indications occurring immediately after cutover. After all translation information in the old office for transferred lines is removed, the cutover program is inactivated.

Cutover Procedure

5.199 The transfer of lines is accomplished by typing a precut message and throwing the master control console key CUT 0 to the proper position. When both offices involved in the transfer have the cutover program for growth, the line transfer can be reversed, if necessary, by resetting the CUT 0 key to the ON position and typing a post-cut message. An inquiry message can be used to determine the status of various indicators. The response tells whether the cutover program is activated or not and indicates office state (precut or post-cut) and state of the cut keys.

5.200 Directory numbers are in groups of 1,000 for translation information. Thus when an office is being replaced, it is desirable to switch all lines simultaneously.

Program Control

5.201 Program control is passed to a SACT routine for handling ESS switch-CUT messages. This routine simply records receipt of the message, updates the message indicator, and obtains status information if requested.

5.202 The cutover audit of the program assures that inactive lines are kept isolated from the switching machine by maintaining cutoff contacts of all lines in the office in the proper state—open for inactive lines, closed for active lines—according to translation information received. The audit has two modes: routine and demand. The routine mode can be entered via a TTY message or maintenance control during routine audit cycle. Peripheral order buffers

are used to hold orders to open or close cutoff contacts. The demand mode of the cutover audit can be entered on a high priority basis via a TTY message requesting that line transfer be performed.

5.203 As soon as audit scratch pad is available, the cutover program is entered from one of the call related audits (SADT) for the purpose of actually processing an ESS switch-CUT message. The function of this routine is to put all of the line cutoffs in a precut or post-cut status, depending upon the message. Therefore, it performs all the hardware transactions for transition from precut to post-cut or vice versa.

5.204 To make line transfer independent of the order in which the message is entered and CUT 0 key thrown, an E-level routine is entered to check for their occurrence. When a precut or post-cut message is received, this routine checks the state of the CUT 0 key. If it is in the appropriate position according to the message received, ie, the key position and the most current message agree, the demand mode of the cutover audit is requested on a high priority and the office state is reversed.

5.205 The network matrix exercise program (NMMX) exercises the relay matrix in the line switch frames by setting up a half path to a line in the cutover state. It is necessary for NMMX to know whether to leave the line cutoff opened or closed. Thus at this point program control is passed to a routine in SACT to determine whether to close the line cutoff when it is exercising the matrix.

5.206 Another entry is entered when an OFF-HOOK is detected on a precutover line. This routine sends out a peripheral order buffer to open the network path or the cutoff, since if the cutoff had really been open the OFF-HOOK would have been undetected.

GENERIC UTILITY SOFTWARE

A. General

5.207 The generic utility software provides the craftsman with full access to data within the system for use in support of system maintenance. The data access functions include:

- (a) Printing of data associated with peripheral order buffers, call registers (CRs), and signal distributor and scanner controller enable words

- (b) Data transfer (copy, dump, load)
- (c) Dataset (create, save, access)
- (d) Freeze (freeze block of data)
- (e) Overwrite (make permanent data changes).

B. Generic Utility Software Interface

5.208 Figure 44 illustrates the interface between the generic utility software and other system software.

5.209 The 1A processor generic utility program (GULP) interfaces with other 1A processor common systems software and with the 1A application software via the applications transfer table.

5.210 Program interfacing occurs between the 1A common system program and the 1A application program when peripheral units are involved. The GULP program passes the utility messages pertaining to the peripheral units and builds an intermediate buffer table. The address of this buffer is passed to the application program.

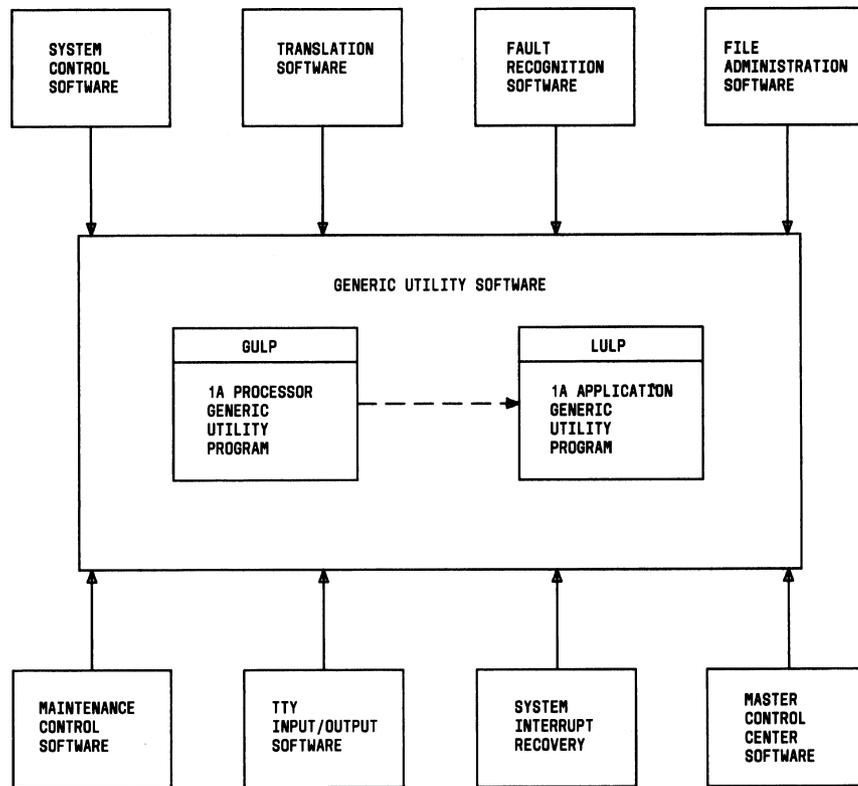


Fig. 44—Generic Utility Software Interface

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5.211 The functions provided by the interfaced 1A processor common systems software include:

- Off-line configuration changes
- Transfer of data to and from file stores
- Copy functions
- Place out-of-service files in update mode
- Paging and scheduling
- Display status of MCC matrix
- Tape update.

5.212 Whenever a peripheral utility function is to be performed either on base level or G level, an entry to the peripheral utility execution routines is made via the transfer table.

5.213 The local generic utility program (LULPUTIL) is entered from GULP when a utility request is initiated to obtain a 5-ms entry from the input/output control program for computing the time allowed for utilities over the next 5-ms period.

5.214 Other application software interfaces with LULP to provide:

- Translations
- Memory addresses.

C. Generic Utility Software Function

5.215 The GULP is a manually initiated program accessed via the input/output control software which requests the maintenance control software to page in the utility programs from file store. The GULP receives 3-ms segments of time from the maintenance programs for execution.

5.216 The functions of GULP are performed on G level (each function depends on G-level interrupt). The estimated time required to execute all the utility functions are controlled by a utility flag. When utility flags are active, the PROGRAM OFF-NORMAL lamp on the MCC panel is lighted.

5.217 The 1A processor generic utility program contains six related routines.

- Main memory resident
- Paged message processor
- Utility paged delayed verb execution
- Utility paged immediate verb execution
- Paged data set procedure
- Paged overwrite procedure.

5.218 An automatic overwrite mechanism is provided in the event an overwrite causes problems that are severe enough to cause a phase of memory initialization. On low-level phases, overwrites of main memory in test state are removed; the overwrite procedure is not terminated. On higher level phases, all overwrites are removed and the overwrite procedure is terminated.

5.219 The LULPUTIL program is modularly designed into four program units:

- G-LEVEL TIME CNTL
- PARSER
- DUMP EXECUTION
- PRINTER.

5.220 The G-LEVEL TIME CNTL unit performs three basic actions:

- Computes operating time for utilities
- Computes the number of cycles available
- Cancels the low priority J-level program entries.

5.221 The PARSER unit passes the dump messages pertaining to the peripheral order buffers, CRs, and enable words in the output buffer.

5.222 The DUMP program unit locates and stores the data for the peripheral order buffers, CRs, and enable words in the output buffer.

5.223 The PRINTER program unit administers the printout of the data.

RINGING, TONE, AND RECORDED ANNOUNCEMENT MAINTENANCE SOFTWARE

A. General Purpose

5.224 The primary purpose of these programs is to monitor and test equipment associated with ringing, tone, and recorded announcements. Tests provided by the ringing and tone plant maintenance programs ensure the system is always provided with ringing current, dial tone, audible ringing tone, high tone, low tone, call waiting tone, busy tone, intrusion, receiver-off-the-hook tone (ROH), and NU-TONE tone. The supervisory scan program provides tests for trouble-detecting capability on a daily basis and, upon detecting a fault, requests a TTY message and a major alarm. The recorded announcement machine in the central office contains various tones and announcements which are used to inform customers and operators of various conditions encountered during the process of a call. Any of these facilities is accessed via tone or announcement circuits which are

located on the universal trunk frame. This facility contains specific scan points which are monitored and processed by the recorded announcement machine program (RAMP) which provides required input to the TTY program for a printout of the fault(s) located within the facilities. Refer to Fig. 45 for an illustration of the ringing, tone, and recorded announcement maintenance software subsystem interface with other software subsystems.

B. Ringing and Tone Maintenance

Equipment Interface

5.225 Being fully duplicated, the ringing and tone plant contains two ringing generators, two tone sources, and two solid-state interrupters, thereby providing an active circuit and an idle circuit. When under program control, all units are powered; however, manual control may be requested by means of keys at the equipment locations. This action overrides the program control, removes power from

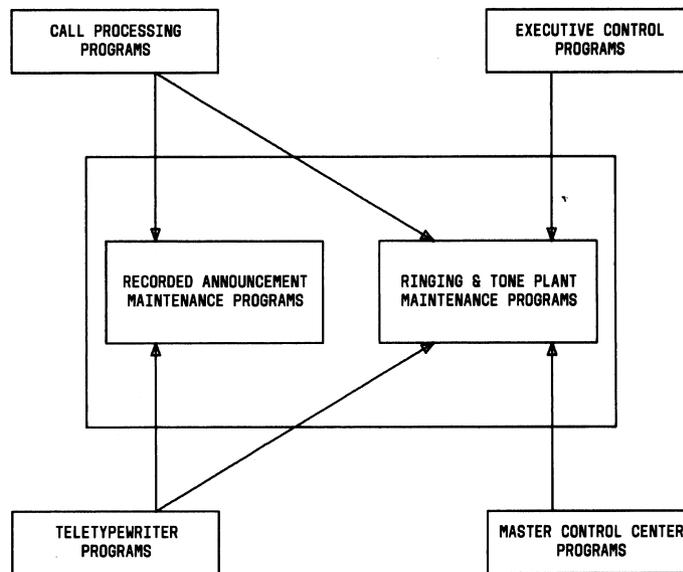


Fig. 45—Ringing, Tone, and Recorded Announcement Maintenance Software Interface

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all units of one circuit, applies power for all units in the other circuit, and connects it to the distribution network.

5.226 Solid state logic provides the timing for the solid state interrupter which interrupts the ringing current. The interrupt for tone uses solid state logic to operate relays which, in turn, interrupt the tone current. Monitors exist that check the output of each ringing generator and one "low output" monitor that checks each of the tone amplifiers of a circuit. To indicate the ringing phase, ferroids are associated with each solid-state interrupter. In the diagnostic program, relays may be operated to simulate trouble conditions. Load transfer relays are wired in an "up-check down-check" fashion so that if any contact (of a certain set of relays) fails to make or break when appropriate, an indication will be made via certain ferroids. To power an idle interrupter, one transfer relay is released and the other one is operated. The ground cross detection circuit monitors the distribution network of the milliwatt tone supply and the loop checker generator. In order to test these monitors, a trouble condition is simulated by operating a relay.

Ringling and Tone Plant Monitor and Exercises Program

5.227 Program control of the monitoring facilities is provided by the ringling and tone plant monitor and exercises program (TOMK). The primary function of TOMK is to ensure that the system is always provided with ringling current and various tones.

5.228 In order to check the speed of the interrupter, this program is entered every second. On every entry, the interrupter ferroids are scanned and the ringling phase is determined. After a transfer of load, the ringling phase pointer and interrupter are synchronized before attempting to match ringling phases. The matching of ringling phases consists of comparing a scan result with a program store data word, consisting of what the scan should be for that particular phase. When a scan result and the data word match, a pointer is incremented to point to the data word associated with the next ringling phase. The program is entered again one second later and the scan result and the data word are compared. If a mismatch occurs a counter is incremented. An interrupter is marked in trouble after three consecutive mismatches after a failure to resynchronize. The program and interrupter are synchronized when the

ringling phase is determined by scanning the ferroids and then updating the pointer to the data word corresponding to the next ringling phase.

5.229 When one of the ringling and tone plant monitors has detected a trouble in the ringling generator, solid-state interrupter on tone source, a TTY message indicating the type of unit and the unit number is generated.

5.230 Whenever the supervisory scan program detects a loss of output from the ROH tone generator, or a ground cross in the distribution network of the milliwatt tone source, loop check generator or the ringling and tone plant, program control is passed to a routine in TOMK for the purpose of setting up the pool phrase for a TTY error message. A major alarm is sounded and a trouble message indicating the unit in trouble is printed.

5.231 Another entry to TOMK is responsible for switching the ringling and tone units from active to idle or vice versa. In the transfer of circuits, there exists an entry which indicates the signal distributor action per translation and zeros the signal distributor timing counter. Then the program enters a routine to perform the requested signal distributor action for the transfer of circuits.

5.232 In addition to an entry being provided for the diagnostic program, a final entry is provided for the audit of the ringling and tone plant. During an emergency action phase, sometime after all of the relays in the ringling and tone plant have been released, the audit segment of the program is entered; however, the audit can also be requested with a TTY input message.

Ringling and Tone Plant Diagnostic Program

5.233 The purpose of the ringling and tone plant diagnostic program (TODA) is to test the trouble-detecting capability of the monitors in the ringling and tone plant and the ground cross detection circuit on a daily basis. In general, there are two daily main program entries to TODA. One entry is to test the ringling and tone plant and the other is to test the ground cross detection circuit. Testing of the monitors or transfer of the loads can also be requested via TTY entries to the program.

5.234 When program control is passed to TODA in order to test the ringling and tone plant, the

monitors of the idle circuit are checked first. Relays are operated to introduce trouble and the ferroids associated with the unit in trouble are then scanned to determine if the monitor detected the trouble. The scan result is compared with a program store data word. The data is what the scan result should be. If all of the tests are passed, then the load is transferred and a TTY message is printed indicating the monitor is all right. The monitors of the other circuit are then checked. If a test is failed, the load will not be transferred to the failing circuit and a TTY message indicating the unit with the faulty monitor and the faulty monitor itself is printed.

5.235 Since a trouble introduced in the tone source is not immediately detectable by the monitors, noncall register timing is required to obtain the necessary delays. If a register is unavailable, an appropriate TTY message is printed and the test is terminated. If a test is terminated with the introduced trouble still in the circuit, a TTY trouble message is printed. The trouble can then be removed via a TTY input message. Any of the tests that are performed during the daily diagnostic can be requested via the TTY entry to the program.

C. Recorded Announcement Maintenance

Equipment Interface

5.236 For the recorded announcement function, the recorded announcement frame (RAF) interfaces with the ESS switch via service circuits (announcement trunks). The recorded messages are distributed to the switching networks via the tone or recorded announcement circuit, audible ring and recorded announcement circuit, and permanent signal-partial dial holding circuit. Access to the service circuits is via regular route index, trunk group, and trunk network number translations.

5.237 The trunk group number(s) assigned per channel is stored in the RAF unit type 23 auxiliary block which is required for each equipped RAF to store hardware assignment information. A 19-word block is provided in call store to process scan point reports and to control up to 16 equipped RAFs. The RAF control block contains three words to administer timing and one state word (for RAF status and control) for each equipped RAF. Each RAF control word contains such data as channel request number (CHRN), RAF state item, 6-second cycle counter, out-of-service indicator, recorded tone indicator

(RCTN), relay activity bit (RACT), and transition state indicator (TRNS).

5.238 The individual RAF channels are in either a reproduce, record, or maintenance state as indicated by the various assigned scan points. Based on the scan point changes received, the central processor busies or idles the trunk group associated with each announcement channel and controls the channel state (in service or out of service) via the assigned recorded announcement signal distributor points. The central processor responds to the IAM-IDLE input message used for the RAF and its announcement channels to place a RAF channel in service, reinitialize the memory for one RAF, or to reinitialize the entire RAF memory. Associated with the RAF and its announcement channels are various output messages which indicate the status of the trunk groups.

Recorded Announcement Machine Program

5.239 Program control of the recorded announcement facilities is provided by RAMP. Depending upon the status of the various scan points associated with the RAF and its announcement circuits, this program is entered externally at various points in time.

5.240 Depending upon the various conditions or states of the scan points, RAMP is entered via the common systems recorded announcement frame input analysis program (CRFI). Upon checking the state of the frame and the channel request number, the program stores the state word, frame member number, and an end code. If this information is invalid, the program prints a TTY message which indicates an error in translation and then transfers to an initialization routine. However, if this information indicates an operator recording or a 1000-Hz tone recording, the program transfers to a routine which completes the necessary action for that type of scan point. If there is a change on the scan point associated with the voice alarm, the program sets the out-of-service bit for that channel, prints a voice alarm message, and busies the trunk group associated with that channel. Upon detecting a change in the channel request scan point, the program transfers to a routine which completes the necessary action for that type of scan point.

5.241 The RAMP is also entered via a TTY request to idle particular trunk groups associated

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with the indicated recorded announcement channel. Upon receiving this request, the program checks for the RAF member number. If the RAF member number is 99, then the entire recorded announcement memory is initialized; otherwise, the program transfers to a subroutine which checks for a common systems RAF (CSRAF). Upon finding a CSRAF number, a check is made to determine if that feature is loaded in that office. If so, RAMP transfers to the CRFI program to initialize the CSRAF memory; if not, an appropriate TTY message is printed. If the member number is associated with a RAF, then a check of the unit type auxiliary block is made. If this block is built correctly and the channel request number is valid, then an appropriate TTY message is printed. Next, a check is made of the status of the out-of-service bit for that channel. If the out of service is set, the program resets it and prints a TTY message indicating the trunk groups associated with that recorded announcement channel are idle. The recorded announcement channel may be returned to service by releasing the appropriate key.

5.242 When audit 58 (scan point audit) from the maintenance audit program (MAUD) reaches a RAF scanner row (nontrunk program index 2 or 3), program control is again passed to RAMP, which accomplishes the following actions. The program first checks the frame member number to determine whether a RAF or a CSRAF is detected. If a CSRAF member number is encountered, then the program transfers to CRFI. If a RAF is detected; then the state of the frame is checked. If the RAF is found in the transition state (item TRNS set) at the time the audit is requested, a check is made to ensure that a valid real-time break is occurring, since during a real-time break the RAF cannot be audited. If item TRNS is not valid, then it is reset if necessary and the audit continues. If there is a valid real-time break, then the scan pointer and counter (in MAUD) are updated and program control is returned to MAUD. If the RAF is not in the transition state, the T1 and T2 bits for the channel request, voice alarm, record tone, and operator recording scan points are initialized according to the appropriate status reflected in call store. Then the scan point pointer and counter are updated and program control is returned to MAUD.

5.243 In order to check if any trunk group is unnecessarily left out of service, RAMP is entered every hour from the maintenance control peripheral program (MACR). In this routine, each of the 16

RAFs is checked to determine if any out-of-service bits for that frame are set. For those frames which have at least one out-of-service bit set, the frame member number and the corresponding out-of-service bits set are stored in a memory scratch. An output message indicating which trunk group is out of service is then printed via the TTY.

TELETYPEWRITER SOFTWARE

A. General

5.244 The TTY software serves as the input/output intermediaries between the ESS switch and the craftsperson.

5.245 Both input and output TTY messages are controlled by the TTY software. Input messages are manually initiated at the TTY terminal by the craftsperson, whereas output messages are generated by a client program. The TTY input and output messages, a medium of communication between the craftsperson and the ESS switch, are used for:

- Reporting status of system
- Requesting system action
- Updating customer service and translation information
- Reporting traffic data.

B. TTY Software Interface

5.246 Figure 46 illustrates the software interface between the TTY software and the TTY input/output control and client programs.

C. TTY Translation Input/Output Program (TTYM)

5.247 Whenever an input message is typed and has been identified by the input/output software, TTYM is entered to perform a translation of the input message. The input translation routine parses the message according to certain syntax rules into message fields and parameters. The parsing procedure also separates the message keywords and arguments, converting each keyword into a numeric code which is then used internally to represent the keyword. The translation routine identifies the message verb in the input message directory tables. The translated arguments are then stored in a block of memory referred to as the input message data area.

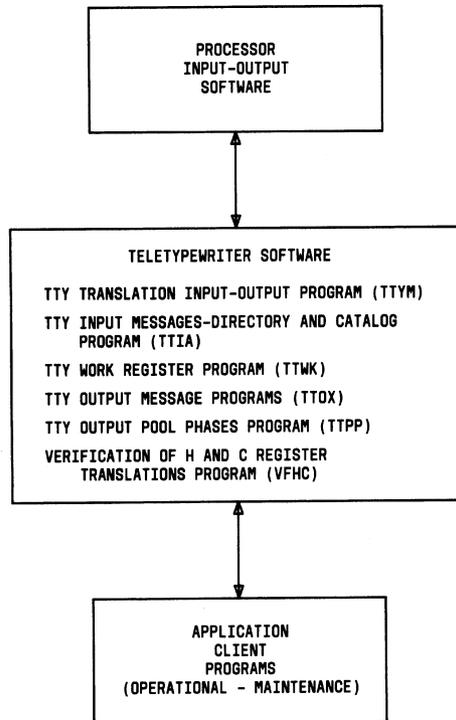


Fig. 46—TTY Software Interface

5.248 The TTYM program gives the start address of the message data area and the identity of the input/output channel to the client program. The client program is allowed a full base level program segment in which to process the input message. After the client program completes processing the input request, it releases the message data area memory and returns an appropriate acknowledgment to the input translator via the top of the return stack.

TTY Input Messages—Directory and Catalog Program (TTIA)

5.249 The TTIA program consists primarily of the data required to identify and translate the

TTY input messages. Its structure consists of two program units:

- (a) Input Message Directory Table, and
- (b) Input Message Catalog.

Input Message Directory Table

5.250 The input message directory table (one entry per input message) provides the information needed to identify the TTY input message. Each table entry contains an encoding of the input message and a pointer to the respective input message catalog entry. This table is utilized by the TTY input message identification routine.

Input Message Catalog

5.251 The input message catalog unit provides the information needed to translate and store input message data, and initiates the appropriate client program. This catalog is utilized by the TTY input message translation routine.

Teletypewriter Work Register Program (TTWK)

5.252 The TTWK program is divided into two separate functions:

- Administration of TTY buffer registers (TBRs) and TTY work registers (TWRs)
- Processing of TTY input messages.

Administration of TWR

5.253 An entry is made to TTWK once every second if the associated control flag is active to initiate the TTY input message client program. The program first checks the TWR to determine if it is in an active state; that is, the client program is in progress. If the TWR is inactive, the TTY input message TBR entry is located, the data word is stored, and the client program is initiated. However, if both the TWR and TBR are inactive when the entry is made, the control flag is cleared and the program returns control to the system control program.

5.254 If the client program to be initiated by the TTY input message is inactive, TTWK checks the interrupt maintenance flag before initiating the client to process the message. In the case of a mainte-

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nance interrupt while a TTY client program is in progress, TTWK deactivates the TWR, releases the maintenance TTY, and returns the NA acknowledgment. The acknowledgment is a signal to the craftsman that the input message has been aborted.

5.255 The TWRs buffer only one input message at a time. When TTWK is entered at its loading routine and the TWR is active, transfer is made to the translation program. However, if the TWR is available for loading the message, the data is loaded and the maintenance TTY is suspended until the client program has completed its task. The control flag is set before returning control to the translation program.

5.256 The TWR is also used to buffer an output message generated by the client program.

Administration of TBR

5.257 The TBR is loaded with the client program start address, one word of translated data, and the terminal member number. This action results in the client program being activated.

Input Message Administration

5.258 The following requests are processed by TTWK:

- (a) Read scanner row or scan point: The output message contains an image of the scanner row in memory.
- (b) Signal distributor operation: The message causes operation of a signal distributor point.
- (c) Central pulse distributor operation: The message changes the status of the designated bipolar central pulse distributor scan points.
- (d) Verify centrex digits: The message reformats and identifies centrex digits.

TTY Output Message Programs (TTOx)

5.259 The TTY output message programs contain the information needed to format and translate the data for the output messages. The output translations are performed according to translation units specified in the corresponding catalog entry. The translated data is stored in the empty output

message registers. When a translation is completed, the registers containing only the raw output data are idled and the translated output message is placed on the output link list.

5.260 The TTY output message programs are listed in Table C.

TTY Output Pool Phases Program (TTPP)

5.261 The TTPP program contains the pool phases used by the TTY output messages. The pool table consists of 256 phases, each indexed by a phase number. It provides client programs with the capability of specifying various sets of American standard code for international interchange characters for printing.

Verification of H and C Register Translations (VFHC)

5.262 The VFHC program performs actions which verifies the H (busy hour traffic schedule) and C (continuous hour traffic schedule) traffic register data.

5.263 Three input options are provided to the craftsman for obtaining the data printout. They are:

- (a) List: Lists all the type measurement code, equipment, group, or office count number.
- (b) Search: Identifies a specific type of measurement code, equipment, group, or office count number.
- (c) Abort: Aborts the output listing requested by either the list or search options.

5.264 The entry into the program is via the verification TTY input message. If the input message parameters are invalid, a no good (NG) output message is returned to the craftsman. If valid, the input parameters are stored in the T-scratch memory locations.

5.265 If the list option is requested, and there is not a higher priority request being serviced, the message header for the output message is printed. Each traffic measurement primary translation word is recent hunted. The type measurement code, equipment, group or office count number, and the fast scan indication are moved to the output buffer. An output

TABLE C

OUTPUT MESSAGES

TTY OUTPUT MESSAGE PROGRAM	OUTPUT MESSAGE CATALOG
TTOA	0—63
TTOB	64—127
TTOC	138—191
TTOD	192—255
TTOE	256—319
TTOF	320—383
TTOG	384—447
TTOH	448—511
TTOI	512—575
TTOJ	576—639

segment of one line is printed. A print routine is then called to print additional segments until all have been printed.

5.266 If the search option is requested, a sequential search of the register is made to locate the specific type of traffic. If found, a TTY output message is returned which verifies the translation data.

LIBRARY AND PAGED PROGRAM CONTROL SOFTWARE

A. Library Control Software

General

5.267 The library control software for No. 1A ESS switch (Fig. 47) administers the storage, loading, and execution of special purpose nongeneric programs in a generic environment. The library client programs are initially stored on magnetic tape providing an inexpensive means of bulk storage. From tape, the library programs may be loaded into a special file store area allocated for the semipermanent storage of library programs. The library control system provides for retrieving and controlling the

execution of the library programs (ie, clients) from either tape or file store as conditions warrant.

5.268 There are two basic types of library client programs: those designed to be executed out of a rover program store with a K-code = 36 (referred to as program store 36) and those designed for paged execution (from file store only) out of the program store paging area. Program store 36 programs may be loaded for execution from either tape or file store. Paged programs are loaded for execution from file store only. Even though file store is loaded with both program store 36 type and paged type library programs from tape (using program store 36 as a buffer), no provision is made for the execution of a paged type program from tape.

Library Program Packaging

5.269 The basic execution entity loaded into the 1A processor by the library control system is the library package. A library package consists of from one to eight library programs; each program consists of from one to eight tasks (ie, subprograms). Note

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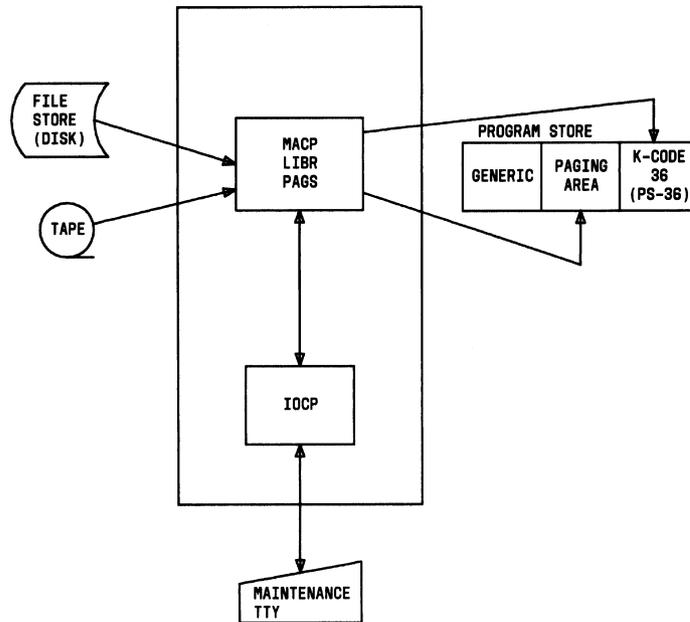


Fig. 47—No. 1A ESS Switch Library and Paging Control

that a library program may consist of one or more assembly units (ie, pidents).

5.270 Program store 36 packages are restricted to no more than 65,536 words (the size of a 64K program store). Paged library program packages have a practically unbounded size, since the size limiting factor is likely to be the amount of file store area allocated for library program storage in any particular office.

5.271 Library program packages are initially introduced into a 1A processor from a tape containing as many packages as necessary. Each package is always uniquely named (with respect to other package names on the same tape) even though the same program name may appear in more than one package. This uniqueness of package names is required so that the specification of a package name, program name, and task number will always clearly identify only one library client. A given library tape

may have a mixed assortment of both program store 36 type and paged type packages. However, a package type must be homogeneous with respect to program type; eg, a program store 36 type package may not contain other than program store 36 type programs.

Library Program Loading

5.272 The library load function of the library control program (LIBR) provides three basic load mechanizations:

- Tape to program store 36
- Tape to file store
- File store to program store 36.

5.273 The loading of a program store 36 program from tape occurs under control of pident LIBR and is the simplest type of load. It involves

copying the memory image of the program store 36 package from tape to memory, performing validity checks, and allocating scratch space to the program store 36 programs from the program store 36 area that is not occupied by the programs.

5.274 Before library programs can be executed from file store, the desired subset of library program packages (program store 36 and/or paged type) must be copied into file store from tape. Loading a library package from tape to file store is also accomplished under control of LIBR. Program store 36 is used for buffering the transfer, requiring that no library programs be active. The loading process performs memory management of the file store area for storage of up to 16 library packages. The size of each package is rounded up to the next multiple of 1024 words; this facilitates recovery from file store mutilation and aids in memory management. The file store library area is partitioned into two sections. The first area contains 16 catalogs used to locate and describe the library packages. The second area contains the actual text of the library package. Each package is stored at a 1024-word (BINK) boundary to aid recovery from mutilation. If the writable store audit (SAWS) detects a mutilated BINK, it is only necessary to reinitialize the area belonging to the library package containing the bad BINK. When the load file store from tape operation is requested, and if a contiguous area in file store can be found (using the first fit algorithm), the package is copied into file store and a catalog entry for it is created. Once the file store has been initialized with a set of library programs, loading program store 36 from file store is much the same as loading program store 36 from tape.

5.275 The LIBR program also supports several file store related administrative functions. Packing of the file store library area can be done to remove external fragmentation and create the largest possible contiguous area of free space. Library packages can be removed from the file store library area to make room for new packages. To guide in the packaging and removal functions, a memory map of the file store library area can be obtained upon manual query of the system.

Library Program Execution Facilities

5.276 The ability to manually initiate and terminate library programs is provided by the library system by interfacing with the MACP and

PAGS. With the appropriate input messages, a library package, a program within that package, and a task within that program can be selected for initiation or termination. The library system processes this input information for validity and then communicates the desired action to MACP.

5.277 A program store 36 type library program is brought into a spare program store which has automatically been configured to K-code 36. The direct execution of the program store 36 programs is performed by MACP as if they were main memory resident generic programs. The MACP provides for multiexecution of clients within a program store 36 package, the number of programs allowed to run at one time being application dependent. Library clients execute in the MACP library class. If the spare program store is needed for generic integrity, it may be seized by the maintenance programs on interrupt level, thereby terminating the library function.

5.278 For paged library programs, LIBR locates (on file store) and provides linkages between the paged clients and MACP/PAGS. At execution time, PAGS loads the paged library program into one of the paging areas in generic program store. The paged client is also executed in the MACP library class.

5.279 An input facility for passing data to the executing library client programs is provided. This facility allows maintenance personnel to pass up to 16 words of data along with miscellaneous control information to a library client by using the appropriate input messages.

Generic Integrity

5.280 Program store 36 resident library clients are often required to interface with generic programs for a variety of reasons. Frequently when transferring from a generic routine back into a library client (ie, from generic program store to program store 36), it is desirable to verify the validity of the library system before returning control to program store 36. Returns to program store 36 are controlled by the library control common traps administrator program (LIBRTRP1) and the No. 1A application traps in generic identification and compatibility tables pident (PGID).

5.281 A library client is allowed to transfer to a generic routine without return trapping if

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the time duration is to be short, ie, no real-time breaks, delayed returns, or time-consuming data manipulations, etc. If the generic routine is to have control for a relatively long period of time, returns to program store 36 are via the traps.

5.282 The library trap contains unique trap points for independent returns to program store 36. The first function of a trap is to retrieve the return address of the library client in progress and to set up failure and wait addresses. Checks are also made to determine the compatibility and sanity of the program store 36 program (ie, library client). If these checks should fail, the return to program store 36 is “trapped” and control is handed to the trap failure address. When the trap checks reveal that a program store 36 hashing is in progress, control is transferred to a wait address from which later attempts may be made to return through the traps back to program store 36.

5.283 In addition to trapping and compatibility functions, pident PGID performs generic identification as a response to the “who are you” input message. Pident PGID is entered to identify the generic program number and issue number.

B. Paging Program Supervisor (Pident PAGESUPER)

General

5.284 The PAGESUPER pident provides all of the run-time functions necessary for the execution of paged programs. A paged client must be a MACP client. Page loading is accomplished with frequent transfers between the executive interface, page loading sequence, and disk administration (pident DKAD) interface, program units of PAGESUPER. The PAGESUPER program actions consist of paging into main memory the required portions of the program: a page directory table, partial page, and, if necessary, CPSECT and subroutines. The PAGESUPER also corrects the contents of the linkage vector tables in the paged program to reflect main memory addresses or relative addresses for this page. Tables so affected include the INTSUB table in the CPSECT, the subroutine directory table and any subroutine private vector tables. The PAGESUPER operates on base level only. It is a MACP client for purposes of beginning to process a paging request. However, most of its work is completed as a result of returns from DKAD or entries from executive control. The PAGESUPER is naturally segmented by its interfaces with file store; it

takes time breaks while awaiting file store request completion. During the INTSUB modification, the computation may continue over more than one time segment. The PAGESUPER program performs time segmenting for this case. The MACP passes one paging request per entry to PAGESUPER; however, PAGESUPER may be working on more than one request at a time.

5.285 When MACP determines that a paged client program is to be run, it enters PAGESUPER. The PAGESUPER program blocks the execution of the client until its paging is complete by placing it in a special wait state. When paging is complete, the client is started.

5.286 Data passed by MACP is used to determine the paging area for the client. After determining that the paging request is legal, PAGESUPER initiates page loading.

5.287 For the remainder of this segment, PAGESUPER sets up and issues the request for the page directory entry from file store. The state vector reflects this on return to MACP. Since PAGESUPER is limited in its number of outstanding file store requests, the program may simply set the state vector to initiate the page directory entry request on entry to PAGESUPER after a time break.

5.288 The next entry to PAGESUPER comes from either DKAD (file store request complete) or executive control (file store request not initiated). The executive control program enters PAGESUPER and requests that the page directory entry be retrieved from file store. The program also verifies that DKAD is still processing all outstanding page directory entry requests (and other file store requests) using the FIND_SPECIFIC macro interface with DKAD.

Partial Page and CPSECT Loading

5.289 Upon completion return from DKAD, PAGESUPER begins partial page loading. This takes place in several steps. The PAGESUPER waits for the completion of each file store request before continuing to the next step. When file store requests are not available, they will be reissued. First, the partial page specified in the page directory entry is requested from file store. Using information in the partial page, a CPSECT may be requested from file store. Upon completion of CPSECT actions, the subroutine directory table is modified to reflect the main memory addresses of the paged programs. If a program has no subroutines, the state vector indicates end of load.

5.290 Subroutine directory table modification takes place upon entry from executive control. First, the CPSECT internal vector table addresses are modified to reflect the main memory addresses of the subroutines. This modification may require more than one time segment to complete. Upon completion, the subroutine directory table is modified to reflect the relative addresses where the subroutines were paged into main memory.

Subroutine Loading

5.291 Each subroutine is then paged into main memory. The PAGES program issues multiple file store requests, requesting as many subroutines as it can at that time. A PAGES entry from executive control monitors the status of loading. Upon completion return from DKAD for the last outstanding request, the state vector indicates subroutine loading complete.

5.292 A separate entry from executive control modifies the subroutine private vector table entries to reflect paged program main memory addresses.

End of Load

5.293 The PAGES end-of-load actions consist of removing the wait state blockage of program execution, set up by MACP on entry to PAGES. This indicates to MACP that the client may be started.

C. Miscellaneous Run-Time Loading Functions

User Paging Information Routines Program Unit

5.294 The PAGES performs the run-time function necessary to provide information about the page loading state to the client program. The function of the GETCPADR macro is to obtain the CPSECT address. The GETPGADR macro obtains the address and size of the paging area. The GETPGNUM macro obtains the current page number. The return from each of these functions is to the client program.

5.295 The routine PAGSGFRA is called to obtain the address and size of the free or unused space on the current page. Client programs may utilize this area of the page for temporary memory storage. The routine is called using the standard CALL_SUB interface.

5.296 To accommodate the disk-paged mode of library operation, the PAGES/ALOC routine is

called by MACP to allocate a paging area for the library class. If the request is successful, the subclass paging area pointer table is changed to contain the address of the allocated paging area. The PAGSDLOC routine is called by MACP to deallocate a paging area for the library class. If the request is successful, the subclass paging area pointer table entry is cleared.

Errors Program Unit

5.297 The PAGES also provides a complete set of error diagnostics through TTY messages to operations personnel to clarify any error that may occur while it is in the process of loading a page for a client. These routines are contained in the errors program units, and are accessed through the error exits from routines in other PAGESUPER peripheral units. When errors are detected during page loading or linking, an applications program is called via a processor applications transfer table (PATT) entry to generate an error message on the TTY. The detected error is corrected, if possible, and an audit routine is requested to check for further errors.

Audit Program Unit

5.298 The audit program unit provides an entry for periodic checks on the self-consistency of the MACP assigned control memory blocks, and the load states of the various clients. Should a control memory block be found mutilated, it is rebuilt using independent information gained by searching the MACP class tables.

Link and Return to Paged Program Unit

5.299 The link and return to paged program unit is called by the client program to pass or return control to another paged program section. Control is passed directly to a paged program that is on the current page except that a segment break may be taken, if requested. When the target address is in a paged program but not on the current page, the MACP control memory block is made ready and page loading begins. The page loading sequence, as described in run-time loading, will be executed.

5.300 Entry to this program unit to perform linking functions to another program section is via the LKPGSECT macro and contains a return address. The RTNSECT macro is used to perform a return function to a paged program section. The return

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address is the address saved by a previous LKPGSECT macro call.

NETWORK MAINTENANCE SOFTWARE

A. General

5.301 The network maintenance software provides for testing and maintaining the network links and switches.

B. Software Interface

5.302 Figure 48 illustrates the interface of the network maintenance software with other system software programs.

C. Network Maintenance Software Function

Network Maintenance Action Program (NMFL)

5.303 The ESS switching network consists of links and switches through which talking or signaling paths are established. The peripheral orders that control the links and switches are loaded in a buffer called the peripheral order buffer. Periodically, at every fifth J-level interrupt, the peripheral

order execution program sends the orders to the appropriate unit. If a failure condition occurs during the execution of a peripheral order, network fault recognition program (NMRF) is entered and processes the peripheral order buffer that contains the failed order.

5.304 The NMRF program deactivates the peripheral order buffer which contains the failure and places on the maintenance unexpected result list (MURL). The NMFL program identifies the failing peripheral order buffer and places it on the MURL. The NMFL program unloads the MURL and series of checks, depending upon the type of failure as indicated by scan point results, are performed.

5.305 In the case of a signal distributor failure, all trunk network numbers associated with the failure are matched with all the trunk network numbers associated with signal distributor orders. If a match is found, a diagnosis of the associated trunk is requested and the program returns to the client failure address. If a match is not found, the program transfers to the client failure address without a trunk diagnostic request.

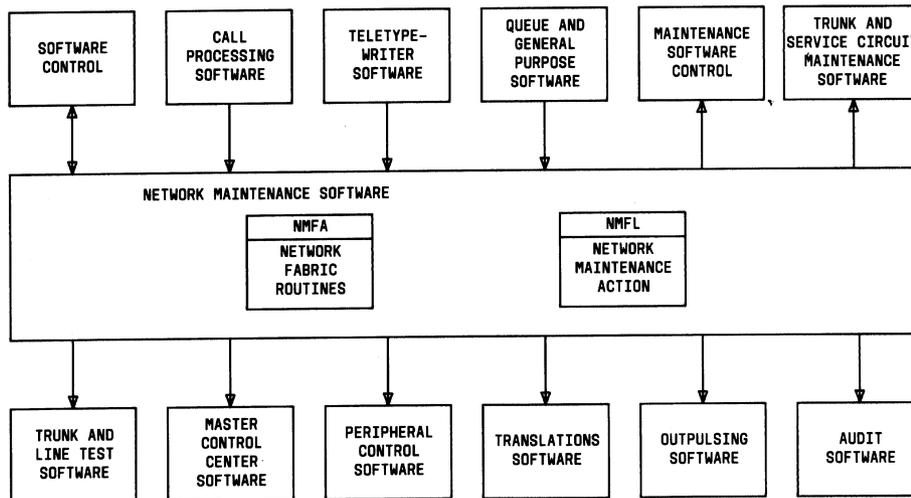


Fig. 48—Network Maintenance Software Interface

5.306 During the processing of the peripheral order buffer which contains the failure, NMFL performs the following actions:

- (a) Identification of the failure activator
- (b) In-depth testing, further isolation, or retrieval on per-path and per-call peripheral order buffer maintenance test failures
- (c) Generation of TTY output messages for notifying office maintenance personnel of the failure
- (d) Error analysis of network switches involved in certain types of peripheral order buffer failures
- (e) Isolation of failure trunks, and request of automatic diagnosis
- (f) Isolation of a failing line and certain failures of automatic line tests
- (g) Restoral of nonfailing trunks
- (h) Restoral of supervision to all lines
- (i) Idling of peripheral order buffer.

Network Fabric Routines Program (NMFA)

5.307 The NMFA program provides the craftsman the capability to remove portions of the network fabric from service and establish partial paths in the network for testing, repairing, and replacing faulty crosspoints in the network fabric.

5.308 The NMFA program performs the following actions in response to TTY input messages:

- (a) Lists incoming trunks that are assigned to an identified trunk switch frame and grid
- (b) Makes busy and removes the links from service by marking the associated bits of information busy in the network map
- (c) Restores links which have been previously taken out of service
- (d) Performs tests on suspected crosspoints and switches in order to establish a partial path in the network frame

(e) Displays the present condition of the link or switch

(f) Prevents F-level interrupts from occurring when removing a concentrator from a line switch frame.

FAULT RECOGNITION SOFTWARE

A. General

5.309 The fault recognition software is implemented when a system F-level interrupt occurs because of a failure in the network peripheral units. The fault recognition programs first determine which peripheral unit is at fault and then reestablishes an operational configuration that will allow the continuation of the interrupted call or maintenance procedure. A diagnostic is requested to be performed on the failed unit at a later time.

5.310 The peripheral units checked by the fault recognition software are the central pulse distributor, signal distributor, peripheral unit bus, scanner controller, network and signal distributor controller, and automatic number identification (ANI) circuit.

5.311 The peripheral units are connected to central control via two bus systems, central pulse distributor bus, and peripheral unit bus. The central pulse distributor bus provides the communication path between the central control and the central pulse distributor community. The central pulse distributor bus consists of the central pulse distributor execute bus, central pulse distributor echo bus, central pulse distributor enable bus, and central pulse distributor enable verify bus. The peripheral unit bus provides the communication path between the central control and the peripheral unit community. The peripheral unit bus consists of the peripheral unit address bus and scanner answer bus.

5.312 A peripheral order processing failure will generate an F-level interrupt. The failure types are given below.

- (a) All-Seems-Well: The all-seems-well message is returned to the central control from the addressed peripheral unit. When a peripheral unit is addressed the all-seems-well response signifies that the unit is being properly addressed via a valid name, matched mode, valid parity, and ex-

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pected received data. The central control accepts the all-seems-well reply, or lack thereof, from each reply bus and records the message in the all-seems-well flip-flop.

(b) Answer Parity: The central control selects the parity result recorded in the answer parity flip-flop associated with the peripheral unit reply bus and checks the result against the parity generated over the data received. The results of the check determine whether proper or improper parity was received.

(c) Autonomous Peripheral Unit: Processing and maintenance work is performed autonomously by the autonomous peripheral unit. If trouble occurs within the unit, it is reported to the central control. The failure is recorded in an associated flip-flop resulting in an F-level interrupt.

(d) Peripheral Sequencer: If during the execution of an order by the peripheral sequencer and a

trouble is detected, a sequencer failure is recorded in the failure summary flip-flop.

B. Fault Recognition Software Interface

5.313 The interface between the fault recognition software and other system software is illustrated in Fig. 49.

C. Fault Recognition Software Function

Central Pulse Distributor Fault Recognition (CPFR) Program

5.314 Whenever a system F-level interrupt occurs and the system interrupt recovery software has determined that the failure occurred within the peripheral units, CPFR is entered. If the peripheral unit failure was due to an actual fault, CPFR retries the order in an attempt to isolate the source of trouble by using various configurations of the central

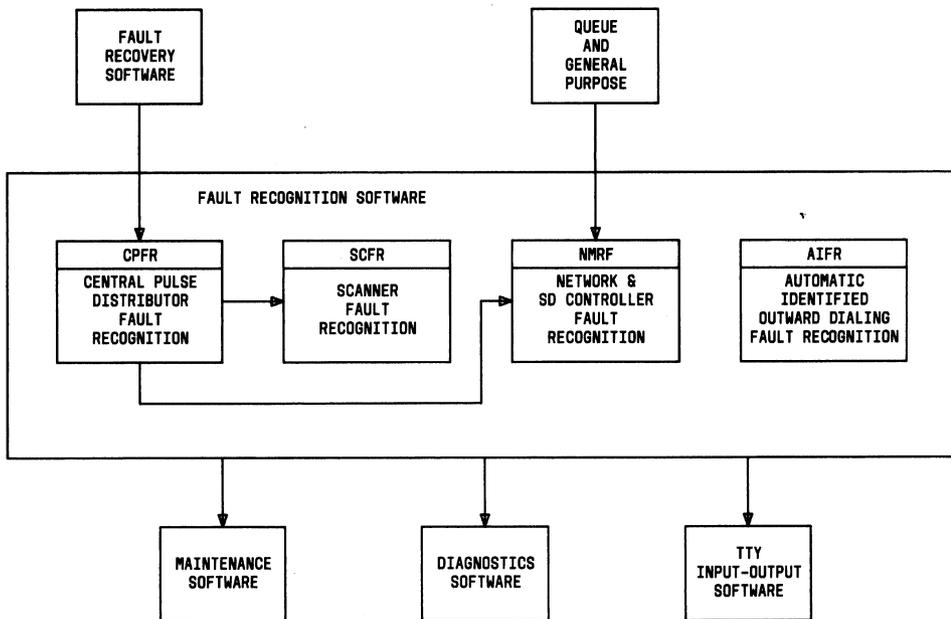


Fig. 49—Fault Recognition Software Interface

pulse distributors and peripheral unit buses. When a good configuration is found, the network routing information is updated and a diagnosis of the faulty unit is requested.

5.315 If the F-level interrupt occurred during supervisory scanning, the scanner enable route is changed and a new bus and controller are selected in an attempt to isolate the trouble. If a scan order caused the failure, a program transfer is made to the network fault recognition program (NMRF).

5.316 Whenever a scanner fault is isolated by the scanner fault recognition program (SCFR), CPFR is entered to perform tests on the central pulse distributor and peripheral unit bus. If the central pulse distributor is found to be at fault, a diagnostic is requested, and the central pulse distributor lamp on the MCC is lighted. If the peripheral unit bus is faulty, it is taken out of service, and its failure is recorded.

Scanner Fault Recognition Program (SCFR)

5.317 The SCFR program is entered from CPFR whenever either an all-seems-well failure message or an enable verify mismatch has been detected. The SCFR program retries the peripheral unit order on all possible routes. If the peripheral unit order is then successful, the route is updated, associated secondary lamps on the MCC are lighted, and a program transfer is made to the maintenance software. However, if there are no routes available to the addressed scanner, a major alarm is sounded, and a TTY output message is printed.

Network Fault Recognition Program (NMRF)

5.318 The basic function of NMRF is to maintain a network configuration in which peripheral unit orders that are addressed to the network and signal distributor controllers are successfully executed.

5.319 At the beginning of each network cycle, NMRF scans the F-scan points of the network, signal distributor, and master scanner controllers. If the scanning function detects a change-of-state in the F-scan points, a failure order is recorded in the peripheral order buffer. The failing order is then processed during the next network cycle. Also, if a controller cannot complete a peripheral unit order within one network cycle, a failure is recorded.

5.320 The NMRF program services TTY input messages that:

- Activate or deactivate the F-level, F-scan, and error snaps
- Inhibit maintenance of frame
- Restore maintenance of frame
- Print F-level, F-scan, and error snaps.

Automatic Identified Outward Dialing Fault Recognition Program (AIFR)

5.321 The AIFR program is entered whenever a trouble has been detected during the operation of the ANI circuit. If the trouble is due to a circuit failure, the program requests a diagnostic of the circuit, and provides a TTY output message to assist the craftsperson in locating the trouble.

5.322 If the originating station is not identified, the program idles the receiver.

5.323 The AIFR services TTY input messages that:

- List ANIs out of service
- Remove ANIs from service
- Restore ANIs to service
- Restore maintenance to receiver
- Remove maintenance from receiver
- Print daily counters on ANIs
- Control failure information in printout.

SYSTEM UPDATE SOFTWARE

A. General

5.324 The No. 1A ESS switch update software updates the system generic with either a full update (introduction of a complete new issue of generic and/or office dependent data).

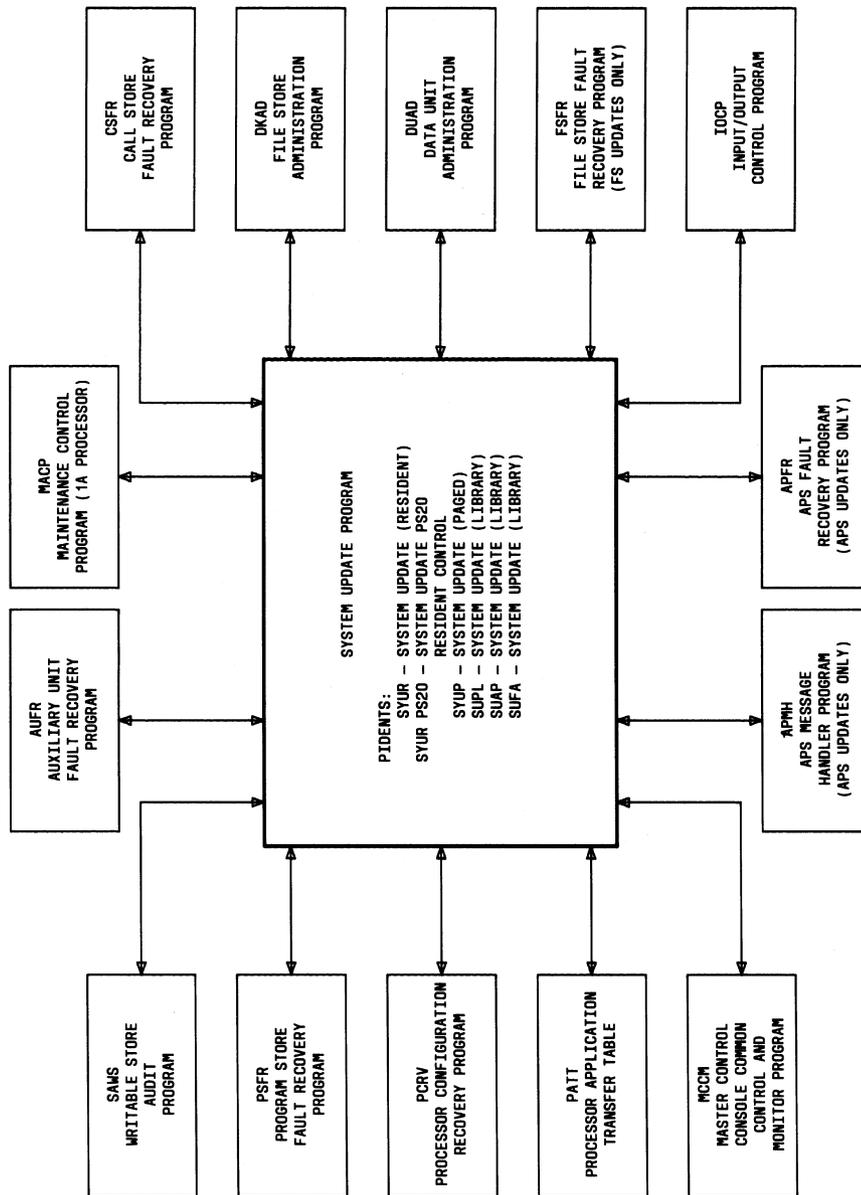
B. System Update Software Interface

5.325 Figure 50 illustrates a block diagram of the system update program.

C. System Update Software Function

5.326 For a file store update, a previously designated set of file stores is taken out of service

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↑ Fig. 50—System Update Program—Program Interface Block Diagram ↓

and updated on a segmented basis prior to the interruption of normal call processing. This minimizes system disturbance during introduction of an entire new issue of generic program or office data. For the Attached Processor System (APS) update, no units are taken out of service. Instead, the APS update programs send an APS message to the file manager interface (FMI) which "unlocks" the UPDATE file on the 3B disk, copying the NORMAL file into it. The FMI then uses the UPDATE file to store the update data. The system update program, being an MACP client, must operate in the 3-ms segment allotted by MACP. When the update procedure begins, a check is made to see if any other data changing programs are in progress. If so, the update will stop. If not, a lock-out mechanism will be set up to prevent those programs from running. Examples of programs affected are the recent change program, generic utility overwrite, tape writing program, or the system audit of stores using tape. For a file store update, this lockout is necessary because any changes made after the file stores are split will be lost when the updated copies are returned to service. After all data has been read in from the update tape(s), any mapping of transient data is performed. Then, the file stores are switched so that the updated files are in service and the obsolete files are out of service, the new data is pumped from the updated file store copies, and then a previously designated phase of memory reinitialization is started. For an APS update, the files are not switched but access is switched. After data mapping is done, access is switched so that normal reads and writes go to the UPDATE file.

D. Full Update

5.327 The library program SUPL is used for full file store updates. The library programs SUAP and SUFA are used for full APS updates. A full update, since it entails a pump from the updated file store, requires considerably more time than partial update (or point load). The following paragraphs present a description of each step of a full update.

Preliminary Verification

5.328 A full update entails a generic update and/or an office dependent data (generated by the office data assembler) update. The tape header must be verified to ensure the user has mounted the correct tape. Since the headers for generic and office dependent data tapes are slightly different, the verification procedure for both tapes is given.

- (a) **Generic Update:** To verify a tape for a generic update, the following checks are made.

- (1) The tape is a generic tape.
- (2) The tape is classified as a system reinitialization tape (tape format is consistent with that which is expected by SUPL, SUAP, or SUFA).
- (3) The generic identification data matches that which is inputted on the TTY.

(b) **Office Dependent Data Update:** To verify a tape for an office dependent data update, the following checks are made:

- (1) The tape is an office dependent data tape.
- (2) The tape is classified as a system reinitialization tape (tape format is consistent with that which is expected by SUPL, SUAP, or SUFA).
- (3) The date and time the tape was written matches the date and time inputted on the TTY.
- (4) The office identification code and the generic identification on the tape match that stored in the system.

5.329 In addition to verifying a tape update, SUFA, which can only be used for a full generic update, must do extra initialization. This is necessary because SUFA must be able to access the 3B processor via the attached processor interface (API) while running in a file store generic. These additional requirements are:

- (a) All auxiliary unit bus 0 file stores must be out of service. The auxiliary unit bus 0 is used to access the 3B processor.
- (b) All auxiliary unit bus 1 file stores must be in service to permit normal system activity to continue.
- (c) The file store 0&2 key at the MCC update panel must be selected to ensure that the file stores are used to pump memory during an abort.
- (d) Translations must be changed to indicate that API 0 is in AUB port 0.
- (e) The API 0 is restored unconditionally.
- (f) The FMI state is initialized to normal.

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5.330 A mismatch in any of the above checks will cause an immediate termination of the MACP job, and an error message is generated and printed. If all tape header information matches correctly, SUPL checks to see if a file store has been manually selected for update. If not, a message is printed and the program lapses into a wait mode for 1 minute. At the end of 1 minute, if a file store has not been chosen, another message is printed and the update is terminated. If a file store selection is made before the 60 seconds expire, an acceptance message is printed. For an APS update, SUFA makes a check of the file store 0&2 key at the MCC update panel, or SUAP makes a check for the NORMAL key.

E. Data Transfer

Merge Data File

5.331 The merge data file on a full update tape contains the main memory-to-file store map, the IDtag-to-file store (ID2FS) map, hash sum head table, and hash sum tables. Each of these structures is incomplete in that they contain entries pertaining only to the particular type of tape. That is, a generic tape would have generic data range blocks in the ID2FS map plus range blocks for all Datapool defined file store areas, only generic hash sums in the hash tables, etc. The merge data file must therefore be buffered until an indication is received that all tapes have been read in, so that all data required for the generation of tables is available. The remainder of the data needs no buffering before being placed in the corresponding file store. The merge data file is saved in a designated main memory buffer area of the rover program store for later use.

Update Data Blocks

5.332 Following the merge data file on the tape is the remainder of the update data. This data is placed in files of 32 BINKs (BINK=binary K=1024). The data may be placed directly on the appropriate file store without change. Each file store is taken out of service only when data is encountered on the tape which must be placed in that file store. Thus, changes in system configuration are made only as necessary and are delayed as long as possible. Before any file stores are removed from service, all recent change activities are inhibited. During an APS update, the entire UPDATE file is unlocked so data encountered on the tape can be written directly to the UPDATE file.

F. Building System Maps and Tables

5.333 After the last data file has been read in, the tape is rewound to the beginning-of-tape mark, and a message indicating completion of work on that tape is printed. If another tape is to be included at this point in the full update, it must be mounted and the corresponding message entered. If there are no more tapes to be included in the update, the actual main memory overwrite may be initiated or a test merge may be requested, verifying the compatibility of the tapes. In any case, system update enters a wait mode which will time out in 30 minutes if a message is not entered. At the end of 10 minutes, the tape completion message is printed again. If no instructions are received in 20 minutes, another message is printed. If after 30 minutes from the end of processing of the current tape no input message has been received by the update program, the time-out abort message is printed and the update is terminated. However, if the system is committed to the update before the 30-minute time-out, the wait mode is ended and the processing of the merge data files begins.

5.334 Before building system maps, the update program must verify that all components are available. Any data which has not been entered via tape is extracted from the current system maps and assumed to be correct. Since SUFA is used for file store to APS retrofits, generic and all office dependent data tapes must be inputted. If only a generic tape were read in for a file store to file store update, SUPL or SUAP would extract from the respective tables (currently in the system) all file store descriptor blocks, range blocks, and hash sums not entered from the tape. Then, new maps and hash sum tables are created by merging the data which was entered from tape with that which was extracted from current system maps. Verification includes assuring that range blocks do not overlap in the ID2FS map and that file store descriptor blocks are consistent in the CS2FS map. These updated maps and tables are then written onto the associated file store for a file store update. For an APS update, the updated maps and tables are written by SUFA and SUAP to the UPDATE file on the 3B disk.

G. Data Mapping

5.335 Data mapping is used to copy transient data blocks (nonpermanent data) from current locations to locations compatible with the updated

Police Radar Gun Spoofing Experiments

Overview

You've just got done shooting an open–borders politician in the head... You now need to make your quick escapex – without drawing attention from any of the local authorities. What you're wishing for is a way to speed in your vehicle without all the hassle of being pulled over or having one of those stupid "Let's make ZOG more money!" photo radars taking your picture. Fret not, as your local Open Source Assassins are currently working on a solution to this problem...

As we learned in the last issue (#57) covering the Through–the–Wall Motion Detection Device, the microwave Gunnplexer in a X–band police radar gun is used as a RF "illumination" device and the Gunnplexer's mixer output is a low–frequency signal equal to the amount of Doppler shift in the target's motion. Since the Gunnplexer samples both the *transmitted* and *received* 10.5 GHz signal, the received (reflected) signal of *any* target in motion will impart a slight frequency shift via the Doppler effect. This output "beat" frequency is what determines the speed of the target. For each mile per hour of target speed, the Doppler shift will be equal to approximately 31.3 Hz.

Since we know the frequency which most police radar guns operate and we can calculate the proper Doppler shift required for different speeds, we can also make that radar gun display just about any speed we wish. We'll do this by transmitting on the radar gun's frequency with a signal modulation that equals the required Doppler shift. Say we want some cop's X–band radar gun to always display "65 MPH." Well, all you'll need to do is modulate your 10.5 GHz Gunnplexer with a audio signal of around 2,034 Hz. Most Gunnplexer sources already have a "varactor bias" pin which makes modulating the output RF signal quite easy.

Construction Notes

While this particular device is *very* experimental and still in development, the construction and operation will be simple. A standard 32.768 kHz watch crystal is configured as an oscillator, with the output "divided–by–two" several times. This signal is picked off via a series of taps at 4,096, 2,048, 1,024, and 512 Hz. One of these output taps is then slightly low–pass filtered and combined with a DC offset via a potentiometer. The combined audio signal/DC offset is then connected to the Gunnplexer's varactor bias pin. Since not all Gunnplexer's have varactor tuning/modulation pins, you may have to apply the audio modulation directly to the Gunnplexer's Gunn diode bias line. This method (and schematic) are shown in the various older ARRL *Handbook for the Radio Amateur*, so it won't be covered here.

The operational idea is that the Gunnplexer's output 10.5 GHz signal will be modulated with the proper Doppler shift to *override* the weak reflected RF signal from the target vehicle. You are essentially transmitting your *own* Doppler–shifted RF signal directly into the police radar gun. Since a X–band police radar has a Doppler shift of approximately 31.3 Hz per mile per hour of target speed, the 2,048 Hz and 1,024 Hz clock signals can be used to "spoof" vehicle speeds of approximately 65 and 35 miles per hour, respectively. You can use the other clock taps for experimenting or for spoofing operations on the higher–band (24 and 36 GHz) radar gun frequencies.

Doppler Frequency Shift Equation

$$F_d = (2 * F_o) / c$$

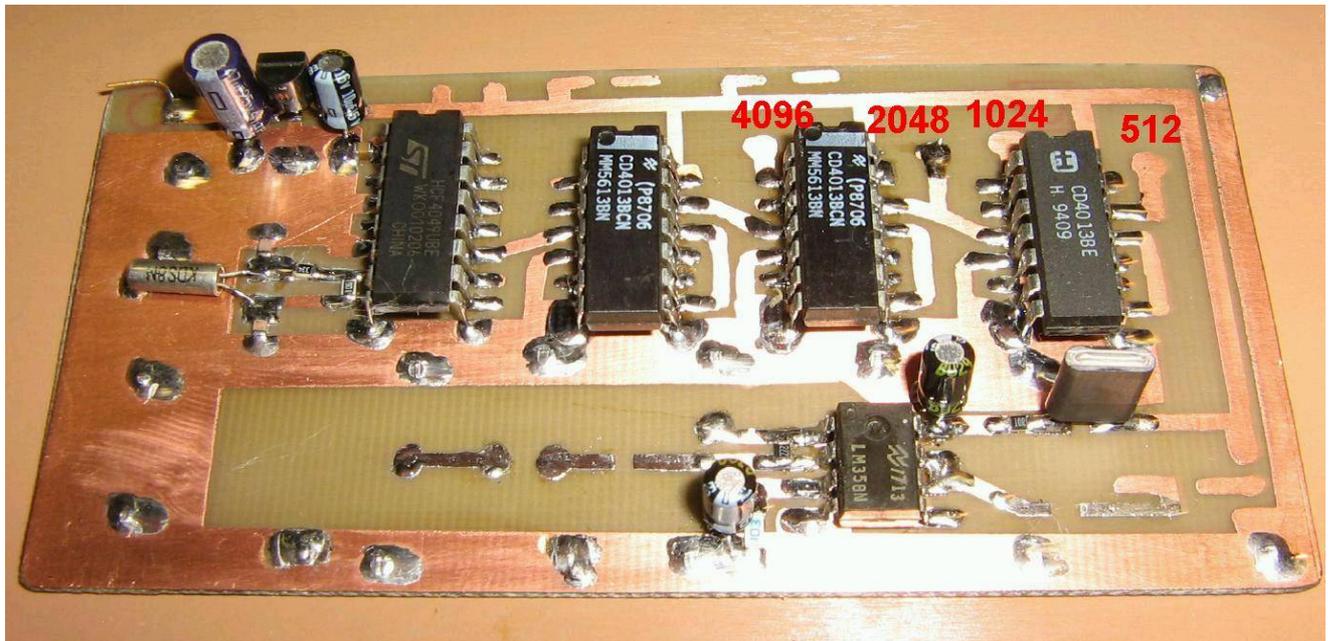
F_d = Doppler Shift (Hertz)

F_o = Original Transmit Frequency (Hertz)

c = Speed of Light (299,792,458 meters per second or 670,616,629 miles per hour)

Using a 10.5 GHz Gunnplexer, the on-axis, two-way Doppler shift would be 70 Hz each meter per second (31.3 Hz each mile per hour) of the target's speed. Newer Ka-band (33.4 – 36 GHz) police and photo radars will have a Doppler shift equal to approximately 100 to 109 Hz per mile per hour of target speed.

Pictures

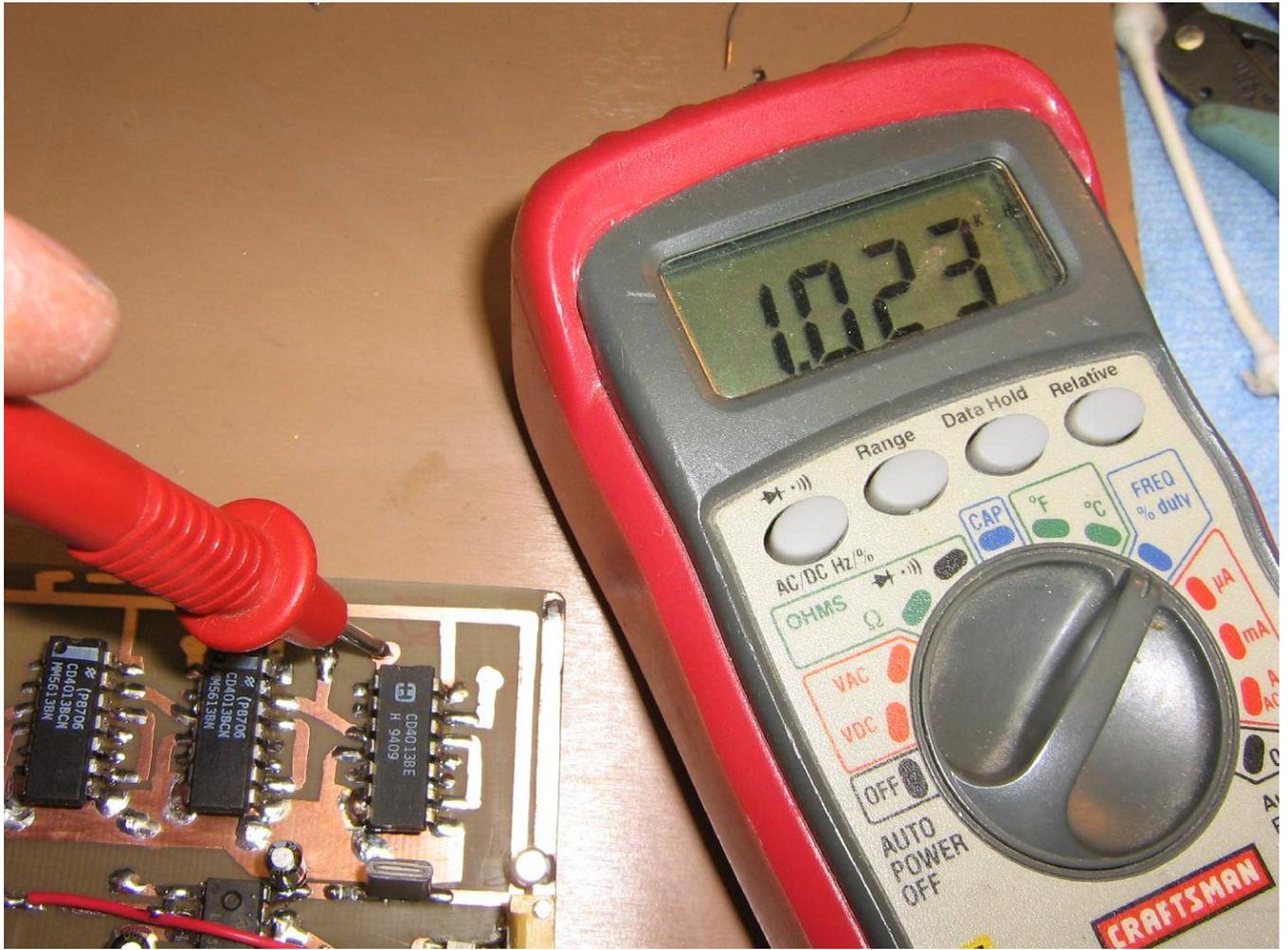


Clock generator circuit board.

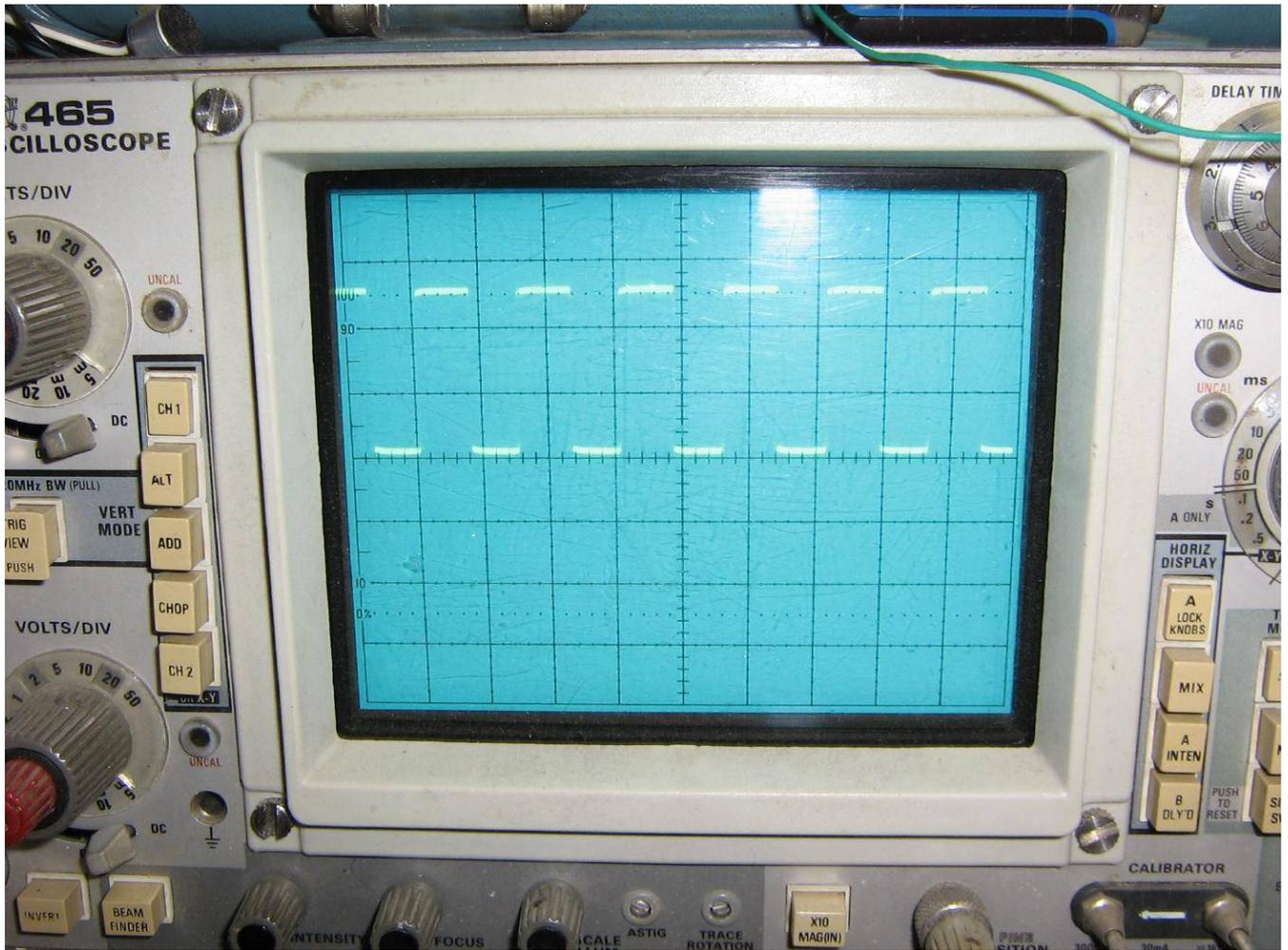
A 78L08 voltage regulator and input voltage filtering is on the upper-left.

The 8-pin IC on the left is the CD4049 hex buffer with a 32.768 kHz watch crystal setup as an oscillator. The CD4049's 32.768 kHz clock output is then sent to a series of CD4013 dual D flip-flops to be further divided down. Each flip-flop divides the incoming signal by two, so you end up with a series of taps at 16,384, 8,192, 4,096, 2,048, 1,024, and 512 Hz. Clock oscillator values other than 32.768 kHz can be used to alter the required final output signal frequency.

An op-amp low-pass filter was experimented with, but found not necessary for cleaning up the Gunnplexer's modulating signal. A simple resistor/capacitor combination will be used instead.

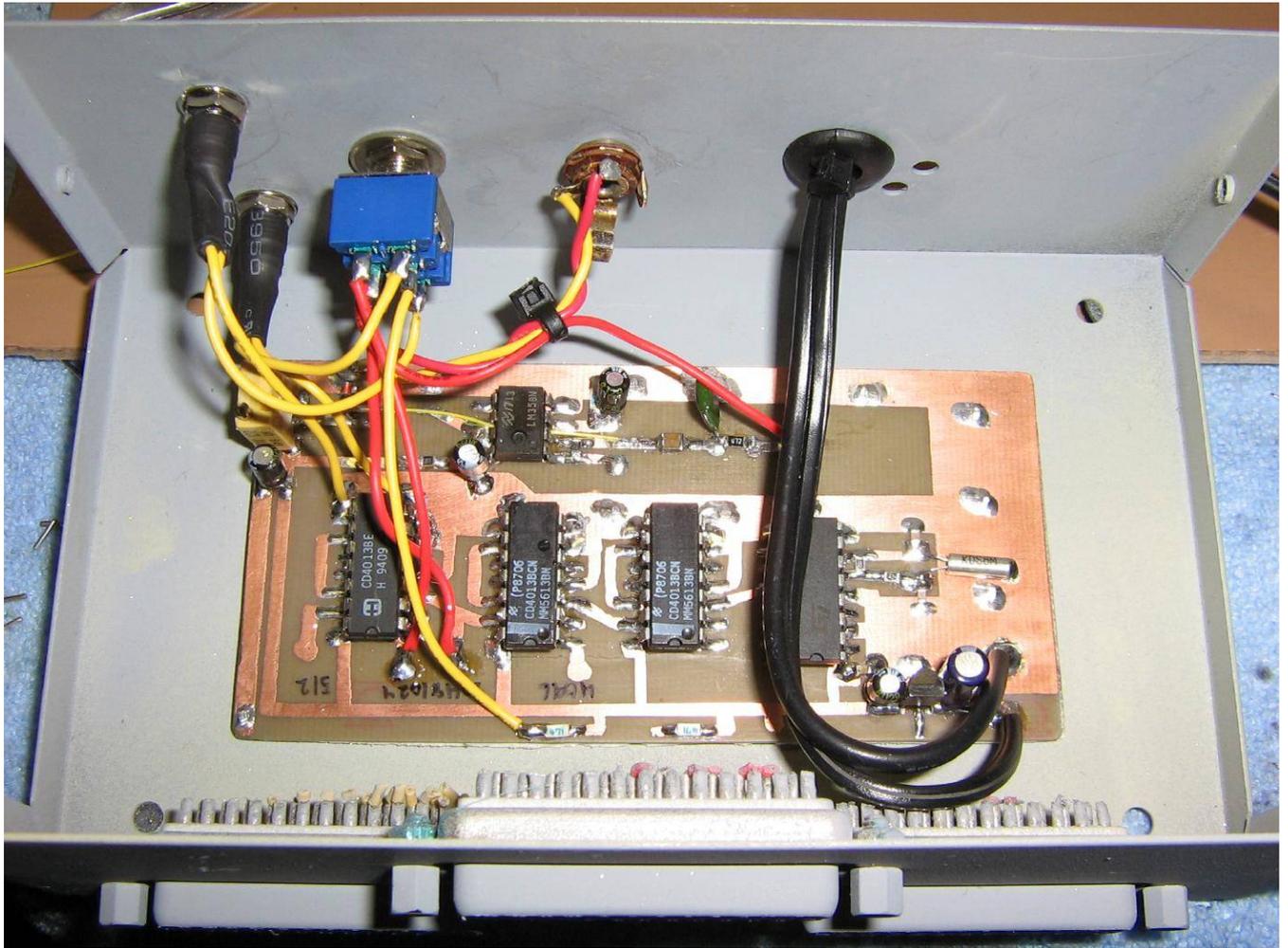


Checking the output frequency of the 1,024 Hz clock tap.



Oscilloscope view of the 32.768 kHz clock output. 2 volts per division vertical and 20 μ S per division horizontal. The circuit was initially run at +5 VDC, but using +8 VDC allows for a greater frequency swing on the Gunnplexer.

You may have to fiddle with the value of the 330 kohm resistor or the crystal's loading capacitors if the circuit doesn't oscillate on startup.



Inside case overview.

The case is an old printer switch with the circuit board attached via double-sided tape.

The DC input power is via a standard, fused automotive cigarette lighter plug.

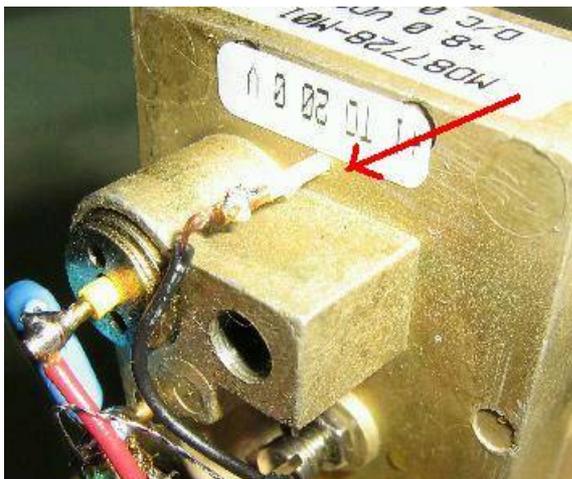
The Gunnplexer's varactor modulating signal and DC offset are sent to a panel-mount mono 1/8" jack.

A DPDT switch with a center-off position is used to select the required spoofing speed. The two LEDs indicate the switch's status.



Finished outside case overview.

12 VDC cigarette lighter plug is on the left, Gunnplexer varactor output is in the middle, and the speed select switch and LEDs are on the right.



Example of a M/A-Com Gunnplexer varactor bias pin. The input is +1 to +20 volts with about 50 MHz of overall tuning range.



Test setup.

Using a salvaged Hot Wheels Radar Gun, the display has been spoofed to display 32 miles per hour.

Also, for some reason, the "65 mile per hour" rate didn't work.

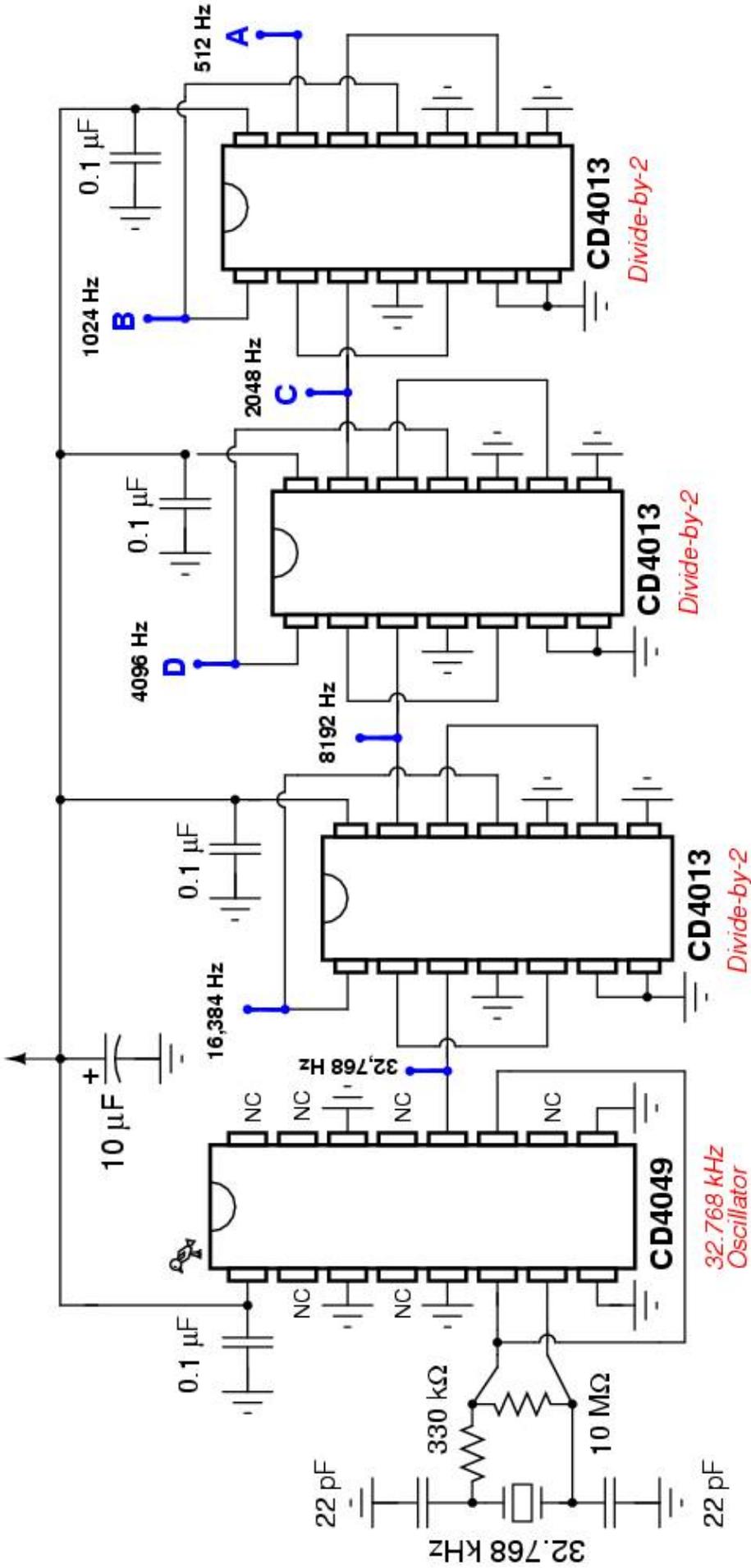
Since I don't have a *real* X-band police radar gun to test this on, it'll all just be experimental right now.

The Gunnplexer may need to be tuned to slightly, either mechanically or electronically, to be on the right transmitting frequency.

Radar Gun Spoofing Signal Generator

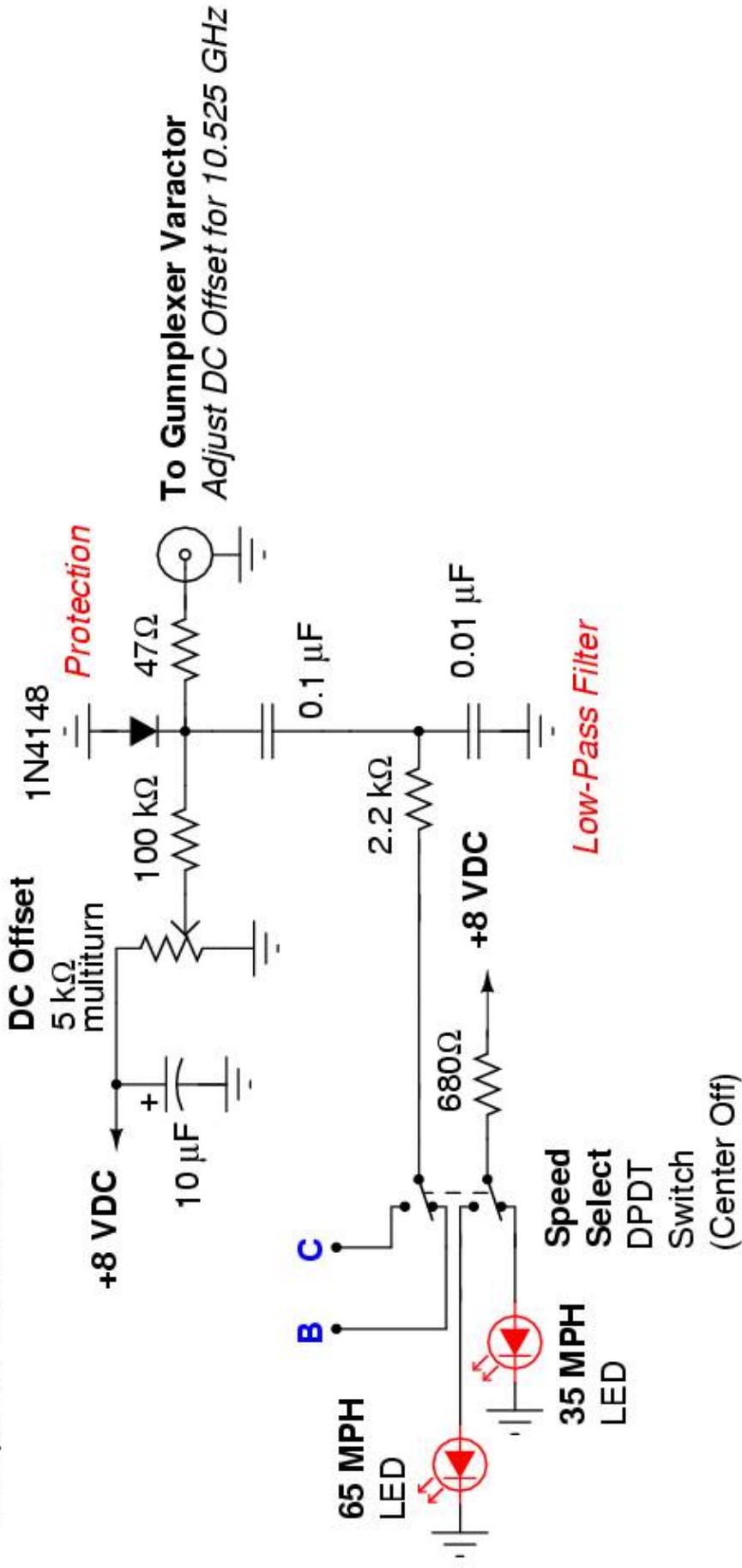
Clock Generator

+8 VDC



Radar Gun Spoofing Signal Generator

Gunnplexer Varactor Bias



DMS-100 Automatic Number Identification Data Table (ANIDATA)

Table Name

Automatic Number Identification Data

Functional Description of Table ANIDATA

Table ANIDATA is datafilled at three Automatic Number Identification (ANI) levels – NPA (numbering plan area), NXX (three–digit exchange number), and SUB (subscriber) – to provide the ANI screening capability at all three levels on all incoming Network System Service Feature Group D (NSSFGD) calls. A lookup table function is also provided for the Network System Service (NSS) Replacement of Dialed Digits (RDD) feature.

Datafill Sequence & Size

There is no requirement to datafill other tables prior to table ANIDATA. The table size is 0 to 128,000,000 tuples. Memory is allocated dynamically for this table. The maximum number of tuples depends on the switch configuration.

Datafill

The following table describes datafill for table ANIDATA:

Table ANIDATA Field Descriptions

Field	Subfield	Entry	Explanation and Action
ANIDIGS		Alphanumeric (up to 10 characters)	<i>Automatic Number Identification Digits</i> Enter the ANI register as follows: * If three digits are entered in this field, enter "NPA" in field ANITYPE. * If six digits are entered in this field, enter "NXX" in field ANITYPE. * If 10 digits are entered in this field, enter "SUB" in field ANITYPE.
REFAREA		See Subfields	<i>Automatic Number Identification Data Reference Area</i> This field consists of subfields ANITYPE and STATUS
ANITYPE		NPA, NXX, or SUB	<i>Automatic Number Identification Type</i> Enter the ANI type in accordance with the instructions set out in field ANIDIGS above.
STATUS		ALLOW, CASUAL, or NOTALW	<i>Status</i> Enter the calling party's status as follows: * If the entry in field ANIDIGS is three or six digits, and the entry in field ANITYPE is NPA or NXX, enter "CASUAL" or "NOTALW".

* If the entry in field ANIDIGS is ten digits, and the entry in field ANITYPE is SUB, enter "ALLOW", "CASUAL", or "NOTALW".

STATUS = ALLOW

If the entry in subfield STATUS is ALLOW, datafill fields NACUSGRP, NANCOS, ACCTREQ, SUPPRESS, and IDDALLOW.

NACUSGRP	Alphanumeric (up to 16 characters)	<i>North American Numbering Plan Area Customer Group</i> Enter the customer group defined in table CUSTHEAD.
NANCOS	0 to 511	<i>North American Numbering Plan Area Network Class of Service</i> Enter the Network Class of Service (NCOS) of the customer group.
ACCTREQ	Y or N	<i>Account Code Required</i> Enter "Y" (yes) if an account code is required for all incoming NSSFGD calls using pure dialing that originate from the offnet address specified by this ANI. Enter "N" (no) if an account code is not required.
SUPPRESS	Y or N	<i>Suppress</i> Enter "Y" if offnet originated stations entering the network by way of a NSSFGD trunk using pure dialing are to have their ANI information suppressed, preventing the display of their Directory Number (DN). Enter "N" if ANI suppression is not required.
IDDALLOW	Y or N	<i>International Direct Distance Dial Allowed</i> Enter "Y" if a call referencing ANI type SUB with STATUS set to ALLOW is allowed to make international calls outside world zone 1. If this field is set to "N", international calls are not allowed and the call is sent to treatment.

IDDALLOW = Y

If the entry in field IDDALLOW is "Y", datafill fields INTLCGRP and INTLNCOS.

INTLCGRP	Alphanumeric (up to 16 characters)	<i>International Customer Group</i> Enter the customer group allowed to make international calls.
INTLNCOS	0 to 511	<i>International Network Class of Service</i> Enter the NCOS of the customer group allowed to make international calls.

-End-

Datafill Example

The following example MAP display shows sample datafill for table ANIDATA:

ANIDIGS	REFAREA
742223	NXX CASUAL
214	NPA NOTALW

How E.T. Really Called Home

If it were not for an inventive ham, E.T. might still be trying. In this exclusive article, the designer of the little guy's communicator unveils its inner workings.

By Henry R. Feinberg, [K2SSQ](#) in the April 1986 issues of *73 Magazine*

"TGIF," I thought as I returned from lunch to my office in the exhibit department of Bell Labs. Lying on top of my desk – on top of a pile of exhibit plans – was a telephone message asking me to call Kathleen Kennedy in Hollywood. Now, the public relations department of Bell Labs gets many requests for information, but this one was considerably more usual than most.

Ms. Kennedy, who produced E.T. with Steven Spielberg, had called Bell Labs earlier that day to find someone who would work at home during the weekend, designing a space communicator to be used by a stranded alien to contact his space ship. Few other details were given, as a great deal of secrecy surrounded the film. Even the name of the film was a secret. I was told that the alien was called E.T., short for extra-terrestrial, but the working title given me for the film was deceiving; it was called *A Boy's Life*.

I guess the call was referred to me because of my experience in using household objects to explain science. My title at Bell Labs at the time was Exhibits and Science Presentations Coordinator. Before coming to the Bell system, I worked with Don Herbert, TV's "Mr. Wizard," designing experiments using everyday materials to explain scientific principles. At the Labs, I continued my work popularizing science through films, demonstrations, and exhibits. Currently, my work at AT&T involves corporate exhibitions such as the Bell System's Futurecom at Epcot Center in Walt Disney World.

Kathleen Kennedy asked me to work by phone with Melissa Mathison, who was writing the *E.T.* script and who was also associate producer. I had several long phone calls with Melissa, discussing items found around the house that could be used in a communicator. As an avid ham-radio operator with a limited junk box, I first looked for household objects that could actually transmit a signal. Transmitters of various sorts were too ordinary, of course. I was looking for something more exotic, something like a microwave oven that could be converted to send a signal into space.

Plausibility was a big factor. While the communicator didn't actually have to work, I wanted it to be plausible enough that my ham friends at Bell Labs wouldn't laugh me away from the "ham table" in the cafeteria. I also wanted to avoid a science-fiction look with a lot of blinking lights, coils, and sparks. It was important to me that people seeing the film would not be scared away from the science, and might even understand how a communicator like this might work.

Using a microwave oven as a transmitter seemed plausible enough, and I expanded on the fanciful design by placing a round hubcap in the oven to focus the microwave energy out the door and into a waveguide made of flexible aluminized air conditioning duct. The duct could be run out the kitchen window to an antenna made by inverting a metal patio umbrella and using it as a parabolic reflector.

At this point, before I'm accused of gross ignorance for failing to recognize how the oven would be de-tuned or how inefficient the system would be, remember that the objective was plausibility, not practicality. It was the thought that counted, and I was having fun thinking of possibilities such as building a flying spot-scanner using a combination of mechanical and electronic components – like Christmas tree ornaments and loudspeakers with mirrors attached. Melissa Mathison told me that

Steven Spielberg liked the microwave oven idea but wanted a portable unit to work from a forest clearing. Back to the drawing board. During my years with Mr. Wizard, we put together one Rube Goldberg contraption after another to illustrate scientific principles. Invariably, we would use household materials in unorthodox ways. Psychologists call this type of creative brainstorming a release from "functional fixedness." Briefly stated, it means that you can do more with an old 813 than build a lamp with it. The trick is to analyze the desired result by function, breaking down each section to as simple a scale as possible; then it's easier to build the unit from the ground up in a new way. (Sounds a lot like writing a computer program, doesn't it?)

What Spielberg wanted was a beacon transmitter – something to say "Here I am! Come and get me!" I reasoned that three main parts were needed for a basic beacon: a means of producing a message, a programmer to repeat the message, and a way of transmitting the signal into outer space.

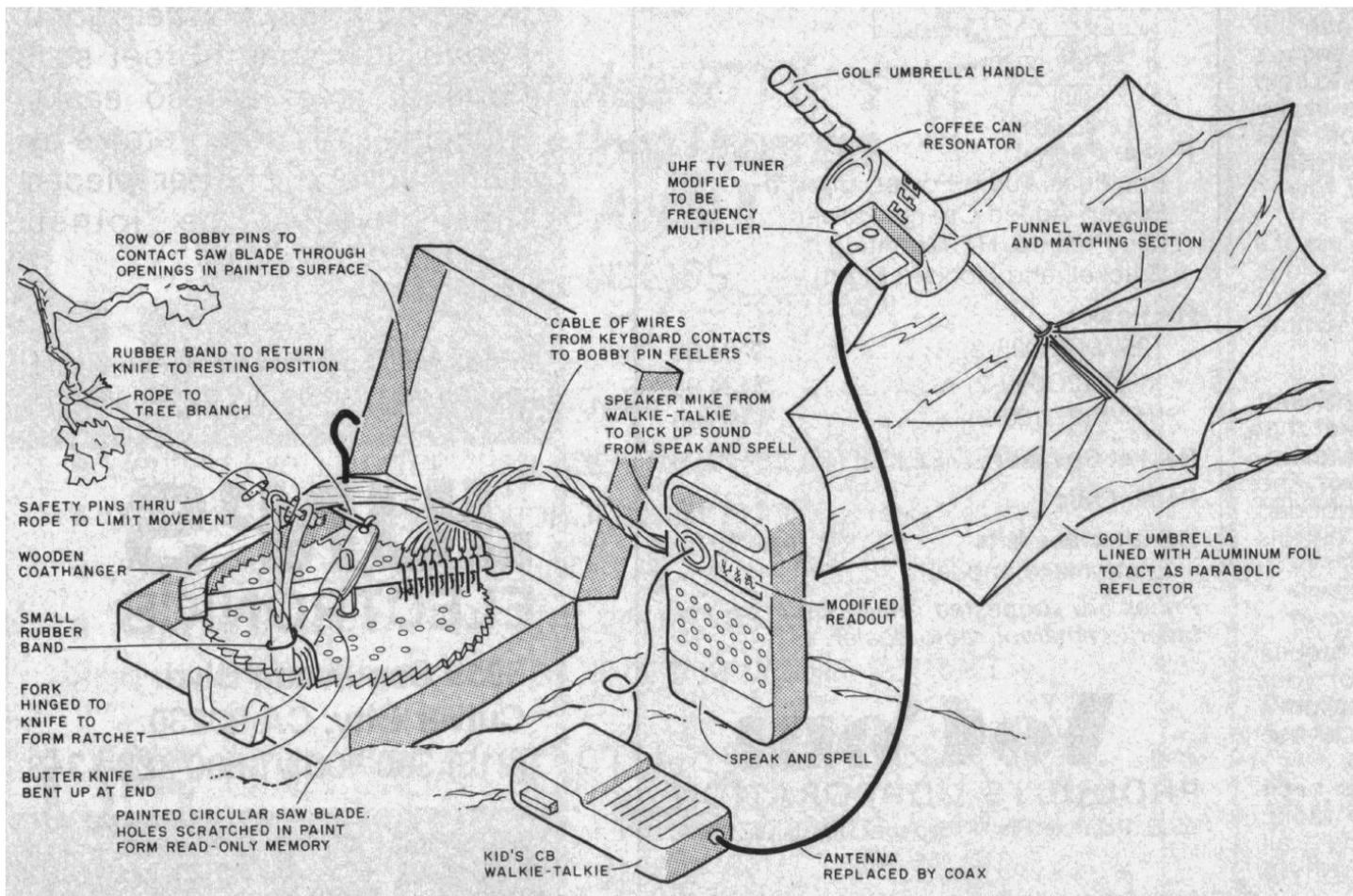
Working backward, I knew that a golf umbrella lined with aluminum foil would make a plausible-looking parabolic reflector. And on my last trip to the Dayton Hamvention, I saw coffee cans being used as resonators for receiving MDS TV signals. In fact, a UHF TV tuner purchased there *could* be extensively modified to act as a multiplier to select the umpteenth harmonic of a CB signal from a toy handie-talkie. The resulting microwave signal could then be directed from the coffee-can resonator toward the umbrella reflector through a waveguide/matching section made from a funnel. Ah, the license of plausibility!

To produce the message, I used a Speak and Spell learning aid made by Texas Instruments. The unit contains a speech synthesizer, a keyboard, a fluorescent read-out, and a speaker. E.T. deserved his own alphabet, so I rewired the segments of the alphanumeric readout. It took several tries to make the resulting gibberish look like another language. No changes were made in the speech circuits since I thought the sound-effects people would add their own sound. Actually, they never did, and in the film one doesn't hear any sound at all from the communicator – not even the original "message" I devised with the help of Debbie, my wife. It was our names repeated over and over.

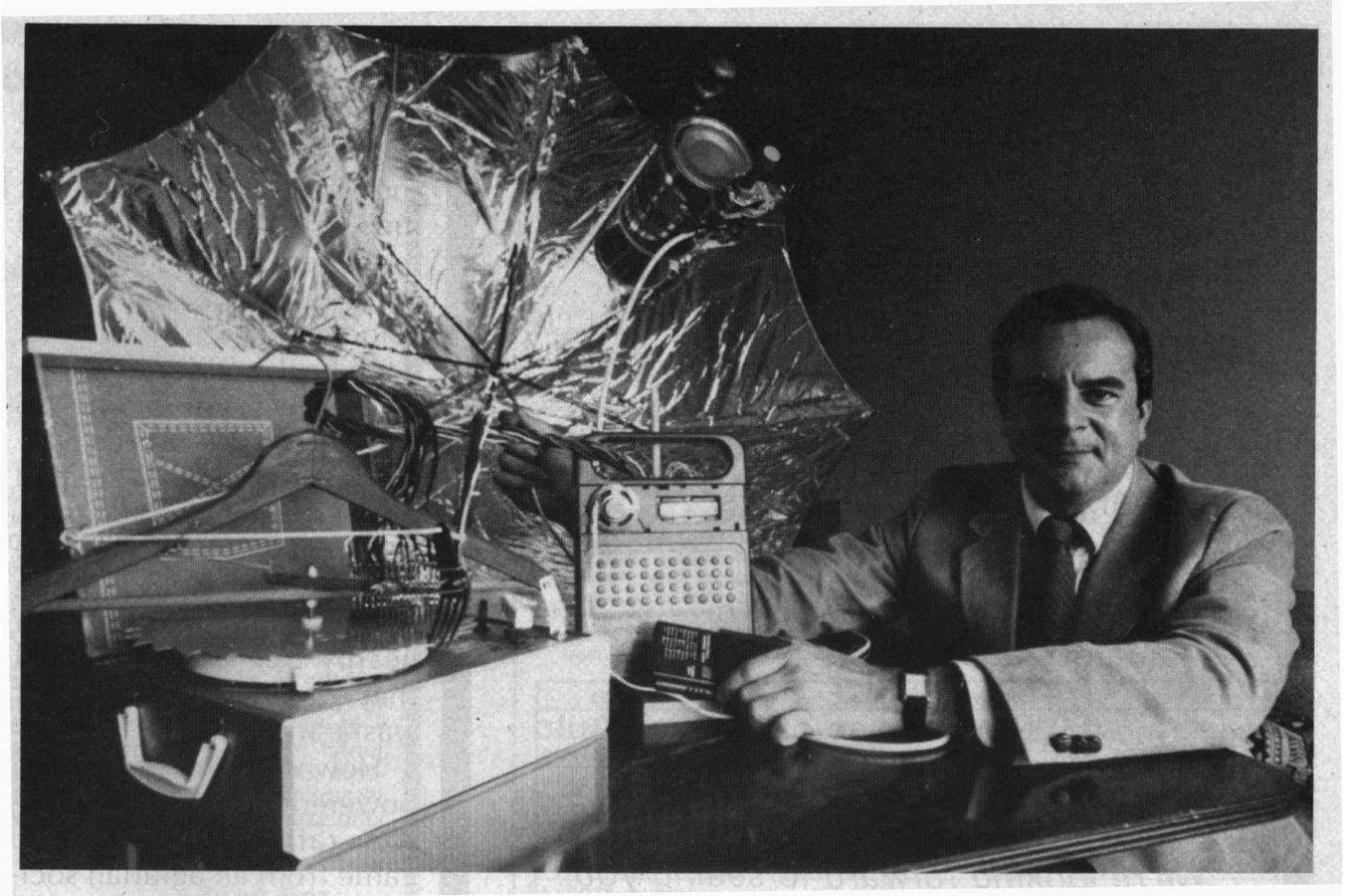
The remaining problem was how to program the Speak and Spell the same message over and over. To begin with, wires were attached to each keyboard contact. A set of feelers was needed for the other end of the wires. Originally, I used a row of safety pins inserted through the dowel of a wooden coat hanger. But these were a problem to keep straight under pressure. Debbie deserves the credit for suggesting bobby pins. Their flat cross-section prevented them from moving sideways. The coat hanger was positioned across a child's record player. On the turntable, a circular metal saw blade took the place of a record. The surface of the saw blade was coated with several layers of spray paint which served as insulation, preventing the bobby pins from contacting the metal blade. The message was programmed on the blade by carefully scratching through the paint. This created a pattern of openings similar to those on a punched card through which selected sets of bobby pins could make contact with the blade as it turned. But how to turn the saw blade? Well, since the communicator was to work by itself in the forest and sawblades have teeth, I decided to use wind power to rotate the blade via a ratchet mechanism. A knife and fork were hinged together and made to pivot on the spindle of the turntable. Each back-and-forth motion of the knife and fork pulled another tooth of the saw blade around and created another set of contacts. A rubber band returned the knife between pulls. A string tied between the knife and a nearby tree branch was all that was needed – the rest was a breeze!

How were the electronics powered? As Melissa Mathison rationalized it, E.T. came from an agrarian society that had learned to tap the forest for electrical power. On the set, the day's shooting schedule didn't leave time to wire the trees, so a battery was used. Score one for practicality over plausibility.

The close-ups of the communicator were filmed in a sound stage dressed to look like the forest. To achieve a misty quality, the trees were sprayed with water before each take. Everything was damp, including the boulder on which E.T. placed the Speak and Spell. At one point, the bare circuit board made contact with the wet surface and it stopped working. Panicked thoughts of zapped ICs flashed through my mind as all eyes turned to me for help. I was scared, but I said a silent prayer and asked for a hair dryer to be brought onto the set. There's a scene in the film where Elliott helps E.T. set up the communicator in the forest. As the wind starts to blow, Elliott shouts, "It's working! It's working!" I remember that scene, because I was standing right next to the camera, wiping my brow and mouthing the same words.



Pictorial Drawing of the E. T. Communicator



Henry R. Feinberg with the E.T. Communicator



FOR IMMEDIATE RELEASE
November 5, 2008

[Printer Friendly Version](#)

**Governor Blagojevich Congratulates President-elect Obama and Discusses U.S. Senate Seat
To fill President-Elect Barack Obama's Senate seat, Governor will use deliberate process to select suitable replacement**

CHICAGO – After congratulating President-Elect Barack Obama on his decisive victory, Governor Rod R. Blagojevich announced today that he will take his time and use a diverse senior staff made up of key members of his administration who will assist him in selecting a suitable replacement for Obama.

“Last night’s victory was bittersweet for Illinois - as we gain a great President, we lose a great Senator. And it goes without saying that our next Senator has big shoes to fill. Because it’s important that the best person for Illinois is selected, I want to be clear that the calendar won’t dictate our search. Instead, I want to ensure that Obama’s successor will understand and fight for the needs of average Illinoisans,” Governor Blagojevich said.

Governor Blagojevich will be looking for candidates that will:

- Support the President-Elect’s agenda for the people;
- Effectively represent the interests of the state of Illinois in the U.S. Congress;
- Work with my administration to achieve our shared goals of ensuring access to affordable healthcare, rebuilding Illinois’ infrastructure, improving the economic security and livelihoods of Illinois workers, and caring for our most vulnerable; and,
- Prioritize the average Illinoisan who is too burdened by taxes and economic hardship.

The U.S. Constitution, 17th Amendment, provides that a state legislature may empower the executive of the state to make the appointment.

(<http://www.illinois.gov/PressReleases/ShowPressRelease.cfm?SubjectID=2&RecNum=7260>)

End of Issue #58



Any Questions?

Editorial and Rants



**National Mall
Washington, D.C.
January 21, 2009**



Overhead Satellite View

And it starts... "The Adventures of Tom Sawyer" nails the hacker spirit perfectly. No wonder people like Eric Corley want to ban it.

Teacher Wants to Expel Huck Finn

January 19, 2009 – From: www.latimes.com

By Kim Murphy

Reporting from Ridgefield, Wash. — John Foley figures he has pretty much maxed out on explaining to African American mothers why it's OK to call a black man the N-word — as long as it's in a novel that is considered a classic.

For years, English teachers have been explaining away the obvious racism in Mark Twain's "The Adventures of Huckleberry Finn." And for years, the book that perhaps best explains Americans' genetic predilection for hitting the road, only to later find themselves, has stayed near the top of many high school reading lists.

However, with an African American about to be inaugurated as president, Foley wonders whether 'Huck Finn' ought to be sent back down the river. Why not replace it with a more modern, less discomfiting novel documenting the epic journey of discovery?

"The time has arrived to update the literature we use in high school classrooms," Foley wrote in a guest column this month for the Seattle Post-Intelligencer. "Barack Obama is president-elect of the United States, and novels that use the 'N-word' repeatedly need to go."

Foley, 48, teaches at a largely white suburban high school near Portland, Ore. Year after year, he said, he patiently explains to his students that Jim, a black man, is actually the hero of the novel, and that Huck comes to see the error of his ways and commits to helping Jim escape slavery. But many of them find the book dull and plodding, and they sometimes never get past the demeaning word Huck uses to refer to his friend.

"This is particularly true, of course, of African American students," Foley wrote. "With few exceptions, all the black students in my classes over the years have appeared very uncomfortable when I've discussed these matters at the beginning of the unit. And I never want to rationalize 'Huck Finn' to an angry African American mom again as long as I breathe."

He also thinks "To Kill a Mockingbird," Harper Lee's classic about racial inequity in the Deep South, and John Steinbeck's "Of Mice and Men" should be removed from the curriculum for similar reasons.

Foley had wanted to talk to the staff at Ridgefield High School about his proposal, but after his op-ed was published, it was as though a stink bomb had landed in a crowded room.

"Obama would be horrified if he knew this censorship was done in his name," wrote Trudy J. Sundberg, a retired teacher of American literature from Oak Harbor, Wash. Her response to Foley's column was just one in a barrage of letters and e-mails that the newspaper received.

"What an amazingly stupid teacher this is," another reader wrote. "There is nothing in American literature that more succinctly and directly attacks racial prejudice than Mark Twain's 'The Adventures of Huckleberry Finn.' This is another teacher anxious to pursue political correctness more than seek to understand what is involved in truly 'reading' a book."

Foley said he was most bemused by critics who insisted he was being satirical, that he couldn't have seriously been attacking three novels that say more against human intolerance than almost any you could think of. "Whenever you take a couple of shots at sacred cows, people assume it's satire," he said one recent afternoon at a Starbucks as students streamed in for lattes and spiced tea.

"It's just my experience teaching, especially 'Huck Finn.' Every year, it seems to be a tougher sell to the kids. I have a lot of passion for 'Huck Finn,' and my enthusiasm usually carries the book. But I have kids come up to me, very smart kids, who say, 'Mr. Foley, I hate this book.' "They hate not only the difficult dialogue, he said, but what students -- usually white ones -- object to as "demeaning stereotypes."

"Our new president is this very intelligent, highly articulate guy, and the literature we're foisting on our children typically depicts black men as ignorant, inarticulate, uneducated. And the contrast just jumped out at me," he said.

Foley said his students were now reading "To Kill a Mockingbird." The character Tom Robinson is very noble, he said, "but again, he's uneducated, inarticulate. I was just thinking, for students here in Washington anyway, wouldn't 'Snow Falling on Cedars' be just as valuable?"

That book, written by David Guterson, documents the internment of Japanese American residents of the San Juan Islands during World War II and the efforts of a few islanders to defend their neighbors against an onslaught of bigotry, jealousy and false accusations. If Foley could, he would replace "Huck Finn" with the epic tale of two old cowboys' last great cattle drive, Larry McMurtry's "Lonesome Dove," and "Of Mice and Men" with Tim O'Brien's Vietnam novel, "Going After Cacciato."

"Like George and Lennie in Steinbeck's novel, Cacciato dreams of peace and a better world. And the Vietnam War is a more recent -- and arguably more painful -- era in American history than the Depression and one of more interest to teens," Foley said in his op-ed. His objections to reading "Finn," "Mice" and "Mockingbird" in the classroom are hardly new; such criticism has been lobbed at the books over the years. Some schools have gone so far as to take them off reading lists and library shelves.

But those against censorship have countered that such books contain civilized values in direct opposition to racism that make them deserving of being read and taught as the classics they are. That seems to be the prevailing view at Ridgefield High.

"I have a 14-year-old son, and he's read 'To Kill a Mockingbird,' " said Julie Olson, chairwoman of the school board. "He clearly understands the concepts involved, and it wasn't really a stretch for him to get it."

Foley said he doesn't want to ban the books. He just thinks they shouldn't be the backbone of the American literature curriculum in 2009, he said, at a time when getting kids to read anything at all is a struggle.

"You have to remember, it's hard to sell kids these days on books. I write young adult novels, and sometimes I wonder, why bother? You're writing for three girls who like to read."

These Muslim politicians are insane and definitely into the woo-woo...

Obama Support Group Code Pink Held Witchcraft Ceremony to Cleanse White House

January 20, 2009 – From: www.freerepublic.com

A reporter for The Nation magazine reported today that the President Barack Hussein Obama support group Code Pink held a witchcraft ceremony to 'cleanse' the White House on President Bush's last full day in office.

One of Code Pink's leaders, Jodie Evans, was an early financial supporter of Obama's, serving as a bundler for his campaign and donating the maximum to his primary and general election campaigns, as well as thousands of dollars to the Obama Victory Fund. Code Pink also organized get out the vote efforts for Obama.

Code Pink's affiliation with witchcraft was present at its creation—a Wiccan who calls herself Starhawk is a co-founder of the group.

Last year, Code Pink held a witchcraft ceremony at the Berkeley Marine Corps officer recruitment center.

Victor Navasky, in his report in The Nation titled The Work has Begun wrote of his train ride to Washington yesterday for the inaugural that his seatmate, Joanna Lawrence, was planning to attend a "shoe-in", or shoe-out, to protest President Bush on his last day in office.

He wrote:

It also included a rally organized by Medea Benjamin, who was joined by witches from CodePink and Kate Clinton, the comedienne, whose object would be to "cleanse the White House." Don't ask.

Besides invoking witchcraft against the United States, Code Pink also works with state sponsors of terrorism and the terrorists in Iraq to undermine America in the war on terror. And Code Pink works with President Obama.

God help us, please.



"Obviously he [Rahm Emanuel] will influence the president to be pro-Israel. Why wouldn't he be? What is he, an Arab? He's not going to clean the floors of the White House."

— November 11, 2008 quote from Benjamin M. Emanuel, Rahm's father, which has been censored from Wikipedia.

The following is from a 2005 *Guardian* (Eurosavage) newspaper article entitled "Bush 'The King' Blows \$50m on Coronation."

Barack Hussein Obama's "iniggeration" cost \$150 million and used a hell of alot more security forces. They didn't exactly cover *that* story... LOL! **Murder ALL Europeans!**

"It will be one of the biggest parties in American history, but half of the country will be left out. With a price tag of up to \$50 million, President George W. Bush's inauguration in 11 days' time will be an unashamed celebration of Red America's victory over Blue America in last November's election.

It is going to be the most expensive, most security-obsessed event in the history of Washington D.C. An army of 10,000 police, secret service officers and FBI agents will patrol the capital for four days of massive celebrations that some critics have derided as reminiscent of the lavish shindigs thrown by Louis XIV, France's extravagant Sun King.

...

Many observers say it is all too much. 'We have elected a President who seems to have quite a monarchical role. It is a bit of a coronation,' said Larry Haas, a former official in Bill Clinton's White House."

"There is no liberal bias in the media!"

(<http://www.guardian.co.uk/world/2005/jan/09/usa.theobserver>)



Yeah, so... you see... A small piece of copper is going from Green Bay to Obama...

Green Bay Company Makes the Official Inaugural Medallion

January 20, 2009 – From: www.wbay.com

By Sarah Thomsen

A Green Bay company is eagerly awaiting next week's presidential inauguration.

The Medalcraft Mint has been working for months to create the official medallion to commemorate the historic event.

Inside a small factory on Green Bay's west side, a piece of history is carefully crafted — well, more like pressed — right before your eyes.

"It's the official inaugural medallion," Medalcraft president Jerry Moran said proudly.

President-elect Barack Obama's inaugural committee hand-picked Medalcraft Mint to strike the only official inaugural medallion — the only company in the country to earn the honor.

"It's kind of like the crown jewel of minting," regional sales manager Tony Ullman said. "For us, a three-peat, it's like a Super Bowl in this arena."

Medalcraft minted the official medallion for both of President George W. Bush's inaugurations.

But this time the inaugural committee was a little pickier about the final product. The medal being minted is a second draft. The first one had Obama smiling.

"This one took a little different approach to kind of show probably what Barack Obama was thinking at the time or what he is thinking at the time — the economic conditions, two wars we're in, the worldeconomics, and the job ahead of him," Moran explained.

Coming up with the design, though, isn't easy. It takes four to five months — time sculptors obviously don't have between the election and inauguration.

"We had sculpts done of John McCain and Barack Obama, not knowing who was going to win the election," Moran said. "We had it down, medals made before the election, and as soon as the election was done, ten days later they wanted product in D.C. to start selecting."

So far employees have boxed and shipped nearly 25,000 medallions for purchase but Medalcraft expects more Internet orders.

It hopes to make a run for 200,000 inaugural medallions — the record set when John F. Kennedy took office.

Dirty Jew bankers get billions in free taxpayer handouts – while World War 2 veterans freeze to death! Change!

WWII Veteran Freezes To Death In Own Home

January 26, 2009 – From: www.wnem.com

BAY CITY, Mich. --- Officials in central Michigan say a 93-year-old man who owned more than \$1,000 in unpaid electric bills froze to death inside his home --- where the municipal power company had restricted his use of electricity.

Neighbors and friends of Marvin Schur want answers as to how this could happen.

"Now that we do know it was hypothermia, there's a whole bunch of feelings that I've got going through me," said Jim Herndon, a neighbor of Schur's. "There's anger, for the city and the electrical company."

Bay City officials said changes are on the way in an attempt to not let another instance like this happen again.

An autopsy determined Schur, 93, died from hypothermia in the home he lived in for years.

Bay City Electric Light and Power sent Schur a shutoff notice through the mail a few weeks ago.

Then crews placed a shutoff notice on his front door. A few days later, Schur was found by neighbors. Bay City Electric Light and Power, which is owned by the city, said a limiter was placed on Schur's electrical line. The device limits the power that reaches a home, and it blows out like a fuse if power consumption rises past a set level.

The manager of Bay City said the limiter was tripped sometime between the time of installation and the discovery of the man's body.

The city manager said city workers keep the limiter on a house for 10 days, then shut off power entirely if the homeowner hasn't paid utility bills or arranged to do so.

A medical examiner who conducted the autopsy on Schur told TV5 and WNEM.com that Schur died a painful death due to the hypothermia.

Dr. Kanu Varani has done hundreds of autopsies, and he said he'd never seen a person die of hypothermia indoors.

A neighbor who lives across the street from Schur is angered that the city didn't personally notify the elderly man about his utility situation.

Schur's neighbor, Herndon, said Schur had a utility bill on his kitchen table with a large amount of money clipped to it, with the intention of paying that bill.

Right now the city said the situation is still under investigation. Marvin Schur was a World War II veteran.

A memorial service for him will take place Wednesday at 11:00 a.m. at the Gephart Funeral Home in Bay City.



I, firefighter

The City of Richmond wants you! ... to become a firefighter. Recruiting efforts to staff the city's fire department will focus on women and visible minorities, but all applicants will be accepted and considered.

Hope your house doesn't catch on fire!



Russians Fucking Rule

