

# GBPPR 'Zine



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*"This morning, VG hosted an online Q. & A. with Jan Egeland, former Kofi Annan underling at the UN and soon-to-be director of the Norwegian Institute of International Affairs. One might have expected tough questions about, say, what Pedro A. Sanjuan has called 'the anti-Semitic UN culture,' about the UN's sky-high levels of corruption, and/or about the multitude of rapes that were revealed a while back to have been committed by UN peacekeepers. One would certainly think there'd be a question or two about the Oil-for-Food scandal, which Claudia Rosett has called 'the biggest fraud in the history of humanitarian relief,' and in which Annan has been deeply implicated.*

*But this is Norway, where the UN is sacred and Annan a saint -- and where the scandal was hardly reported at all. Therefore the Q. & A. read almost entirely like this:*

*Q. Is Kofi Annan as nice and sincere as he appears to be? He seems like an unbelievably decent man!*

*A. Yes, he is a really good human being."*

--- May 8, 2007 blog entry by Bruce Bawer. ([www.brucebawer.com](http://www.brucebawer.com))

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**NETWORK MANAGEMENT  
SOFTWARE SUBSYSTEM DESCRIPTION  
1 AND 1A "ESS" SWITCHES**

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# Network Management – Software Subsystem / #1A ESS (Part 1)

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**1. GENERAL**

**INTRODUCTION**

**1.01** This section describes the functional operation of the Network Management Subsystem programs in the 1 and 1A ESS switches.

**1.02** This practice is reissued to include coverage of the 1E8 and 1AE8 generic programs for 1 and 1A ESS switches. Change arrows are not used due to the large number of significant changes.

**1.03** This practice provides coverage for 1E8, 1AE8, and earlier generic programs.

**1.04** Part 6 provides a listing of the abbreviations and acronyms used in this section.

**PURPOSE OF NETWORK MANAGEMENT SUBSYSTEM**

**1.05** The network management subsystem programs provide capabilities for administering network management controls. The purpose of the controls is to permit the maximum number of calls to be completed without allowing the traffic congestion to spread throughout the network. The control capabilities effective with the 1E7/1AE7 and earlier generic programs include:

- (a) Code blocking
- (b) Toll code blocking
- (c) Trunk group controls (TGCs) (manual and automatic via receipt of dynamic overload control [DOC] signals)
- (d) Generation of DOC signals

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- (e) Discrete machine and network status indicators
- (f) Reroute control of traffic (preprogrammed controls only)
- (g) Transmittal of traffic measurement data to Engineering and Administrative Data Acquisition System (EADAS) control centers
- (h) Capability of EADAS/Network Management (EADAS/NM) to assign controls, poll for status of controls, and receive 5-minute data.

**1.06** The following network management controls are effective with the 1E8 and 1AE8 generic programs only:

- (a) Call gapping controls (replace code blocking and toll code blocking controls)
- (b) TGCs (preprogrammed and flexible)
- (c) Generation of DOC signals
- (d) Selective incoming overload controls (SILC)
- (e) Discrete machine and network status indicators
- (f) Network management reroute controls (NMRR) (preprogrammed controls)
- (g) Transmittal of traffic measurement data to EADAS control centers
- (h) Capability of EADAS/Network Management (EADAS/NM) to assign controls, poll for status of controls, and receive 5-minute data.

**1.07** The network management enhanced reroute controls (NMER) are effective with the 1AE8 generic program only.

**Note:** These controls are a type of flexible TGCs. Flexible TGCs are activated/deactivated via a TTY input message.

**1.08** It is very important to become familiar with the network management controls and their generic program sensitivity as outlined in paragraphs 1.05 through 1.07. The generic program sensi-

tivity of each control is not denoted every time the control appears in this practice.

## SCOPE OF SECTION

**1.09** This section includes:

- Brief description of network management subsystem programs
- Network management subsystem interface
- Network management overview
- Functional description of subsystem programs.

## 2. BRIEF DESCRIPTION OF NETWORK MANAGEMENT SUBSYSTEM PROGRAMS

**2.01** The network management subsystem as described herein is comprised of thirteen programs. Table A lists these programs.

### CALLING LINE IDENTIFICATION (CLID) ADMINISTRATION PROGRAM

**2.02** The CLID program provides for and maintains the memory containing the code blocking controls used for controlling network traffic and directory numbers (DNs) by which incoming calls are identified. When network controls are in effect, PIDENT NMGT checks the code block slots maintained by CLID.

**2.03** Effective with the 1E8/1AE8 generic program, the CLID program provides for and maintains the memory containing the CLID controls. PIDENT NMCG checks the CLID slots maintained by CLID.

### NETWORK MANAGEMENT CALL GAPPING (NMCG) PROGRAM

**2.04** This program is effective with the 1E8/1AE8 generic programs. The NMCG program provides the capability to block originating inter-LATA carrier traffic based on a carrier access code or destination code. Both North American numbering plan (NANP) and carrier interconnect codes can be controlled by call gapping. The call gapping controls are activated/deactivated via TTY input messages.

## NETWORK MANAGEMENT SELECTIVE INCOMING OVERLOAD CONTROL (NMSC) PROGRAM

**2.05** The NMSC program provides the capability to block incoming traffic that could congest the ESS switch. Selective incoming overload control signals are provided by the NMSC program to limit incoming traffic. The SILCs are activated automatically when the ESS switch machine congestion level 1 (MC1) or MC2 thresholds have been crossed. Selective incoming overload control (SILC) can limit incoming NANP and carrier interconnect codes.

## NETWORK MANAGEMENT (NMGT) PROGRAM

**2.06** The NMGT program maintains the control codes stored in memory by CLID (1E7/1AE7 and earlier). This program administers DOC signals to apply TGCs which are based on the percentage of attempts to the trunk group. Also, this program performs update routines on indicators associated with real-time breaks, timing, code block status, DOC information, and trunk group number (TGN) data.

## NETWORK MANAGEMENT INDICATOR (NMIN) PROGRAM

**2.07** The function of the NMIN program is to update the network management indicators located at the network management centers. The program provides for a printout of the trunk group no-circuit data via TTY input message.

## NETWORK MANAGEMENT MAINTENANCE (NMMP) PROGRAM

**2.08** The NMMP program performs the following functions:

- (a) DOC transmitter schedule and demand exercise
- (b) DOC transmitter maintenance universal timing
- (c) DOC transmitter interrupter supervision
- (d) DOC transmitter maintenance on MC3 failures
- (e) DOC transmitter lamp test interface

(f) Loop restoral

(g) Central pulse distributor power restoral.

## NETWORK MANAGEMENT REROUTE CONTROL (NMRR) PROGRAM

**2.09** The NMRR program provides network managers the capability to reroute traffic away from congested or troubled switching facilities to other facilities having sufficient switching capacities. The rerouting controls may be applied to both local and toll calls. An audit of the control data slots in memory is performed and errors are printed via the TTY. The program provides for manual activation and deactivation of the control. Options to the reroute control are trunk hunting, percentage of blocking, type of traffic, and to trunk group (TTG) selection.

## NETWORK MANAGEMENT TOLL CODE BLOCKING (NMTC) PROGRAM

**2.10** The NMTC program provides the capability for blocking intertoll calls destined to congested areas having facility switching problems due to telethons, natural disasters, etc. Toll blocking applies to toll offices on a per system basis and is effective on a per call basis. The toll blocking controls are activated/deactivated via TTY input messages.

## TRANSMIT DYNAMIC OVERLOAD CONTROL SIGNALS (NMTD) PROGRAM

**2.11** The NMTD program detects and analyzes DOC signals received from other offices. Every 5 minutes, an exception message printout on peg and usage counts is given. During a phase 3 system operation, an audit of the T1 and T2 scan points is made. The incoming overload control lamps are set by SILC or DOC via the NMTD program.

## NETWORK MANAGEMENT (NMTG) PROGRAM

**2.12** The NMTG program provides the capabilities for limiting the amount of traffic leaving an office that is destined for a congested area based on the trunk group over which a call is to be routed. Two types of TGCs, *preprogrammed* and *flexible*, are provided for limiting or changing the routing of outgoing traffic. Control options to these TGCs are *cancel-to*, *cancel-from*, and *skip*. A *trunk*

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**reservation** option may be applied to the flexible TGC type.

## EADAS/NM INTERFACE (NMEA) PROGRAM

**2.13** The NMEA program performs the interface functions between the ESS switch and the Engineering and Administrative Data Acquisition System (EADAS) and network management (NM) center. The program administers the transmission of EADAS data over specified data links. Five types of data are channeled to the network management center which are: (1) traffic (5-minute data), (2) status and event discretely, (3) network management control status, (4) verification of H and C schedules, and (5) verification of trunk group. The program processes messages sent by EADAS/NM. This allows EADAS/NM to monitor status, activate, and deactivate network management controls.

## ENGINEERING AND ADMINISTRATIVE DATA ACQUISITION INTERFACE (EDAS) PROGRAM

**2.14** The EDAS program processes polls sent by the EADAS center, formats the output data, and initializes the data link circuitry which transmits the data to the EADAS center. The program routines are scheduled by the ECMP program as a class C job.

## EADAS TRANSLATION VERIFICATION ROUTINES (EDVF) PROGRAM

**2.15** The EDVF program verifies the EADAS data for the EDAS program.

## 3. NETWORK MANAGEMENT SUBSYSTEM PROGRAM INTERFACE

**3.01** The network management subsystem programs interface via global entries to eighteen programs as shown in Fig. 1.

**3.02** The teletypewriter program (TTIA) makes global entries into the network management subsystem programs as listed in Table B.

**3.03** Table C lists the network management program entries from the Executive Control Main Program (ECMP).

**3.04** The Executive Control Input/Output (ECIO) program transfers to the interface with Engi-

neering and Administrative Data Acquisition Interface Program (EDAS) every 15 ms on the J-level at global EAXMIT which analyzes the poll received from the EADAS center.

**3.05** When all digits have been dialed and the network management control is activated, the Digit Analysis Lines (ORDL) program interfaces with NMRR, NMGT or NMCG (1E8/1AE8 and later). Enter NMRR if rerouting of the call is indicated and NMGT to determine if network management control is in effect.

**3.06** The Digit Analysis Trunks (ICAL) program interfaces with NMGT at global NMCBCI or with NMCG at global NMCGIC. This function is performed during the processing of tandem calls to determine if the incoming tandem call is to be network controlled.

**3.07** The Digit Analysis Trunk - Revertive (ICRV) program makes a transfer to NMGT at global NMCBCI or NMCG at global NMCGIC. This function is performed during the processing of toll calls to determine if the incoming tandem revertive-trunk call is to be network controlled.

**3.08** The Supervision (SSCD) program interfaces with NMGT at globals NMPPAA and NMPPAR. When SSCD detects that the received DOC signals are associated with trunk group preprogram, global NMPPAA is entered to set the T1 and T2 bits. If DOC signals associated with the preprogram control are lost, entry is made at NMPPAR to set the T2 bit to the unsaturated state.

**3.09** The Receiver Attachment Delay Report (RADR) program enters NMEA at the following global subroutines.

- (a) NMRDAL (loads output buffer with information indicating whether or not test calls are being allowed to determine receiver delay)
- (b) NMIHNO (transmits RADR-INHIBIT NG response to EADAS center)
- (c) NMIHOK (transmits RADR-INHIBIT OK response to EADAS center).

**3.10** The Traffic Measurements (TFCT) program enters NMEA at global NMEATF for transmission of illegal traffic data response to the EADAS

center. Program TFCT enters EDAS at globals EADAS5 and EDAPLT for formatting and processing the poll time data.

**3.11** The System Alarm (MCLM) program transfers to NMMP at global NMSPOW when the power alarm on the DOC frame indicates that power has been restored.

**3.12** The Tandem Connections (TAND) program and the HILO 4-wire outpulsing (HLOP) program interface NMRR at global NMRRCT to check for rerouting of the tandem call.

**3.13** The Translation Routines—Basic Trunk (TRBT) program interfaces NMRR at global NMRTAF to obtain traffic counts on cancelled calls. Program TRBT transfers to NMTG when the outgoing load control indicator in the trunk group head cell indicates TGCs are activated.

**3.14** The NMGT or NMG (1E8/1AE8 and later) program interfaces with MAUD, MCTWADMN, SADA, SADT, and SARG at the following globals:

- (a) NMTT2 (performs audits on T1 and T2 associated with DOC scan points)
- (b) NMGTMGS (provides listing of all active code blocks)
- (c) NMMCTH (calculates receiver threshold values)
- (d) NMAUD1 (audits trunk group controls)
- (e) NMSEGA (performs audit on segment work indicators).

**3.15** The intrarelationship of network management subsystem programs is summarized in Table D.

## 4. NETWORK MANAGEMENT SUBSYSTEM OVERVIEW

### NETWORK CONTROLS

#### A. Code Blocking

**4.01** Code blocking controls may be applied by the ESS switch which limits incoming traffic routed to congested traffic areas in order to prevent

the congestion to spread throughout the switching network. The control is based upon the destination code (3-digit area code, 3-digit office code, 6-digit code, 7-digit code, 10-digit code) as determined by the local 3-digit and toll code blocking 3-digit index to NPA. The code blocked calls are routed via one of three fixed route indexes, EA1, EA2, or NCA. The control of each code is applied as percentage of call attempts. The percentages are 50, 75, 87 1/2, and 100 percent. The code blocking controls are activated and deactivated via TTY input messages. When code blocking controls are in effect, the digit analysis programs, ICAL or ICRV, transfer to the network management (NMGT) program to process the code blocking function.

#### B. Toll Code Blocking

**4.02** The blocking of intertoll calls is processed by the NMTC program. Teletypewriter input messages, used for normal code blocking, are also used for activating and deactivating the function.

#### C. Call Gapping Controls

**4.03** Call gapping provides manual code control of originating inter-LATA carrier traffic based on a specific carrier access code (ignoring the destination code) or based on a specific destination code (ignoring carrier access code). Call gapping sets an upper limit on the rate at which outgoing attempts to a particular code are allowed out of an ESS switch. The control of each code is provided by allowing only one call per specified time interval to leave the ESS switch. This specified time interval is called a gap interval. There are 13 gap intervals, ranging from 0.1 second to 600 seconds. See Fig. 2 for gap indexes and the associated gap interval. Both NANP and carrier interconnect codes can be controlled by call gapping. Calls affected by call gapping controls are routed to one of three fixed route indexes: NCA, EA1, or EA2.

#### D. Trunk Group Controls

**4.04** Trunk group controls (TGCs) provide the capabilities to limit traffic to a congested area based on the trunk group over which a call is to be routed. There are two types of TGCs, preprogrammed and flexible. Preprogrammed controls are activated on prespecified trunk groups. Flexible controls can be activated on any trunk group in the ESS switch. Three control options are available for flexible TGCs (cancel-to, cancel-from, and skip). Also, there is a

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trunk reservation option that can be used to limit the number of attempts offered to a trunk group when less than the specified number of trunks remains available. One of two thresholds, protectional reservation of equipment (PRE) and directional reservation of equipment (DRE), may be applied to the trunk reservation option. The threshold PRE is used in reserving facilities for the first-routed traffic. If the PRE threshold is exceeded, all traffic alternate-routed to this trunk group is inhibited from searching for an idle trunk in any trunk group and is routed to the NCA. The threshold DRE is used in reserving facilities for incoming traffic. If the DRE threshold is exceeded, all traffic to this trunk group is inhibited from searching for an idle trunk in any trunk group and is routed to the NCA.

#### **E. Network Management Reroute Controls (Preprogrammed)**

**4.05** The reroute control functions are processed by the NMRR program. The reroute control feature provides network managers with the capability to insert normally inaccessible routes into a route advance chain. That is, traffic may be rerouted away from congested network areas, represented by a trunk group called the from trunk group (FTG) to areas represented by a trunk group called the to trunk group (TTG) where sufficient switching capacities are available. The options consist of FTG trunk hunt options (when the control is effective), percentage options (percentage of calls affected), and selection of the TTG.

#### **F. Network Management Enhanced Reroute Controls**

**4.06** The NMER controls are a type of flexible TGCs initially available with the 1A E8 generic program only. The NMERs have the same capabilities as the NMRRs. The NMERs are activated via TTY input messages, making these controls easier to activate/deactivate if compared to preprogrammed NMRRs. Four control options are available to the NMERs: immediate single reroute, immediate spray reroute, regular single reroute, and regular spray reroute controls.

#### **G. Dynamic Overload Control (DOC) Signals**

**4.07** Program NMGT provides the use of DOC signals which are sent from tandem and toll offices to connected ESS switches requesting that they limit the amount of traffic being received. The ESS

switches use the DOC signaling feature when shortages exist in real time, multifrequency receivers, dial pulse receivers, revertive pulse receivers, or other call switching resources. The NMGT program processes two levels of signaling for the shortages of real time and receivers. The shortage of real time is determined indirectly from the E-E cycle time through the length of the incoming overload control queue. The shortage of receivers for each receiver type is determined by the length of the queue for that receiver type. The program checks the thresholds for real time and receiver shortage every 2 seconds. When a threshold is exceeded, the sending of DOC signals is initiated. When the shortage drops below the threshold value, the transmission of the DOC signal is stopped. The two levels of signaling for the shortage of real time and receivers are known as MC1 and MC2. The MC1 level indicates that the machine is sufficiently congested to cause substantial delays in receiver attachment. The MC2 level indicates that the machine is considerably more congested than MC1 level. The MC2 level indicates delays of 40 to 80 percent of the receiver holding time. The MC3 signal is sent when the ESS switch is incapable of processing calls. The command source for the MC3 signal is derived from either of two lamp signals on the master control center (MCC). These are: (1) emergency action phase in progress and (2) repeated time-out. In general, the transmitted DOC signal is an ON signal interrupted by an OFF signal every 30 seconds. The interruption is provided by a duplicated hardware interrupter. The interrupter is monitored by program NMMP which switches the interrupters, sounds a minor alarm, and prints a TTY output message when a fault occurs.

#### **H. Selective Incoming Overload Control**

**4.08** Program NMSC provides the use of SILC controls which are activated when the ESS switch becomes congested and traffic must be limited. The two levels of signaling for the shortage of real-time and receivers are processed in the same manner as for DOC (paragraph 4.07). The SILC controls apply only to MC1 and MC2, where DOC controls apply to all three levels of congestion. When either of these thresholds are crossed, SILC is automatically activated by the ESS switch that is congested.

#### **I. Status Indicators**

**4.09** A visual display indicating the current machine and network status is activated via sig-

nal distributor (SD) points by program NMIN. Every 10 seconds, an entry is made to NMIN from the main program to update the indicators. The display indicates the status of:

- (a) Transmitters (multifrequency, trunk dial pulse, revertive pulse)
- (b) Receivers (touch-tone customer dial pulse, trunk dial pulse, trunk revertive pulse, and trunk multifrequency)
- (c) Incoming load control
- (d) Incoming overload queue
- (e) Matching loss
- (f) Machine congestion
- (g) Internal queues.

#### ENGINEERING AND ADMINISTRATIVE DATA ACQUISITION SYSTEM

**4.10** The EADAS system provides network managers information on traffic and status of the switching facilities located within the network for which the management center is responsible. This system consists of a minicomputer located at the network management center and associated data links connected to ESS switches.

**4.11** The following four types of network management data are channeled to the centers from the ESS switches and displayed via modular display boards, cathode ray tube terminals, and receive-only line printers.

- (a) Traffic
- (b) Status and event discretets
- (c) Network management control status
- (d) Verification of the H and C schedule.

**4.12** Traffic data, transmitted from the traffic data converter (TDC) over baud channels, is received by an interface circuit at the central location and is temporarily buffered. The central control unit (CU) scans the input channels and transfers each new data word to a temporary buffer area in the core

memory. The central processor moves the data from the buffer core area to disk facilities where counts are accumulated. This data base on disk contains the accumulated totals for each input for each TDC and serves as the data base for the real-time calculations. At scheduled intervals, the accumulated data is written on magnetic tape.

**4.13** All information passed between the EADAS facility and the ESS switch is coded into 8-bit characters. The characters are transmitted in pairs; each pair forms a word. The two 8-bit characters are stored in call store blocks. The input and output buffer area of call store is addressed by word N2EADAS. The scratch area in call store for the EADAS/NM function is pointed to by word N2EADAC. Parameter word N2NMEA is used to address a call store block which varies in size from 11 to 260 words. Eleven words of this block are used as a scratch and storage area for status discretets. If 5-minute flexible trunk group measurements are to be made, the remaining 249 call store words are required.

**4.14** All data received at the EADAS collection center falls into one of three types:

- (a) Single-count data
- (b) Accumulated data
- (c) Discrete-event data.

**4.15** The EADAS center requests information by sending groups of characters called polls. There are three types of polls:

- (a) Traffic (three characters)
- (b) Interface (four characters)
- (c) Network management (multiple characters).

**4.16** The polls are received one character at a time. When the transmitter and receiver input scan routines detect a character on the EADAS channel, the character is loaded in the EADAS input hopper causing a main program job flag to be set. When all characters for a poll are received, the appropriate subroutine in the EADAS programs is entered which formats the data into the EADAS output buffer and turns on the EADAS output routine to transmit the block of words. As each character of a poll is received

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from EADAS, the ESS switch sends it back to EADAS. The EADAS, in turn, validates the returned poll.

**4.17** The NMEA program updates a copy of the status discretely using three methods: (1) scans for machine status indicators every 2 seconds, (2) updates a discrete when an event occurs in the machine, and (3) scans the indicators after an entry from EADAS/NM when the 20-second status discrete poll is received. With the EADAS/NM feature, the ESS switch scans the machine and network status indicators every 2 seconds and sets the status discretely accordingly. Once a machine status discrete has been set to the ON state, it remains in this state until the status block is transmitted to the EADAS/NM center.

**4.18** When traffic counts are requested, the EDAS program assembles the counts from the H and C schedule that are flagged for the 5-minute network management data collections. The program transmits the data via the EADAS data link to the EADAS/NM center.

**4.19** When an ESS switch requests the status of active controls, EADAS/NM sends special polls that simulate TTY inputs to the EADAS computer. When the EADAS computer receives one of these polls, it loads the American standard code for information interchange (ASCII) characters received as input with the poll into a special EADAS TTY buffer for the EADAS channel. The buffer is then released to the TTY program. The TTY program handles the data essentially the same as if the ASCII characters were input on a TTY at the office. As a result of the TTY processing, the network management program gets an entry from the TTY program. The network management program processes the message normally until it is time to output a response. When the network management programs realize that the request for data was an EADAS request, the data is formatted for output to EADAS. The output formats are the buffer layouts for the data being transmitted to EADAS/NM from the 1ESS switch via EADAS. Buffer layouts include a header, the length of the buffer being transmitted, data which can identify the type of control requested, and any specifics of the control which EADAS/NM may require to understand the status of the office. After formatting, the output is loaded in the EADAS output buffer. The ESS switch EDAS program will subsequently transmit the contents of this output

buffer. In addition to the EADAS/NM output transmission, the network management programs also generate conventional TTY printouts on the network management or traffic channel. These printouts consist of messages that activate, deactivate, or change network management controls in the ESS switch.

## 5. FUNCTIONAL DESCRIPTION OF NETWORK MANAGEMENT PROGRAMS

### CALLING LINE IDENTIFICATION (CLID) ADMINISTRATION PROGRAM

#### A. Function

**5.01** The purpose of the CLID program is to maintain, in memory, codes used for identifying calling line directory numbers via CLID controls. Whenever the digit analysis programs determine that network control is in effect, a transfer is made to the NMGT program which searches the code block/CLID slots (Fig. 3) (1E7/1AE7 and earlier generic programs) for effective codes.

**5.02** Effective with the 1E8/1AE8 generic programs, CLID performs the same function as outlined in paragraph 5.01 except that CLID slots are searched instead of code blocking slots. (Fig. 4).

#### B. Program Description

**5.03** The program contains three global subroutines, CLENTN, CLRMVE, and CLLIST, for administering the CLID list. Each is initiated by a TTY input message. Figure 5 (1E7/1AE7 and earlier generic programs only) depicts a simplified flow diagram for each subroutine.

#### CLID Entry

**5.04** The TTY input message, CI-ENTER, is used to place a code on the CLID list. After message validation, transfer is made from the TTIA program to global CLENTN. This subroutine makes a check for available space on the CLID list and, if none is found, a TTY output message NO is printed. If space is available, transfer is made to subroutine ROOM (1E7/1AE7 and earlier) or subroutine CONVERT (1E8/1AE8 and later), which converts and formats the dialed digits. If a duplicate control is found, the priority alarm in that control is replaced. If the input message is acceptable, a TTY output message OK is

returned. The program then transfers to the main program.

#### CLID Removal

**5.05** Global CLRMVE is entered from the TTIA program when TTY input message CI-REMOVE is typed to request that a code be removed from the CLID list. The subroutine makes a transfer to subroutine ROOM or CONVERT (1E8/1AE8) to translate and set up the data for removal of the code. If the code is removed, a TTY output message OK is returned. The subroutine CLRMVE then transfers to the main program.

#### CLID Listing

**5.06** Subroutine CLLIST is entered from the TTIA program in response to the TTY input message CI-LIST which lists the CLID entries. The subroutine is also entered from the NMGT or NMCG program. If an entry contains a DN, the digits are converted for printing by TTY output message CT06. If the subroutine was entered via the TTIA program, transfer is made to the main program. If the subroutine was entered from NMGT or NMCG, program control is returned.

### NETWORK MANAGEMENT (NMGT) PROGRAM

#### A. Function

**5.07** The NMGT or NMCG (1E8/1AE8 and later) program performs the following functions:

- (a) Activates code blocking controls (1E7/1AE7 and earlier) or call gapping controls (1E8/1AE8 and later) via TTY input message.
- (b) Deactivates code blocking controls or call gapping controls via TTY input message.
- (c) Clears CLID entries in memory.
- (d) Administers OUTGOING LOAD CONTROL lamp.
- (e) Administers DOC signals.
- (f) Audits memory associated with DOC scan points.

(g) Updates indicators (real-time breaks, timing, code block status or call gapping status, DOC data, and trunk group number [TGN] data).

**5.08** Table E summarizes global subroutines interfacing with both the network management subsystem programs and other system programs.

#### B. Program Description

##### Call Processing Interface

**5.09** When all digits have been received on a call and a network management is activated, a program entry is made at global NMCBCO (1E7/1AE7 and earlier) or global NMCGOR (1E8/1AE8 and later) from the ORDL program. This subroutine determines if the dialed digits match the digits in any of the code block slots/call gapping slots. If not, the program transfers back to ORDL. If there is a match for code blocking or call gapping and the call is determined to be blocked, the call is routed via a fixed route index to a recorded announcement by transferring to subroutine ORSTRI in ORDL.

**5.10** Tandem traffic calls, received from PIDENTS ICAL and ICRV after all digits have been analyzed and a network management recent change has been applied, are passed to NMGT1A00 at global NMCBCI or NMCG at global NMCGIC (1E8/1AE8 and later). Tandem calls are processed in the same manner as normal originating calls.

##### Code Blocking Controls/Call Gapping Controls

**5.11** When code blocking controls are activated via the TTY, a transfer is made from the TTIA program to NMGT or NMCG. If the request is not ignored because of a previous request being processed or the recent change buffer is full, this subroutine transfers to subroutine DATA CHK for a validation of the input data. Both the prefix code and digits are checked. If an error is found, TTY output message NM05 is returned. If the test result is a success, digit data words are formatted for processing. The subroutine DIGIT CHK converts the 0 digit to 10, ASCII code to binary coded decimal, and Xs to 0s. For calls affected by code blocking controls, one of four blocking control values (50, 75, 87 1/2, or 100 percent) may be applied. For calls affected by call gapping controls, one of thirteen gap intervals (ranging from 0.1 second to 600 seconds) may be applied.

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**5.12** When the control is manually deactivated by the TTY input message, the TTIA program transfers to NMGT or NMCG (1E8/1AE8 and later). If the scratch area is in use, a TTY output message NM06 is printed and control is returned to the TTIA program. If the scratch area is free, a transfer is made to subroutine DATA CHK for data validation. If the data is valid, a transfer is made to subroutine NMCLDA to deactivate the code block entry. Also, each rate center which the code block or call gapping entry indicates is checked by this subroutine to see if it is set up for blocking. The digits entered in the deactivation request are compared to the code block slots. If a match is detected, the entry is deleted and a TTY output message NM06 REMOVD is printed. Program control is returned to TTIA.

**5.13** The code block slots can be cleared via the TTY input message CB-CLEAR. Subroutine NMCBRA is entered to check if an activate request is in progress. If so, a NM08 NG TTY output message is printed and control is returned to the TTIA program. If not, each occupied slot is deactivated and the NM08 TTY output message is printed indicating code blocks are cleared.

**5.14** The call gapping slots can be cleared via the TTY input message CG-CLR. The NM08 TTY message is printed indicating the call gapping controls are cleared.

#### Administration

**5.15** Subroutines NMOLLS and NMOLLR administer the state of the outgoing load control lamp. These subroutines are entered from PIDENTS NMTC and NMTG or NMCG to turn on and/or off lamp. Subroutine NMOLLS determines if the lamp is on due to an outgoing load control function. If so, program control is returned; if not, the lamp is lighted red. Subroutine NMOLLR turns the lamp off unless outgoing load control is active. The lamp is lighted amber when outgoing load control is in effect.

**5.16** A listing of the active code blocking controls or call gapping controls is provided by subroutine NMCBST via TTY input message CB-STATUS or CG-STATUS (1E8/1AE8 and later), respectively. The NMCBST subroutine lists each occupied slot. The code and disposition of affected calls is printed in the TTY output message NM03.

**5.17** The DOC signals are administered every 2 seconds by subroutine NMSDOC. A check is made to determine what threshold values to apply (minor overload, major overload, or normal). For real time, the current DOC levels are found by comparing the length of the incoming overload control queue to the MC1 and MC2 values. For real time concerning MF receivers, the length of the queue for the receiver is checked. Figure 6 shows the procedure for calculating DOC thresholds for MC1 and MC2.

**5.18** Upon receipt of the DOC signal at the scan point that is associated with a preprogrammed TGC, global NMPPAA is entered from SSCD. The T1 bit is set to accept and the T2 bit is set to saturated so that the scanner will accept the next change of state of the scan point as a loss of the DOC signal. If an MC1, MC2, or MC3 acknowledgement is received, a transfer is made to subroutine NMDCAR in program NMTD. When the DOC signal is received, transfer is made to subroutine NMPAA1 in program NMTG.

**5.19** The control is automatically reset by subroutine NMPPAR upon loss of the DOC signal associated with the preprogrammed TGC. The T2 bit is set to accept (saturated) and the T1 bit is unsaturated. In the case of a lost DOC signal, a transfer is made to subroutine NMPARI in program NMTG which deactivates the preprogrammed TGC corresponding to the DOC signals.

#### Audits

**5.20** Each time the MSN audit function in program MAUD finds the nontrunk program index (NTP1) equals 57, an entry is made at subroutine NMT1T2 to audit the T1 and T2 bits associated with the DOC scan points. If the preprogrammed TGC is manually active, T2 is set to ignore. If the preprogrammed TGC is in the automatic active state, T1 is set to saturated and T2 is set to accept. If the preprogrammed TGC is not active, T2 is set to accept and T1 is unsaturated. When the audit is completed, transfer is made to subroutine MCRAMP in program MAUD.

**5.21** Every 8 to 12 minutes, subroutine NMSEGA is entered from the SARG program to check the segmented work indicators in order to prevent lockout. The subroutine checks and updates indicators for real-time breaks, error print, timing, code block status, DOC data, and TGN data. If the indica-

tor fails to be reset, a TTY output message NM09 is printed. If no error is found, program is returned to SARG.

**5.22** Periodically, an entry is made at global NMAUD1 to audit the TGCs. The subroutine first makes a transfer to subroutine NMEAAU, located in program NMEA, for an audit of the block 63 data structure. The call store constants, used by the NMGT or NMCG program, are initialized. A transfer is made to subroutine NMAUD4 for an audit of the code control slots. If the slot is incorrectly in the real-time break state, it is corrected and a TTY output message SA03 is printed.

**5.23** If the slot is occupied, a range check is made on all the digits. If an error is found, an appropriate TTY output message SA03 is printed.

**5.24** After all slots have been checked, the active code block or call gapping count is validated. If there is an error, the correct code block or call gapping count is entered and the SA03 output message is printed.

**5.25** The final function of the audit subroutine is to print the TTY output message NM09 if error is detected. System control is then transferred to subroutine MACS24 in program MACR.

## NETWORK MANAGEMENT INDICATOR (NMIN) PROGRAM

### A. Function

**5.26** The NMIN program performs two major functions:

- (a) Updates network management indicators (machine status, network status).
- (b) Provides a listing of trunk group no-circuit data.

### B. Program Description

**5.27** The indicator update function is performed by three subroutines:

- (a) NMSTST [controls SD relays in the network management indicator circuit (SD-1A335-01)]

- (b) NMGPOB (hunts POB and loads orders to operate SD relays)

- (c) NMPOBI (idles POB and updates the state word).

### Network Management Indicator Circuit

**5.28** Every 10 seconds, an entry is made from the main program to NMIN at subroutine NMSTST to perform actions on the SD relays associated with the network management indicator circuit. The purpose of this circuit is to provide the interface for the network management display located in the network management center. The states of the circuit relays indicate the current machine and network conditions. The segment indicator in the call register is checked to determine the segment (1, 2, 3, or 4) that is to be processed. The office slot indicators and TGNs are updated for segment 1 only. When all TGNs are processed, transfer is made to subroutine NMGPOB.

**5.29** After either a phase 3, 4, or 5 has occurred, the SD points associated with the network management indicator circuit are released. This action is required because the call store memory that contains the states of the points was zeroed during the phase.

### Peripheral Order Buffer Execution

**5.30** The NMGPOB subroutine obtains the register index and program tag data from word 0 of the pseudo call register (Fig. 7) for processing the POB containing the SD order. A unit type translation is performed for unit type 56, member number 2 to obtain the MTDN to be operated for each indicator. A subtype failure 4 is associated to the MTDN and stored in item FT of the pseudo call register. The appropriate SD order is then loaded in the POB.

**5.31** The NMPOBI subroutine initially makes a transfer to subroutine PQIDWL in QEPR to idle the POB. The state word associated with the SD point of the call store block of memory dedicated to the network management indicator circuit is updated.

### Trunk Group No-Circuit Data

**5.32** When the TTY input message TGN-DATA is entered, a transfer is made to subroutine NMSTDT. This subroutine provides a TTY output

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message NM16 printout which lists the TGNs to which no-circuit indicators are assigned in the member number 2 auxiliary block. The auxiliary block (Fig. 8) is accessed by subroutine NMDASG which provides a segmented list of the TGNs via a NM16A printout. A transfer is then made to the main program.

## **NETWORK MANAGEMENT MAINTENANCE (NMMP) PROGRAM**

### **A. Function**

**5.33** The primary purpose of the NMMP program is to perform maintenance on the DOC transmit function and applique circuitry.

### **B. Program Description**

**5.34** The NMMP1A00 program is divided into seven program units.

- (a) DOC Transmitter Scheduled and Demand Exercise
- (b) DOC Transmitter Maintenance Universal Timing
- (c) DOC Transmitter Interrupter Supervisory
- (d) DOC Transmitter Maintenance (MC3 failure actions)
- (e) DOC Transmitter (MCC lamp test interface)
- (f) Loop Restoral
- (g) Central Pulse Distributor Power Restoral.

### **DOC Transmitter Scheduled and Demand Exercise**

**5.35** The DOC transmitter scheduled and demand exercise subroutine NMMDEX is entered either from ECMP once every 24 hours or by request via the TTY. Its function is to test the interrupter circuits and emergency action (EA) timer to determine what maintenance actions should be performed. The exercise function will be aborted if either there are no POBs available or the MCC lamp test is in progress. Actions are performed which inhibit the MCC lamp test, restoral of DOC loops, interrupter, and MC3 failure actions. The EA timers are tested to ensure correct operation and accurate timing.

### **Interrupter Test**

**5.36** Periodic and duration tests are performed on the interruption signal requirements and testing tolerances. The interrupters are tested by POB orders which change the state of both interrupter power control relays on the SD applique circuit. When the orders are executed, a return is made to the client indicating either successful execution or failure. If only one interrupter functions correctly, the minor alarm is sounded and TTY output message NM26 is printed. If neither of the interrupters functions correctly, the major alarm is sounded and TTY output message NM26 is printed.

### **EA Timer and MC3 Loop Test**

**5.37** To test the MC3 loops, orders are loaded in the POB which operate or release the MC3 loop-around relay on the SD applique circuit. The purpose of the loop-around relay is to isolate the MC3 send and acknowledgement loops from the facilities. To test that the MC3 loops are sending and that the associated timer is operating, orders are loaded in the POB to operate or release the MC3 maintenance send relay. The MC3 maintenance relay has a similar input to the MC3 circuit as is the EA phase in progress lamp or the repeated time-out lamp.

### **Test Failure Response**

**5.38** Refer to TTY Output Manual OM-6A001-01 for a detailed description of the NM26 TTY output message for each type of failure in the NM26 TTY output message.

### **DOC Transmitter Maintenance Universal Timing**

**5.39** Once every second, an entry is made from the ECMP program to subroutine NMDXTR to administer most of the timing necessary for the operation of all the NMMP subroutines. When the entry is made while the interrupter is running correctly, the counter N2DOCXFOR is incremented on every entry.

### **DOC Transmitter Interrupter Supervisory**

**5.40** In the case where the failure of the active interrupter is caused by counter overflow when no interruption is transmitted for 31 seconds, a steady on-signal is sent on the DOC loops. This invalid signal times out all of the DOC receivers. The

failing interrupter is removed from service and the standby interrupter is activated. If all activated DOC loops fail to return an acknowledgement, a second counter is incremented. This counter overflows within 4 seconds if the same failure exists. Subroutine NMSINT also resets this counter. This subroutine is entered from the NMTD PIDENT.

#### DOC Transmitter Maintenance (MC3 Failure Actions)

5.41 Whenever a MC3 false acknowledgement is received, an entry is made to subroutine NMDXFL from NMTD to isolate the MC3 loops from the facilities. The MC3 false acknowledgement is a hardware failure in the DOC transmitter that causes MC3 to unknowingly be transmitted. When a failure is detected, a minor alarm is sounded and TTY output message NM26 is printed.

#### DOC Transmitter (MCC Lamp Test Interface)

5.42 Whenever a manual request is made via the TTY to test the MCC panel lamps, an entry is made to subroutine NMMCLT. The purpose of this subroutine is to prevent the sending of MC3 signals during the lamp test. The loop-around relays are operated in such a manner that they will not cause any interference with any of the DOC maintenance actions being performed.

#### Loop Restoral

5.43 When TTY input message DOCX-RESTORE is received, an entry is made to subroutine NMMRST. If either a MC1 or MC2 loop is indicated in the request, the subroutine restores the loop out-of-service bit. If MC3 loop is indicated and POBs are available, the loop out-of-service bit is restored and the loop-around relay is blind-idled. If no POB is available, the response NO is returned.

#### Central Pulse Distributor Actions for Power Restoral

5.44 Subroutine NMSPOW is entered from PIDENT MCLM when the power alarm on the DOC frame indicates that power has been restored. Since the interface circuitry between the CPD and the interrupter selection relays does not predictably set or reset when power is removed and restored, the NMSPOW routine repulses the CPD points according to the present state circuit indicator.

## NETWORK MANAGEMENT REROUTE CONTROLS

### A. Function

5.45 The NMRR program provides network managers the capability to reroute traffic away from congested or trouble switching facilities to other facilities having sufficient switching capacities. The reroute control function allows traffic destined for one trunk group called the FTG to be routed to another trunk group called the TTG. The reroute control options are trunk hunting, percentage of blocking, type of traffic, and TTG selection. Trunk hunting may be either immediate or regular. Preprogram NMRRs have 5 percentage options (0, 25, 50, 75 and 100 percent) for controlling direct and/or alternate route traffic. Up to three TTGs may be selected for the rerouted traffic.

5.46 Effective with the 1AES generic program only, NMERs (flexible TGCs) perform the same functions as preprogrammed NMRRs. The NMERs have an additional control option called the cancel in-chain return option. The cancel in-chain return option gives the network administrator the ability to prevent the return of rerouted attempts to normal in-chain routing (trunk hunting), when all TTGs are busy at the originating office. Immediate reroutes have nine percentage options (0, 12.5, 25, 37.5, 50, 62.5, 75, 87.5 and 100 percent) for controlling direct and/or alternate routed traffic. Regular reroutes also have nine percentage options (same as the immediate reroute percentages) used for rerouting traffic that overflows the FTG. Up to seven TTGs can be selected for the rerouted traffic.

### B. Program Description

#### Reroute Control Activation

5.47 Two methods are provided for activation of the reroute controls.

- (1) TTY input message [flexible (NMERs) or preprogrammed (NMRRs)]
- (2) Saturation of scan point associated with a preprogram reroute control caused by the reception of a DOC signal.

**Note:** Only preprogrammed NMRRs can be activated by DOC signals.

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**5.48** When a preprogrammed reroute control is manually activated, the outgoing load control bit in the trunk group head cell is set. Parameter word N2TGNANX points to the trunk group head cell (TGNANX). One word (reroute control slot) is required for each trunk group that can be controlled via a TGC. The reroute control slot contains a preprogrammed TGC pointer (NMPTR). This pointer indexes the TGC/activity block (TGPP). This call store block is required for each trunk group in the office that can be controlled via a preprogram TGC. The TGPP call store block is indexed by bits 1 through 7 of word 2 in the unit type 46 auxiliary block (Fig. 9) or from the TGNANX call store block. Also, for preprogrammed reroute controls to be functional, optional word R in the supplementary TGN translator auxiliary block must be built. Optional word R is required for any TGN that can be used as a FTG or a TTG.

**5.49** For flexible reroute controls, TGNANX call store word indicates if a flexible reroute control is active. Bits 7 through 13 of the TGNANX word (associated to the trunk group being controlled) contains a flexible reroute control pointer (FLXPTR). The FLXPTR points to the flexible TGC block. This block contains the single or spray reroute indicator and associated reroute index. The reroute index points to one of the two reroute control tables, single reroutes (Fig. 10), or spray reroutes (Fig. 11).

**5.50** The activation of a preprogrammed reroute control caused by the DOC signal results in the network management lamp on the MCC being lighted. If no reroute control slot is available, the data structure is initialized except for the reroute control slot. When a slot becomes available, the initialization is performed by the audit routine. Table F summarizes global subroutines interfacing with the network management subsystem programs.

#### Base Level Call Processing

**5.51** When all digits have been received on a call and network management reroute control is activated, a transfer is made from the ORDL program to subroutine NMRRCO in NMRR. This subroutine checks the reroute indicator in the change-in-network (CIN) failure word. If rerouting is not indicated, program control is returned. If rerouting is indicated, digits 1, 2, and 3 are translated by subroutine TRNRCD located in program TRBD to check for reroutability of the three digit codes. If seven digits

are associated with the call and the numbering plan area (NPA) of the FTG and TTG are different, the NPA of the FTG is inserted into the call register. If ten digits were dialed, the NPA digits in the call register are checked to determine if they were the same as the NPA of the TTG. If the NPA digits in the call register match those in the NPA associated to the terminating TTG, the NPA digits are deleted from the call register. After the call register digits have been set up for completion on the TTG, the route index (RI) in the call register is changed to the TTG RI and is stored in the reroute control word.

**5.52** Tandem calls are passed to subroutine NMRRCT from programs TAND and HLOP. This subroutine performs the same functions as subroutine NMRRCO on local calls but returns the call with a route index tag (RIT) of 11 to the client.

#### Traffic Count

**5.53** Traffic counts are made for preprogrammed NMRRs and flexible NMERs. A count of reroute attempts is made for both types of reroute controls. For flexible NMERs only, a traffic count is also made for successful reroutes (i.e., a rerouted call that finds an idle trunk in the TTG).

#### Reroute Control

##### TTG Rerouting

**5.54** When another trunk group control is active on a TTG, an entry is made from the NMTG program to subroutine NMRRIT. This subroutine checks the RIT for a value of either 9 or 11 to determine if the call is a reroute attempt. If it is and the trunk group control is a *to-control*, the call is cancelled and the call cancelled counter is updated. If the type of control was neither cancel-to nor skip, a check is made for immediate rerouting. If this is the condition, the call is also cancelled. If immediate rerouting is not indicated, the call is returned to base-level call processing where the reroute to the TTG occurs. Therefore, post-hunt controls are simply ignored.

##### Preprogrammed and Flexible Rerouting

**5.55** If the control on the TTG is cancel-to, subroutine NMRRPP is entered from the NMTG program. Program control is returned to NMTG if rerouting is not indicated. However, if rerouting is indicated, the subroutine CPTGCOM is requested to

process the reroute control. The call is rerouted and the traffic counter is updated. Program control is returned to TRBT.

### **Regular and Immediate Reroute Control Process Routine**

**5.56** Subroutine CPTGCOM is used by subroutines NMRRPP and NMRRFX to process the reroute control on the TTG. For both flexible and preprogrammed reroute controls, a check is made to determine if the call is an alternate or regular reroute. If the reroute is an immediate reroute, the control percentage is obtained (for either direct or alternate-routed) and the call is rerouted accordingly. Program control is then returned to NMTG. If regular rerouting is indicated, transfer is made to the translation program.

### **FTG Overflow**

**5.57** If a preprogrammed control call overflows the FTG, an entry is made at subroutine NMRRAF. This subroutine determines if the call is within the percentage of calls to be rerouted for a regular reroute; in which case, the traffic counter is updated and program control is returned to TRBT which reroutes the call. If the call is not reroutable, a transfer is made to TRBT with this indication.

### **Reroute Control Slot for Manual Preprogrammed Activation**

**5.58** When the TTY request PP-ACT to activate preprogrammed control is received, subroutine NMPPMA of the program is entered from the TTIA program. A transfer is made from NMPPMA to subroutine NMRRSL to check for reroute control and ensure that a reroute control slot is available for manual preprogrammed reroute activation. If a slot is available, program control is returned to NMTG. If one is not available, rejection data is set up for TTY output message NM07, and transfer is made to subroutine NMFCAR in NMTG.

### **Reroute Control Slot Initialization**

**5.59** During the search for the highest priority preprogrammed control performed by subroutine PPFNDA in NMTG, a transfer is made to subroutine NMRRPA to initialize the reroute control slot for the preprogrammed activation request. The reroute control slot is initialized by information

stored in the preprogram data and in the supplementary TGN auxiliary block for the FTG and TTG.

### **Control Slot Deactivation**

**5.60** During the deactivation routines, a transfer is made to subroutine NMRRFD to deactivate the associated control slot. If the control is a reroute, the associated reroute control slot is zeroed and program control is returned to NMTG. If the control is not rerouted, the flexible control word is zeroed, and a return is made to NMTG.

### **Reroute Control Status Printout**

**5.61** In response to TTY input message RR-STATUS, subroutine NMRRST is entered. The message is used only when the NM lamp is lighted. The output message NM27 lists the information concerning the call that caused the NM rerouted call cancelled lamp to light. This subroutine sets up data for printing. The data includes TTG number, FTG numbers, type of reroute control, cancellation information, peg count of rerouted cancelled calls, and activation control. Program control is returned to TTIA.

### **Audit**

### **Reroute Control Slots**

**5.62** Subroutine NMACRS is entered from NMTG to audit the preprogrammed reroute control slots located at the N2NMRR address. If the first word of any slot is zero and all other words contain data greater than zero, the control slot is zeroed, audit 32 error 58 is printed on the TTY. If the reroute slot index being counted in slot 0 for cancelled calls is out of range, slot 0 is zeroed, audit 32 error 70 is printed. If there is any error in word 0 of any slot, the corrected data is stored in the slot and audit 32 error 60 is printed. If a slot is active but its associated preprogrammed control is not active, the slot is zeroed and audit 32 error 59 is printed. If an error is detected in word 1 of any slot, the correct data is stored in the word and audit 32 error 61 is printed. If an error is detected in any TTG information, the TTG information is corrected and audit 32 error 62 is printed. If any word in an unused TTG position is found nonzero, the TTG position is zeroed and error 63 is printed. Program control is returned to MACR.

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## **Linkage From Preprogrammed Control Words to Reroute Control Slot**

**5.63** During the audit of the control and activity words associated to the TGC couplets, a transfer is made to subroutine NMRRL to perform an audit on the reroute control items in the preprogrammed TGC words. The audit 32 error 73 is printed if the preprogrammed control is a regular reroute but the regular reroute bit is not set. If the preprogrammed control is a manual reroute and there is no linked reroute slot, audit 32 error 59 is printed and the control is deactivated. If the preprogrammed control is automatically active and no reroute slot is linked, the subroutine performs the linkage. If the reroute slot index is out of range, the control is deactivated and audit 32 error 78 is printed. If the slot used by the preprogrammed reroute control is idle, the preprogrammed control is deactivated and audit 32 error 74 is printed. Program control is returned to the NMTG program.

## **NETWORK MANAGEMENT TOLL CODE BLOCKING (NMTC) PROGRAM**

### **A. Function**

**5.64** The NMTC program provides the capability for blocking intertoll calls destined to congested areas having facility switching problems due to telethons, natural disasters, etc. Toll blocking is applied to 1 and 1A ESS switches (local and toll) on a per system basis and is effective on a per call basis.

### **B. Program Description**

#### **Toll Code Blocking Controls**

#### **Activation**

**5.65** When toll code blocking is activated by TTY input message CB-ACT, entry is made in call store which contains the local/toll 3-digit index corresponding to the first three digits of the destination code. The rate center status translator (3-digit index) (Fig. 12) provides the toll code blocking indicator and the home NPA associated with the translator. The temporary recent change on each 3-digit translator points to the code block slot information stored in the call store block.

**5.66** When toll code blocking is activated, a transfer is made to NMTC. The activation request

initiates possible code blocking on 7- and 10-digit locally originating traffic. The subroutine transfers to subroutine DATA CHECK to validate the input request data. The prefix code is checked for 0 or 1. If valid, the remaining dialed digits are checked. The percentage of control, 50, 75, 87 1/2, 100 percent, is obtained and transfer is made to subroutine ACT REQUEST to activate the control.

**5.67** The activation subroutine searches for an idle control slot and, if found, the slot is linked to existing slots with the same first three digits identified in the TTY input request. When the NPA of the code block entered matches an NPA in the 3-digit index to the NPA translator, two slots are required. If the toll code block request matches an active control, the control is replaced and TTY output message NM05 is printed. If the request is associated with CLID and matches an active control, the control is not replaced. If there are no idle control slots, this subroutine checks for active controls which may match and replace the existing control.

**5.68** In addition to the time of activation, the following responses are given:

- (a) ACTVTD (activation completed)
- (b) REJCTD (request rejected because of equipment capability)
- (c) ERROR (request rejected because of error in input data)
- (d) IGNORD (request rejected because system was in process of executing previous CB-ACT request).

#### **Deactivation**

**5.69** When the TTY input message CB-REM is entered to deactivate the code blocking control, transfer is made to subroutine NMCBOF from TTIA. If the scratch area is in use, TTY output message NM06 is printed and control is returned to TTIA. However, if the scratch area is free, a transfer is made to subroutine DATA CHECK to validate the input request data. The scratch area is set up with the request data and is used as input to this subroutine. If the input data is valid, a transfer is made to subroutine DEACT to remove the code blocking control. A TTY output message is printed indicating the

action performed. Program control is then returned to TTIA.

### **Removal of All Code Blocking Controls**

**5.70** When the TTY input message CB-CLEAR is entered, a transfer is made to subroutine NMCBRA from TTIA to remove all toll code blocking controls. Subroutine DEACT deactivates each code blocking slot. The TTY output message NM08 is printed indicating all code block controls were removed. Program control is then returned to TTIA.

### **Toll Blocking Status**

**5.71** If TTY input message CB-STATUS is entered, a transfer is made to subroutine NMCBST from TTIA to list the active toll blocking controls. The listing is printed via the TTY output message NM08.

## **NETWORK MANAGEMENT CALL GAPPING (NMCG) PROGRAM**

### **A. Function**

**5.72** The NMCG program provides manual code control of originating inter-LATA carrier traffic based on a specific carrier access code (ignoring the destination code) or based on a specific destination code (ignoring the carrier access code). Call gapping controls are applied to 1 and 1A ESS switches (local and toll) on a per system basis and is effective on the following types of codes:

- (a) 10XXX (XXX = inter-LATA carrier code)
- (b) 10XXX-NPA
- (c) 10XXX-NPA-NXX
- (d) NPA
- (e) NPA-NXX
- (f) NPA-NXX-XXXX
- (g) XXX (e.g., 611).

### **B. Program Description**

#### **Call Gapping Controls**

##### **Activation**

**5.73** When call gapping is activated by TTY input message CG-ACT, the 3-digit index to the NPA translator indicates the NPA of those rate centers to which call gapping controls and CLID entries are applicable. The input to the 3-digit NPA translator is a 3-digit subtranslator index (Fig. 9). The output is an indicator for call gapping and CLID with the NPA associated with the subtranslator. Call gapping and CLID have separate set cards. The call gapping control slots per office are 0 through 63. The CLID control slots per office are 0 through 31.

**5.74** The activation subroutine (ACT REQUEST) searches for an idle control slot and, if found, the slot is linked to existing slots with the same first three digits in the TTY input request. If the call gapping request matches an active control, the control is replaced and TTY output message NM05 is printed. If the request is associated to the CLID entry and matches an active control, the control is not replaced. A return is made and TTY output message NM05 is printed to verify the request is on the CLID list. If there are no idle control slots, this subroutine checks for active controls which may match and replace the existing control.

**5.75** In addition to the time of activation, the following responses are given:

- (a) ACTVTD (activation completed)
- (b) REPLACED (replaced control information is completed)
- (c) INVINP (invalid input parameter)
- (d) INVCOD (invalid code)
- (e) NOFSL (no slots available)
- (f) RCAFUL (ignored request, temporary recent change area full).

##### **Deactivation**

**5.76** When the TTY input message CG-RMV is entered to deactivate the call gapping control,

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transfer is made to NMCBOF from TTIA. If the scratch area is in use, TTY output message NM06 is printed and control is returned to TTIA.

### Removal of All Call Gapping Controls

**5.77** When the TTY input message CG-CLR is entered, a transfer is made to subroutine NMCBRA from TTIA to remove all call gapping controls. Subroutine DEACT deactivates each call gapping slot. The TTY output message NM08 is printed indicating all call gapping controls were removed. The program control is then returned to TTIA.

### Call Gapping Status

**5.78** If TTY input message CG-STATUS is entered, a transfer is made to subroutine NMCBST from TTIA. This subroutine lists all active call gapping controls, or a list of active call gapping controls for carrier interconnect codes only, or a list of active call gapping controls for NANP codes only. Also, the number of available call gapping control slots are displayed.

### Recent Change Update

**5.79** During the activation routine, all the codes that exist on a particular 3-digit NPA are linked together. The system checks the linked slots to determine if a slot identical to the requested control message already exists. If one exists, it is replaced by the requested message data. If the requested message input is unique, it is placed in the linked list according to the number of digits.

## TRANSMIT DYNAMIC OVERLOAD CONTROL SIGNALS (NMTD) PROGRAM

### A. Function

**5.80** The NMTD program administers the transmission of DOC signals which are sent from a tandem or toll office to connected local offices requesting that they limit the amount of traffic in the network.

### DOC Signal Levels

**5.81** Two levels of signaling are used for identifying the shortage of real time and the shortage of receivers. These levels are called MC1 and MC2. The MC1 level is the indication that the switching

machine is sufficiently congested to cause substantial delays in receiver attachment. Delays that range from 20 to 40 percent above normal receiver holding time are considered substantial. The MC2 level is the indication that the machine is considerably more congested than the MC1 level. At the MC2 level, delays that range from 40 to 80 percent above normal receiver holding time will be expected.

**5.82** The MC3 level of signaling is sent when the system is incapable of processing calls. The command source for this type of signaling is derived from one of two lamp signals located on the MCC system status panel. They are: (1) emergency action phase in progress and (2) repeated time-out activated.

### DOC Signal Acknowledgement

**5.83** The DOC signal is an on-signal interrupted by an off-signal every 30 seconds. The duration of the off-signal is approximately 1 second. The acknowledgement, returned from the receiving office, must be identical to the transmitted signal. Acknowledgements of the DOC signal are detected at the transmitting office by supervisory scan points. For MC1 and MC2 DOC levels, the signal is removed and marked out-of-service either when an acknowledgement is not received within 2 seconds or when an acknowledgement is received without a signal having been sent. Acknowledgements of the MC3 level signal are made after recovery of the system.

### B. Program Description

**5.84** The NMTD program provides approximately 28 global subroutines, which allow entry by three system programs plus the network management subsystem programs. Table G lists the global subroutines and interfacing programs.

### Scheduled ECMP Entries

**5.85** Every 10 seconds, entry is made to subroutine NM10SC to validate the acknowledgements. A TTY output exception message is printed every 5 minutes containing information on peg and usage counts.

### DOC Loop State Change

**5.86** The NMGT program enters global NMSEND to check if a change of state has occurred in

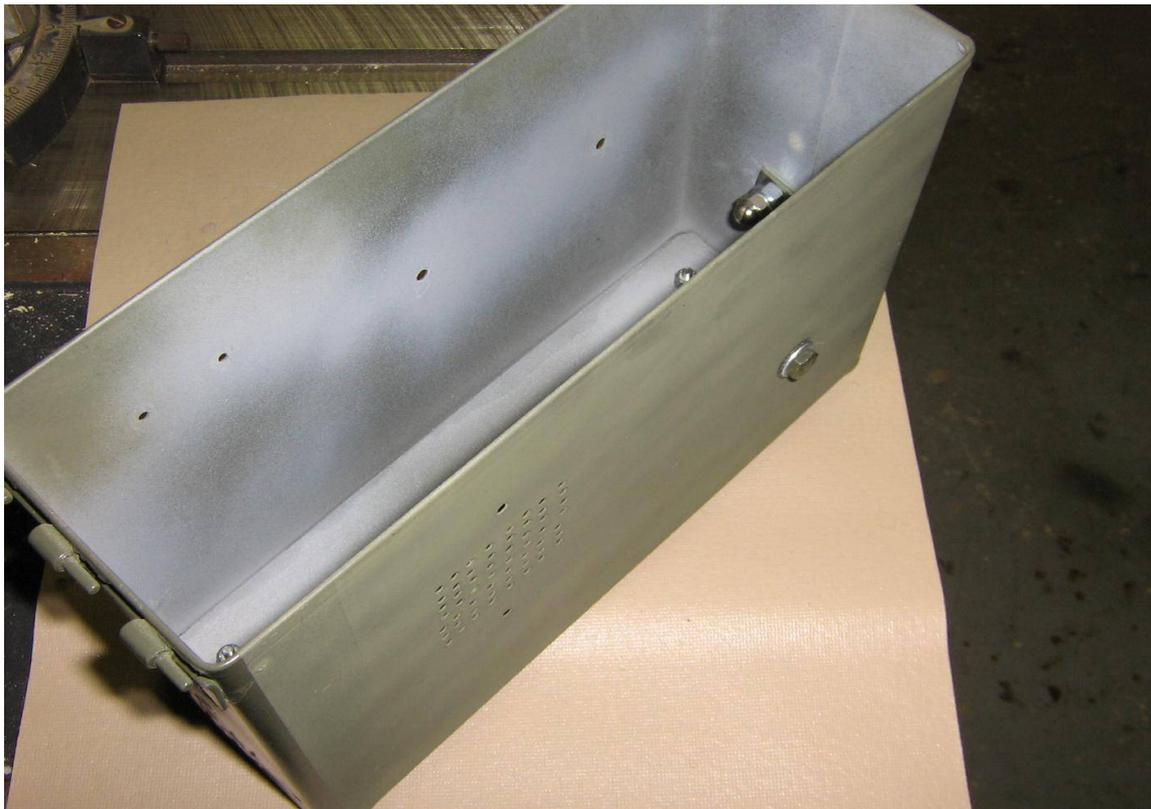
# GBPPR 1079 Audio Amplifier

## Overview

The **GBPPR 1079 Audio Amplifier** is a handy little device which can be used as an audio preamplifier while performing TSCM sweeps. It is based around the National Semiconductor LM380 2.5 watt audio power amplifier chip and is powered from a series of eight "AA" Alkaline batteries. It is *not* designed to run off a single 9 volt battery, or even carbon-zinc batteries, due to the LM380's fairly high current draw (up to 1 amp). The LM380 has a fixed voltage gain of 50, or +34 dB, and is designed to only amplify low-level signals. For this design, we'll have a variety of input jacks for different test leads. This is helpful if you don't have any adapters or just want to use a set of alligator clips to route your signal. One of this design's drawbacks is that the LM380 needs a fairly large copper ground plane for dissipating heat. The circuit board should also be mounted to a small aluminum plate to act as an additional heatsink. This particular amplifier design was based around the reference schematic in the LM380's datasheet, but with a few changes that allow the input to be capable of handling signals up to 100 VDC. This is useful if you need to connect the **GBPPR 1079 Audio Amplifier** to an unknown line, and you are not sure of what voltage levels the signals could be carrying. It is *NOT* presently designed to connect to wires carrying 120/240 VAC power, so be careful where you clip!

Be sure to remove the batteries when not in operation, or they can leak.

## Construction Notes & Pictures



Project case overview. It formally supplied little pieces of 5.56 mm love and happiness. It's not quite as stupid as a cracker box, but hey, we like girls over here.

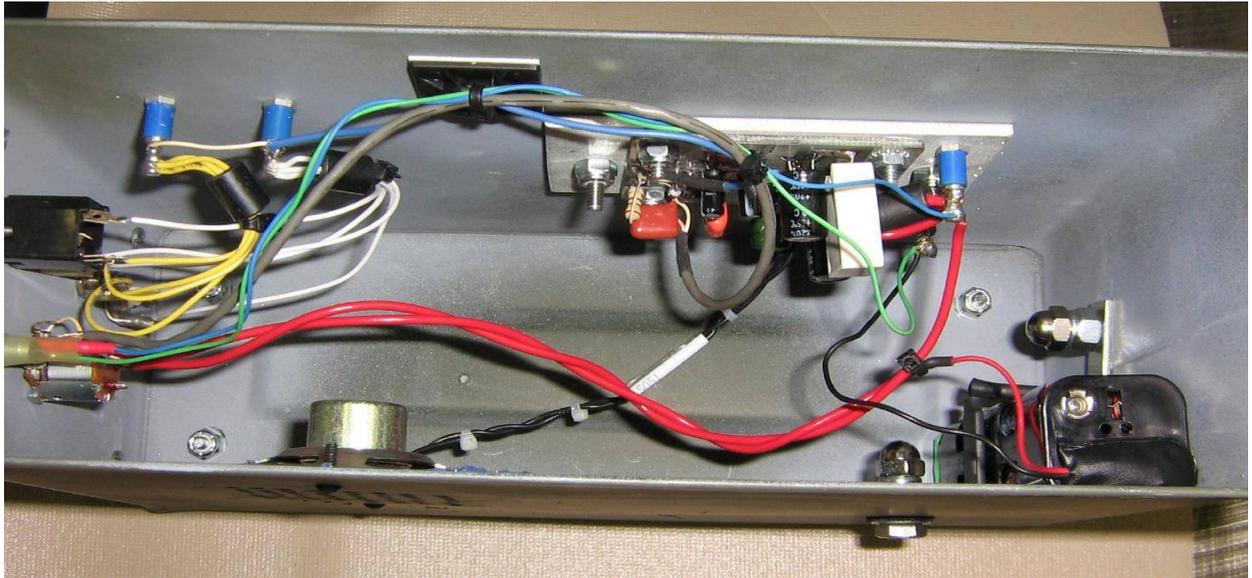


Alternate view showing the front-panel and the array of 1/8-inch diameter speaker holes. In the rear, two L-brackets secure the battery pack to the side of the case. The holes on the left side of the front-panel are for a 1/4-inch jack, a 1/8-inch jack, a RCA jack, and a BNC jack.

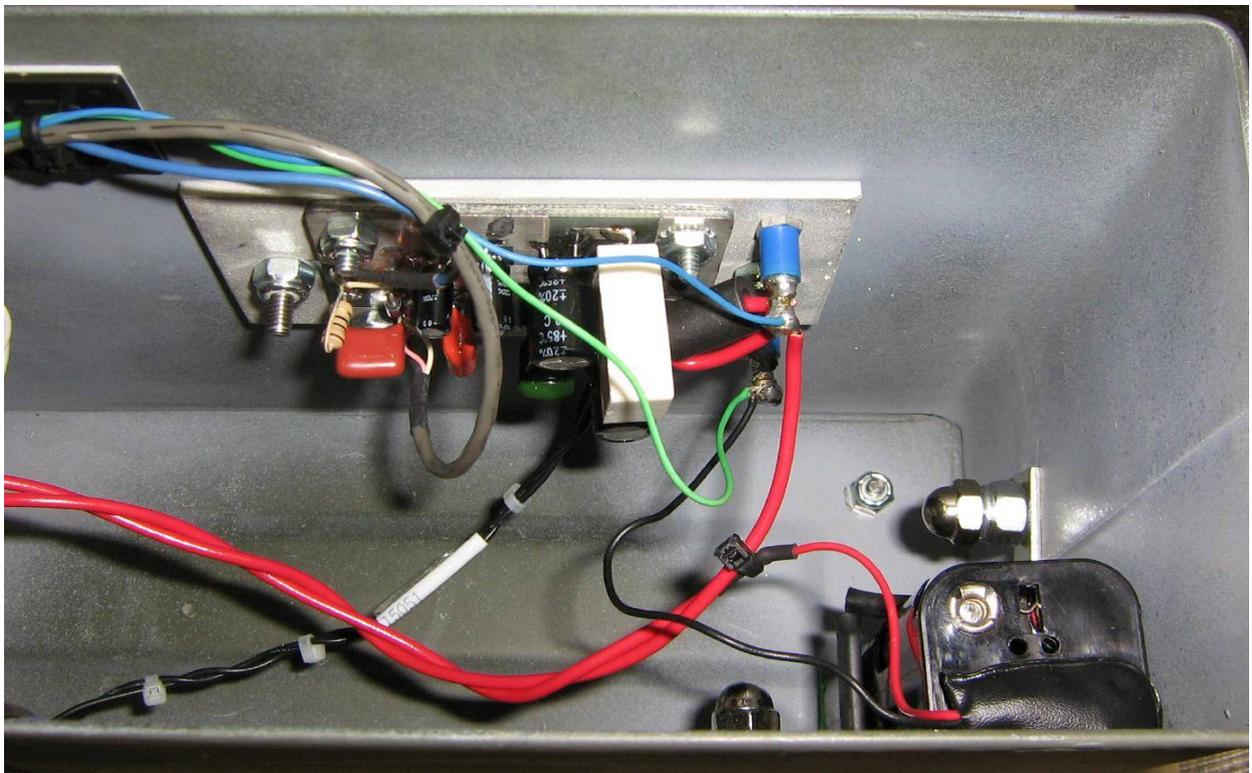


The main amplifier circuit board. Audio input is on the left, via the shielded blue wire. It passes through a DC-blocking capacitor and on to two back-to-back 1N4007 diodes. These clip the signal down to 0.7 peak volts. It then passes onto the 10 kohm audio potentionmeter which acts as a gain control. The signal then comes back, through a ferrite bead and another DC-blocking capacitor, and then onto the LM380. The LM380's final audio output is sent to a small, low-impedance speaker mounted inside the case. A good source of speakers is from old answering machines. There is also extensive filtering on the LM380's DC input lines. A large ferrite bead is slipped over the red positive wire, and a 3 ohm / 5 watt series resistor helps to "de-Q" the power line to prevent oscillations. A 330 µF capacitor near the LM380 smoothes everything else out.

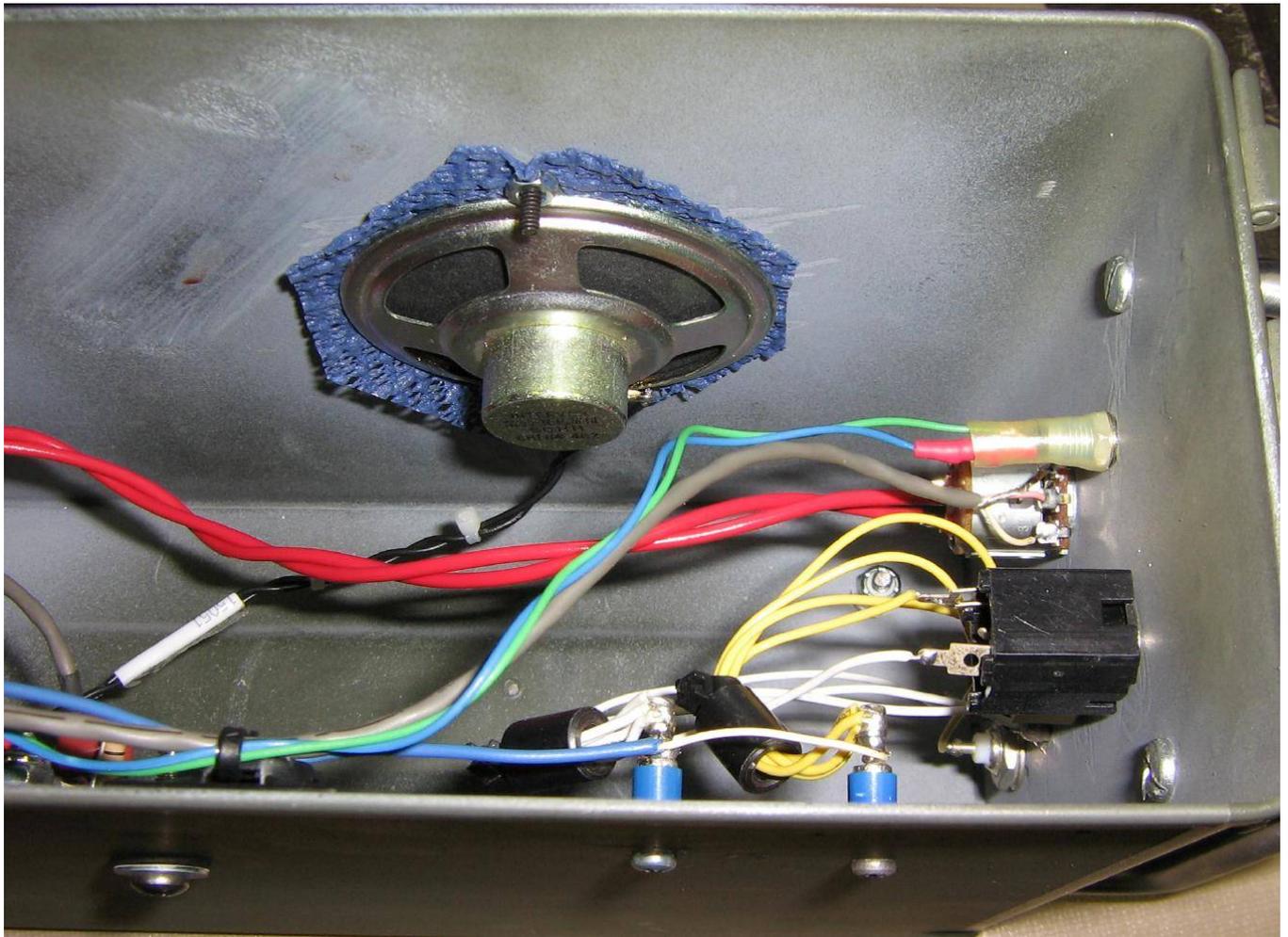
Note the center pins on the LM380 are soldered to the ground plane with alot of solder. This is to help dissipate heat. Try to use a circuit board with two ounce copper plating to help further dissipate heat away from the LM380. The completed circuit board is then mounted on a piece of aluminum plate, which is then attached to the side of the case.



**GBPPR 1079 Audio Amplifier** internal overview. Front-panel is on the left. The common inputs and grounds from all the front input jacks tie to signal points, with an additional ferrite bead slipped over them to block any RF interference. The speaker and the main amplifier circuit board are mounted in the middle, and the "AA" battery pack is on the lower right.



Close up picture of the main circuit board and the battery pack. Since the LM380 can draw up to one amp, you should try to use fairly heavy gauge wire for the LM380's power connections. The small blue and green wires are for the front-panel LED power indicator.



Close up picture showing the speaker and front-panel connections. A piece of "non-slip" pad is used to seal the speaker to the side of the case.



On the BNC input jack, a small chain (from a lamp pull), two solder tabs, and a male BNC connector, were used to make a protective cap which also doubles as clip-on points for alligator clips.



Completed project outside case overview.



Completed project front-panel overview.



## ***Nortel DMS-100 Home NPA Code Subtable (HNPACONT.HNPACODE)***

### **Table Name**

Home NPA Code Subtable

### **Functional Description of Subtable HNPACONT.HNPACODE**

Subtable HNPACONT.HNPACODE lists the route, treatment, or table that translation routes to for each of the 1,000 three-digit codes (000 to 999) within each of the Serving Number Plan Areas (SNPA) or Serving Translation Scheme (STS) assigned in table HNPACONT (Home Numbering Plan Area Code Subtables).

The subtables are initialized with each of the three-digit codes routed to a vacant code.

Each of the three-digit codes can be expanded to ten or more digits, provided that the incoming call equipment is capable of sending that many digits. The number of leading digits defined as prefix digits in field NOPREDIG in subtable STDPRTCT.STDPRT (Standard Pretranslation) are stripped from the digit string used to index into subtable HNPACONT.HNPACODE.

The number of digits entered must not exceed the maximum number of digits permitted by the associated code type (CD).

If the total number of post prefix digits received is less than the matching string in fields FROMDIGS or TODIGS, the call is automatically routed to the appropriate subtable of TMTCNTL at TREATMT set to VACT (Vacant Treatment).

If the value of the post prefix digits received does not fall within the range set by the matching string in fields FROMDIGS or TODIGS, the call is automatically routed to the appropriate subtable of TMTCNTL at TREATMT set to PDIL (Partial Dial Treatment).

The translation is routed to HNPACONT.HNPACODE when a line or trunk has pretranslation and field TRANSYS in subtable STDPRTCT.STDPRT is set to "NA". **Note:** Field TRANSYS is a refinement field for subtable STDPRTCT.STDPRT selector field PRETRTSEL.

If pretranslation is not required for the line or trunk group, subtable HNPACONT.HNPACODE is indexed directly from the line attribute or trunk group table for all codes dialed.

### **DMSMON DBLOCKS Command**

The DMS Monitoring System (DMSMON) command `DBLOCKS` displays the number of digit blocks being used, the number of digit blocks allocated, the percent of digit blocks used, and the percent of digit blocks available for each of several tables including:

- CLSVSCRC.CLSVSCR (Class of Service Screening)
- CODEBLK (Code Blocking)
- HNPACONT.HNPACODE (Home NPA Code)
- IBNXLA (IBN Translation)
- LATAXLA (Equal Access LATArea Translation)
- SPLDNID (TOPS Special Directory Number ID)
- STDPRTCT.STDPRT (Standard Pretranslator)

Each of the three-, four- or five-digit codes are assigned to one of the following code types.

## Code Type to Switch Type Table

A "Y" at the intersection of the code type line and the switching unit column indicates that the code type can be used in the switching unit type.

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### *Code Types to Switch Types*

<b>Code Type</b>	<b>Description</b>	<b>Switching Unit:</b>	<b>Local</b>	<b>Toll</b>
AMBI	Ambiguous Code		Y	Y
CONT	For future use		-	-
DN	Terminating Line (replaces TERM)		Y	N
FNPA	Foreign NPA Six-digit Translations		Y	Y
FRTD	Foreign NPA Three-digit Translations		Y	Y
FRTE	Foreign NPA Three-digit Translations		Y	Y
HNPA	Home NPA (dialing of home NPA code permitted)		Y	Y
HRTE	Home Route (non-local within the home NPA)		Y	Y
INWC	CCIS INWATS OSO (originating screen office)		Y	Y
INWO	INWATS OSO (originating screen office)		Y	Y
INWS	INWATS Terminating		Y	Y
INWT	INWATS Tandem		Y	Y
LRTE	Local Route		Y	Y
NPOSDN	No Position to DN		Y	N
NSC	Number Service Code		Y	Y
OPC3	Three-digit Operator Code		Y	Y
OPC4	Four-digit Operator Code		Y	Y
OPC5	Five-digit Operator Code		Y	Y
SACNWM	Service Access Code Network Management Code		-	-
SCD3	Three-digit Service Code		Y	Y
SCD4	Four-digit Service Code		Y	Y
SLRTE	Special Local Route from SC/TOPS Trunks Code		N	Y
STRG	Station Ringer Test (replaces SRNG)		Y	N
TTC	Terminating Toll Center		Y	Y
VCT	Vacant Code		Y	Y

-End-

## Notes on Originating Source

Originating source, local and non-local, is used to prevent the operating company from originating calls to destinations that are reserved for operators only. The operating company is defined as local and authorized operators are defined as non-local.

Originating source is also used to prevent non-local sources from reaching service operators.

The sources, lines or trunks are defined as local or non-local as follows:

- Lines are automatically assumed to be local.
- Trunks are divided into the following groups:
  - ◆ Trunks that are explicitly defined by the telephone operating company as local (LCL) or non-local (NLCL) in table TRKGRP field ORIGSRCE (trunk group types MTR, OI, OPR, PX, P2, TD, TI, TPS101, and T2) or field ORIGSRC (trunk group types A5, OC, and OA).
  - ◆ Trunks that have no originating source field and are automatically assumed to be LCL, except for the intertoll trunk group IT, which is automatically assumed to be NLCL. Calls incoming on intertoll trunk groups (field GRPTYP is set to IT) are assumed to be from a non-local originating source, even though the trunk group can carry traffic from local and non-local originating sources. Blocking of unauthorized users from dialing certain codes is done before the call is allowed to proceed on the trunk group.

If field ORIGSRCE is set to LCL and the incoming digits in subtable HNPACONT.HNPACODE get a code type of OPC3, the call is automatically routed to Vacant Code Treatment (VACT).

### **Datafill Sequence & Meaning**

There is no requirement to datafill other tables prior to table HNPACONT.HNPACODE.

**Note:** Additions or changes (through the table editor or through a Datafill Modification Order Profile [DMOPRO]) to tuples with a value of AIN result in the error message:

```
AIN is not a supported value.
```

### **Table Size**

Memory is allocated for 1,000 codes in each assigned subtable.

For each Serving Translation Scheme (STS), the maximum number of unique tuples in subtable HNPACONT.HNPACODE is 1,022 for the following selectors:

- DN (Terminating Line)
- STRG (Station Ringer Test)
- NPOSDN (No Position DN)
- NSC (Number Service Code)

### **Datafill Example**

An example of datafill for subtable HNPACONT.HNPACODE with various code types is shown below.

The example consists of all the previous examples, excluding code type VCT (assuming HNPA dialing is permitted), plus examples of the following:

- A FNPA 202 with three-digit translation and blocking if the fourth digit is 0 or 1.
- The INWATS originating code 008.
- A four-digit service code 4102 with code type SCD4.
- A four-digit test maintenance code 0683 with code type OPC4.
- An example of office code sharing, 692-0XXX to 692-2XXX routing using route index 18 in subtable HNPACONT.RTEREF, and 692-3XXX to 692-9XXX routing using route index 19 in the HNPA route reference subtable 613.

FROMDIGS	TODIGS	CDRRTMT
008	008	INWO 0
025	025	TTC 12
0683	0683	OPC4 20
201	201	FRTE 1
202	202	FRTD 1
224	224	LRTE 38
4102	4102	SCD4 39
411	411	SCD3 10
416	416	FNPA 0
556	558	HRTE 1
575	575	STRG 0
613	613	HNPA 0
6920	6922	LRTE 18
6923	6929	LRTE 19
800	800	INWO 0

## GBPPR Electromagnetic Pulse Experiments – Part 2

### Overview

For the second article in this series, we'll be focusing on turning a common 2.45 GHz microwave oven magnetron into an Electromagnetic Pulse (EMP) device. Using higher microwave frequencies (shorter wavelengths) is ideal for EMP warfare because they are not as easily attenuated in the target device. A horizontally-polarized, high-power 2.45 GHz pulse is almost perfect for coupling into the PC board traces in most electronic devices. Potential uses out in the "real world" could involve disabling electronic voting machines to prevent illegal alien (Democrat) voter fraud. Another possibility could revolve around disabling a Mosque's or Eurosavage embassy's security system so you can more easily break into them. With a little more tweaking, a device such as this could remotely disable Improvised Explosive Devices (IED) by "zapping" any electronic timers or even pre-detonating their blasting caps. Is there some nutty open-borders politician driving an unshielded electric vehicle you want to take out? Zap!

The basic idea behind this device is to charge a high-voltage capacitor up to around 4,000 volts, and then using a spark gap, "pulse" discharge it into the magnetron. A spark plug will make a perfect spark gap for this particular application. The fast-rising pulse on the magnetron's cathode should even cause it to output a little more power than normal, over 1,000 watts of peak RF power is possible. That's the idea at least... It should be noted that magnetron's operate with a *negative* voltage on their cathode and "ground" potential on their anode, which is tied to the external case and cooling fins. The magnetron's filament/heater and cathode are also tied directly together. A magnetron is basically modelled as a large zener diode.

This project is ***very experimental*** and still needs some tweaking. It will output RF power, but I think the pulse capacitor needs to have a much larger energy storage capacity. The 1  $\mu$ F capacitor used for testing can only output around 10 joules. This corresponds (roughly) to a magnetron pulse output time of around 10 milliseconds. Since microwave oven magnetrons are *not* designed to be pulsed this rapidly, I don't think the overall RF output peak power is very high. Extending the time of this pulse, probably with a larger high-voltage capacitor bank, might help to fix this. You'll need to experiment and find out. It should also be noted that microwave oven capacitors, which usually have a "2,000 VAC" maximum voltage rating on them, can be used at significantly higher DC voltages. They appear to easily handle at least 5 kV for short periods of time.

Remember that playing with high-power microwave RF devices, and their corresponding high-voltages, is very dangerous. We've teamed up with *\$2600 Magazine* to provide a special RF burn medical treatment program. If you think you fried your testicles, go to the next New York City \$2600 meeting, and Emmanuel Goldstein will personally take a look at them for you. No charge!

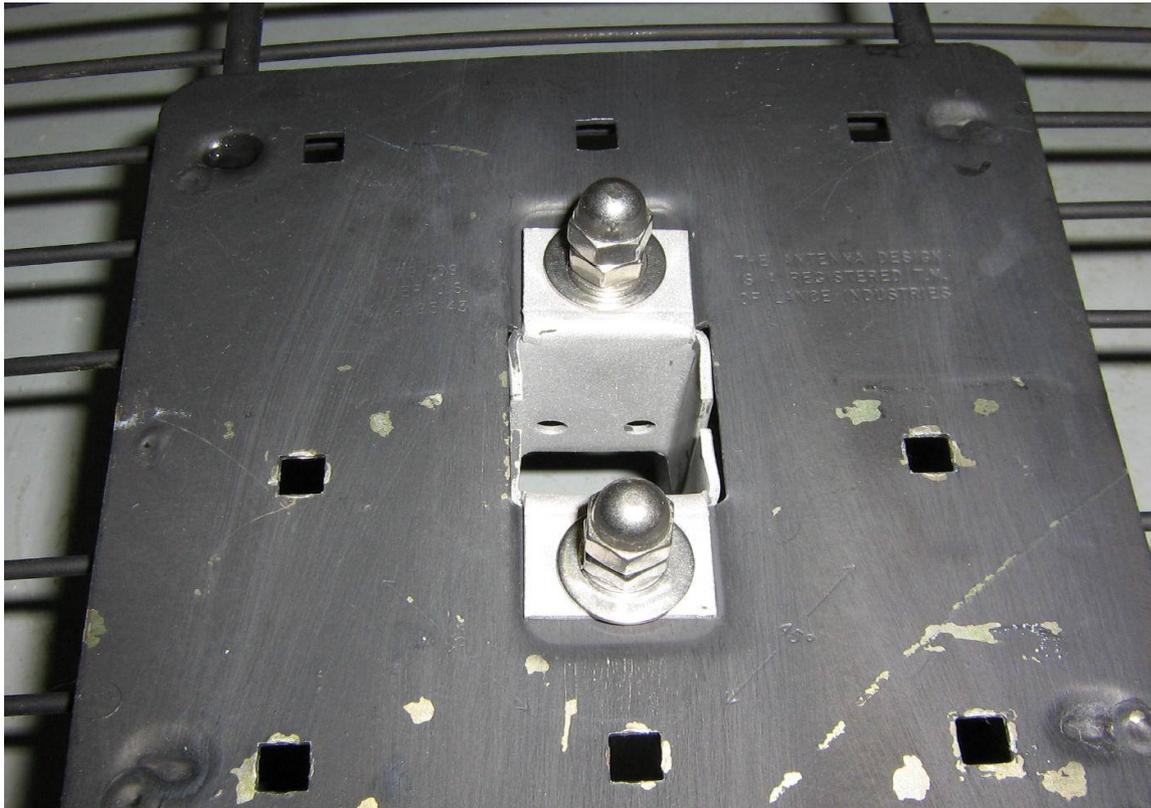


Google Streetview camera cars? Or potential EMP targets?

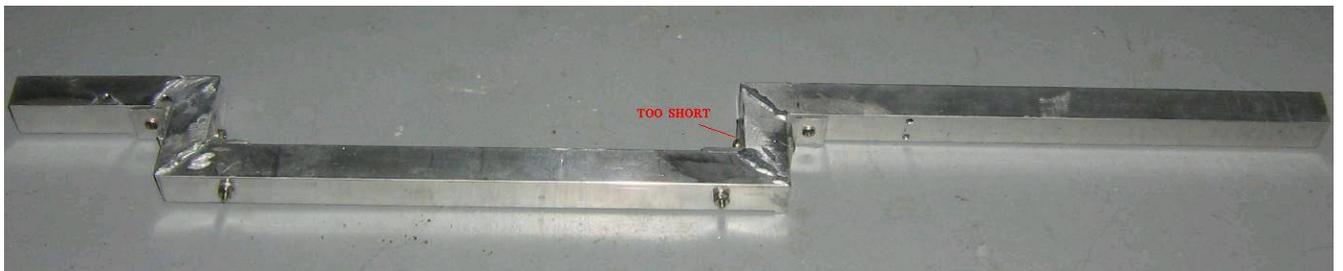
## Construction Notes & Pictures



Parabolic antenna reflector used for this project. It's a Lance Industries Model 2536. This 36-inch diameter dish was originally designed for the 2.5–2.7 GHz MMDS band. The gain is approximately 26 dBi and the 3 dB beamwidth is 10 degrees. The focal length is 18-inches.



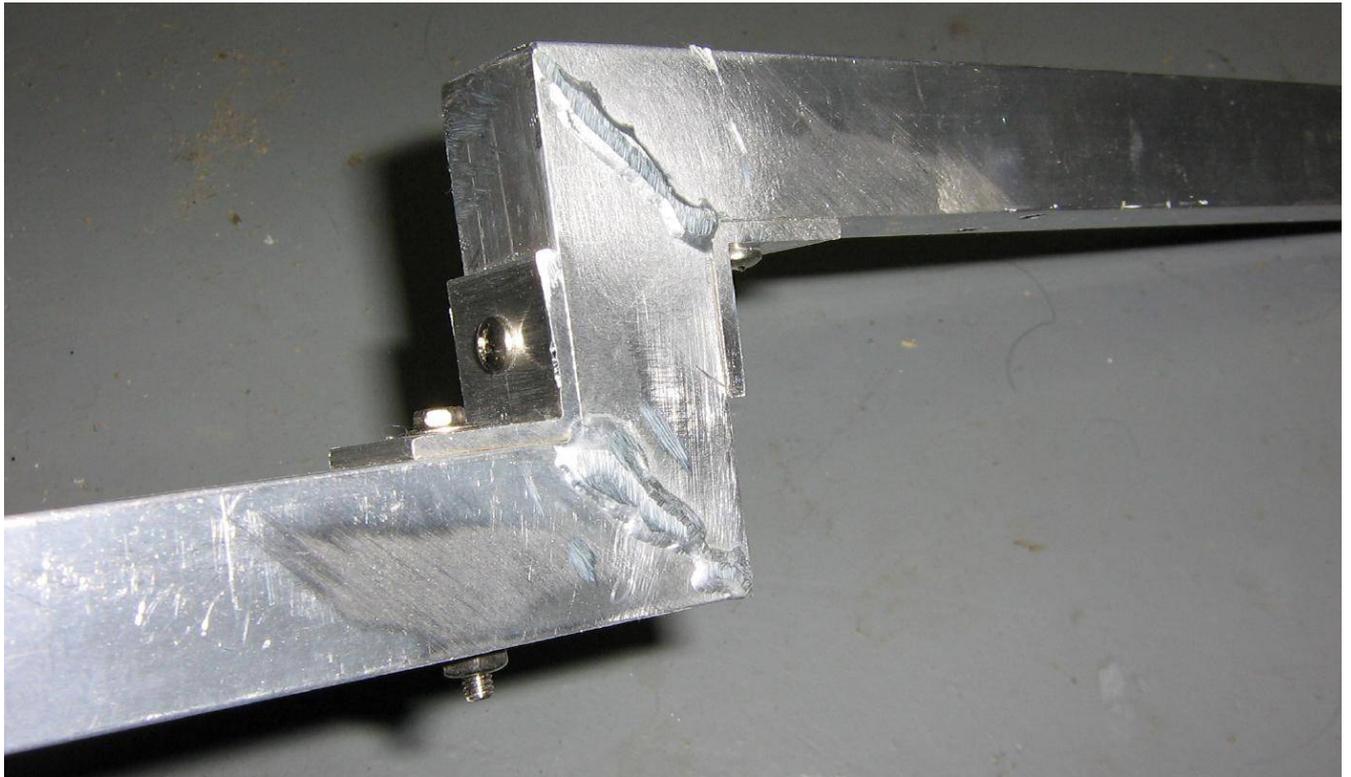
The only modification to the stock parabolic reflector is to the feed's mounting brackets. Since we'll be making a new feed arm, the original brackets should be drilled out (they are rivoted) and replaced with 1/4-inch stainless steel hardware. This helps to distribute the added weight of the magnetron mounted to the feed arm.



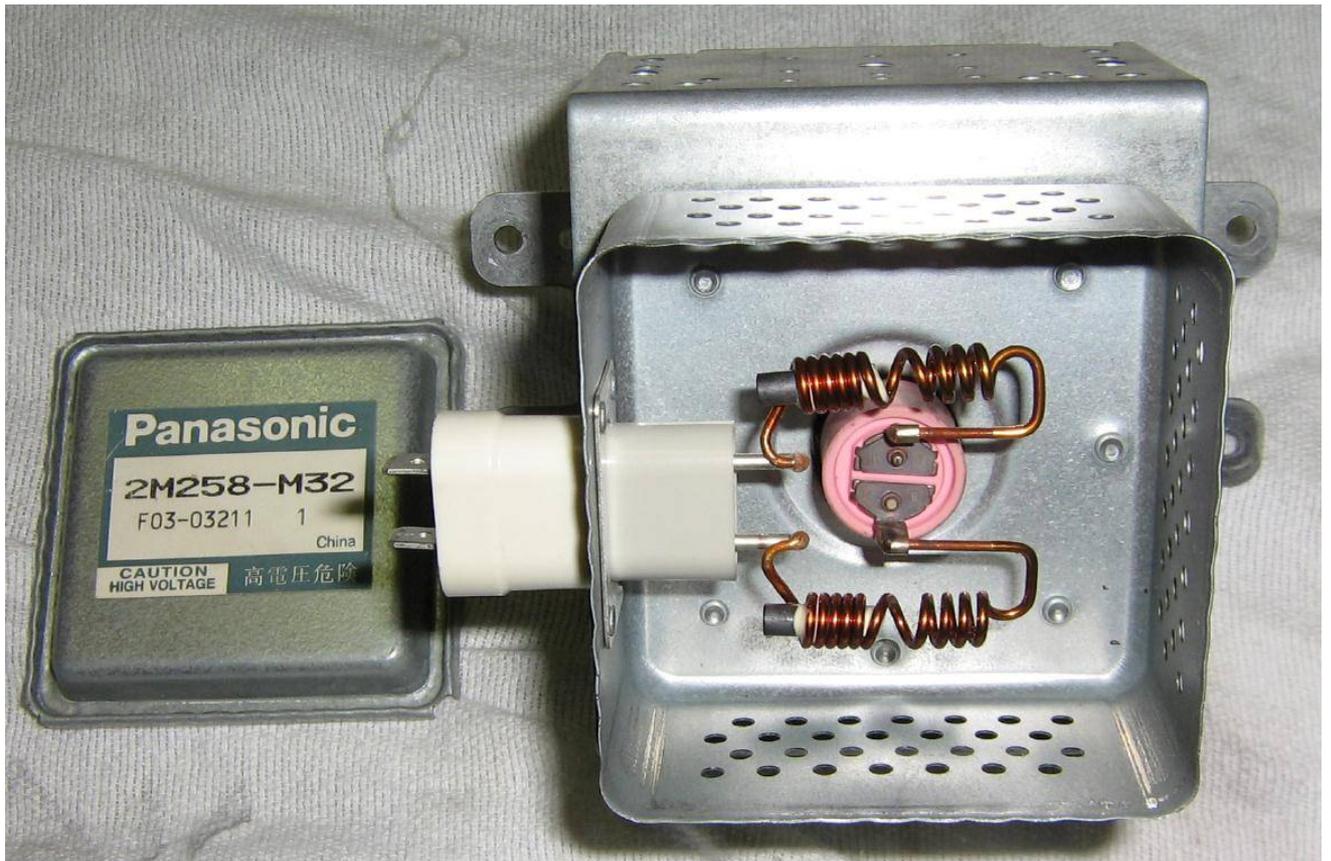
New feed arm made from 1-inch square aluminum tubing. The second little strut should have been 2-inches long, instead of only 1-inch, to help center the magnetron's horn antenna at the focal point. The aluminum feed arm was also an experiment using those "weld with aluminum" sticks you can buy at the hardware store. They say you can use only propane, but in reality, you'll need to use MAPP & oxygen to get a good "weld."

The magnetron and feed horn mount on the left-hand side. The feed arm was designed so that the parabolic's focal point is 1-inch *inside* the magnetron's feed horn assembly.

The extra arm length on the right-hand side is for mounting the completed parabolic antenna assembly to a mast. Normally the mast hardware attached to the parabolic reflector itself, but since the magnetron and supporting hardware are so heavy, the feed arm was made to carry the bulk of the weight.



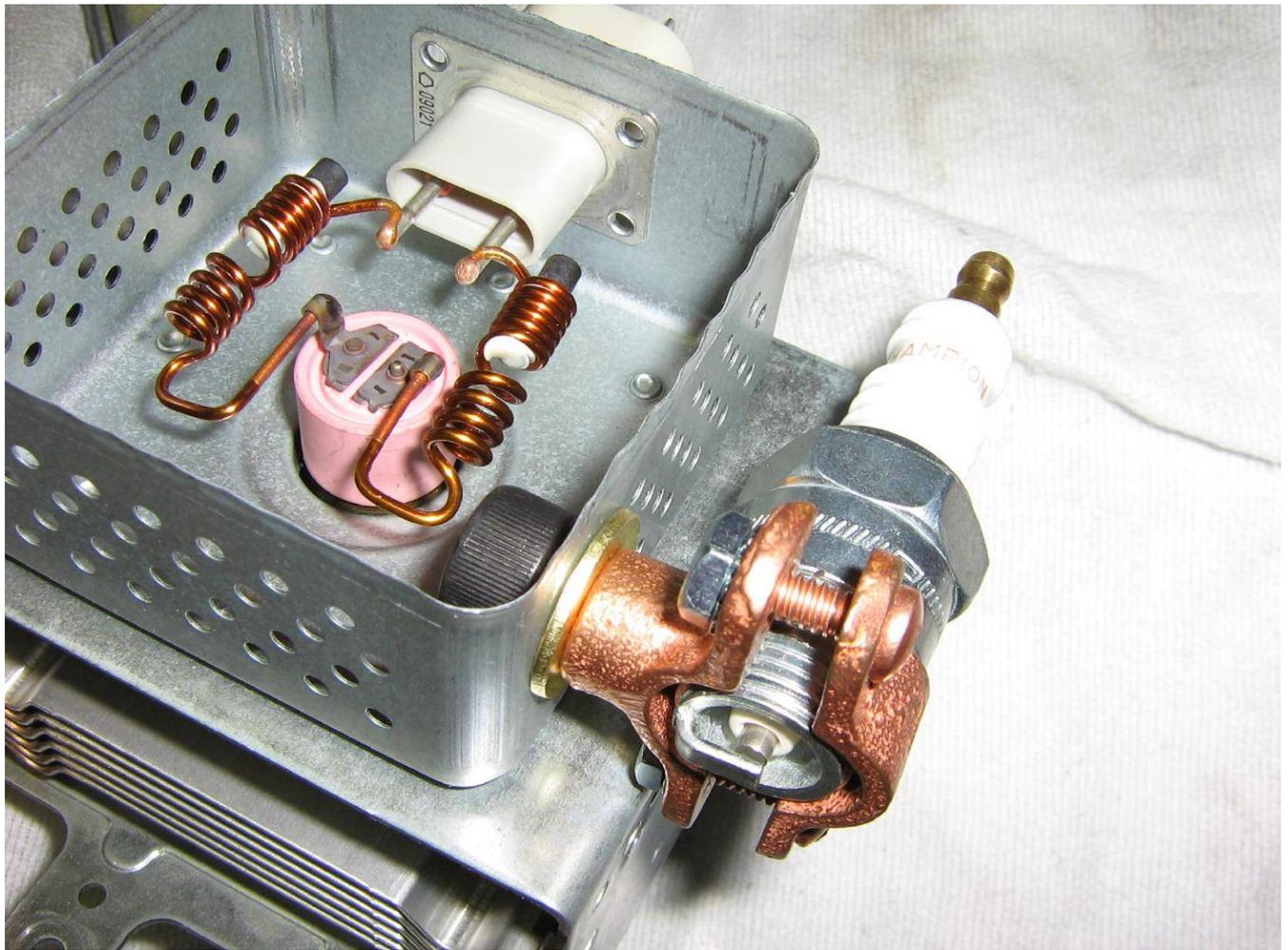
Closeup view. Little aluminum L-brackets were added to help increase the feed arm's strength incase those sloppy welds won't hold. This thing is a total hack, so you may wish to design something a little nicer looking.



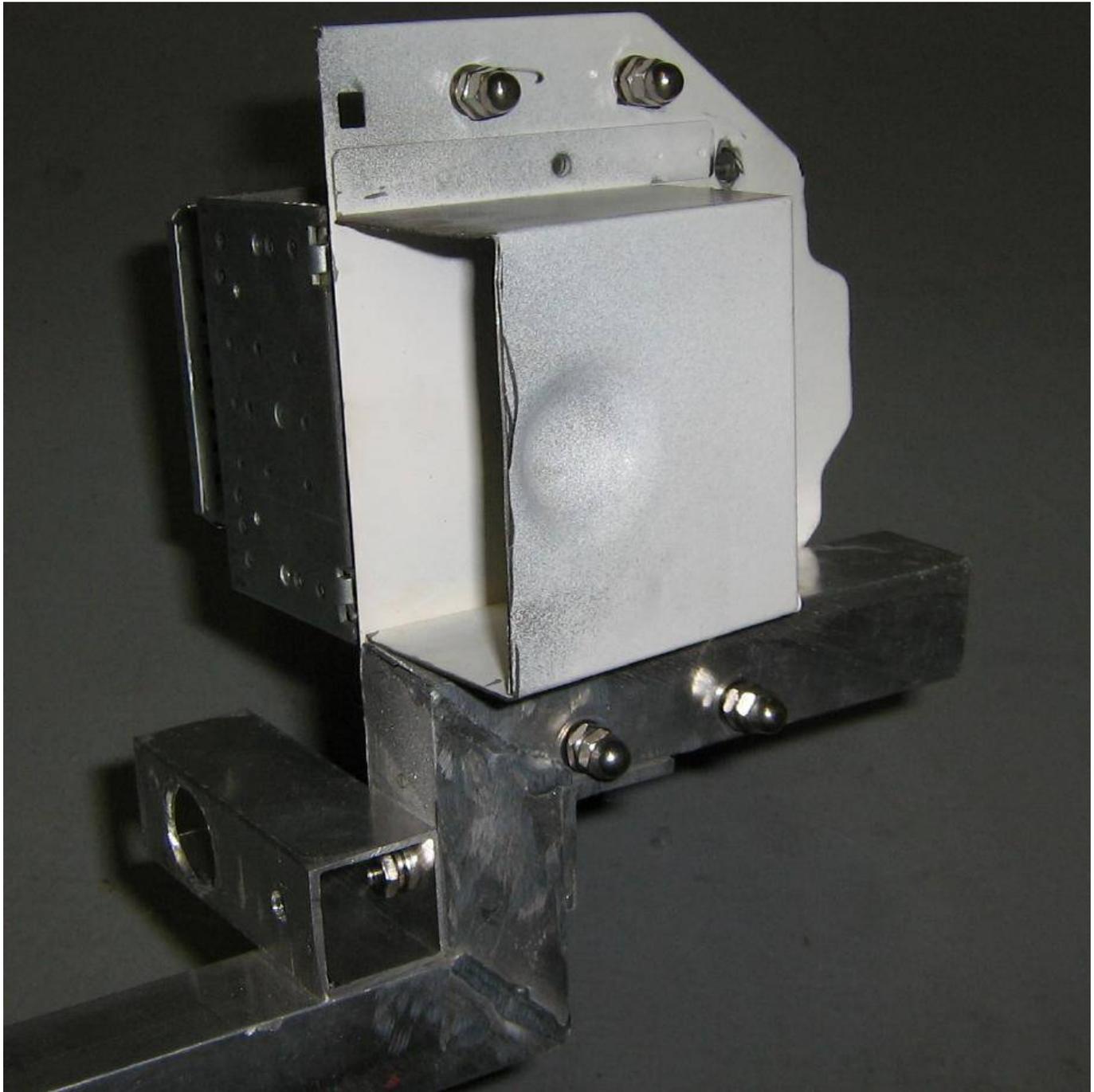
Inside the filament/cathode filter box on a Panasonic 2M258 magnetron. The large white plastic insulator is a feed-through capacitor and the two inductors keep the 2.45 GHz signal from flowing back into the filament/cathode leads. These should probably be bypassed for this application.



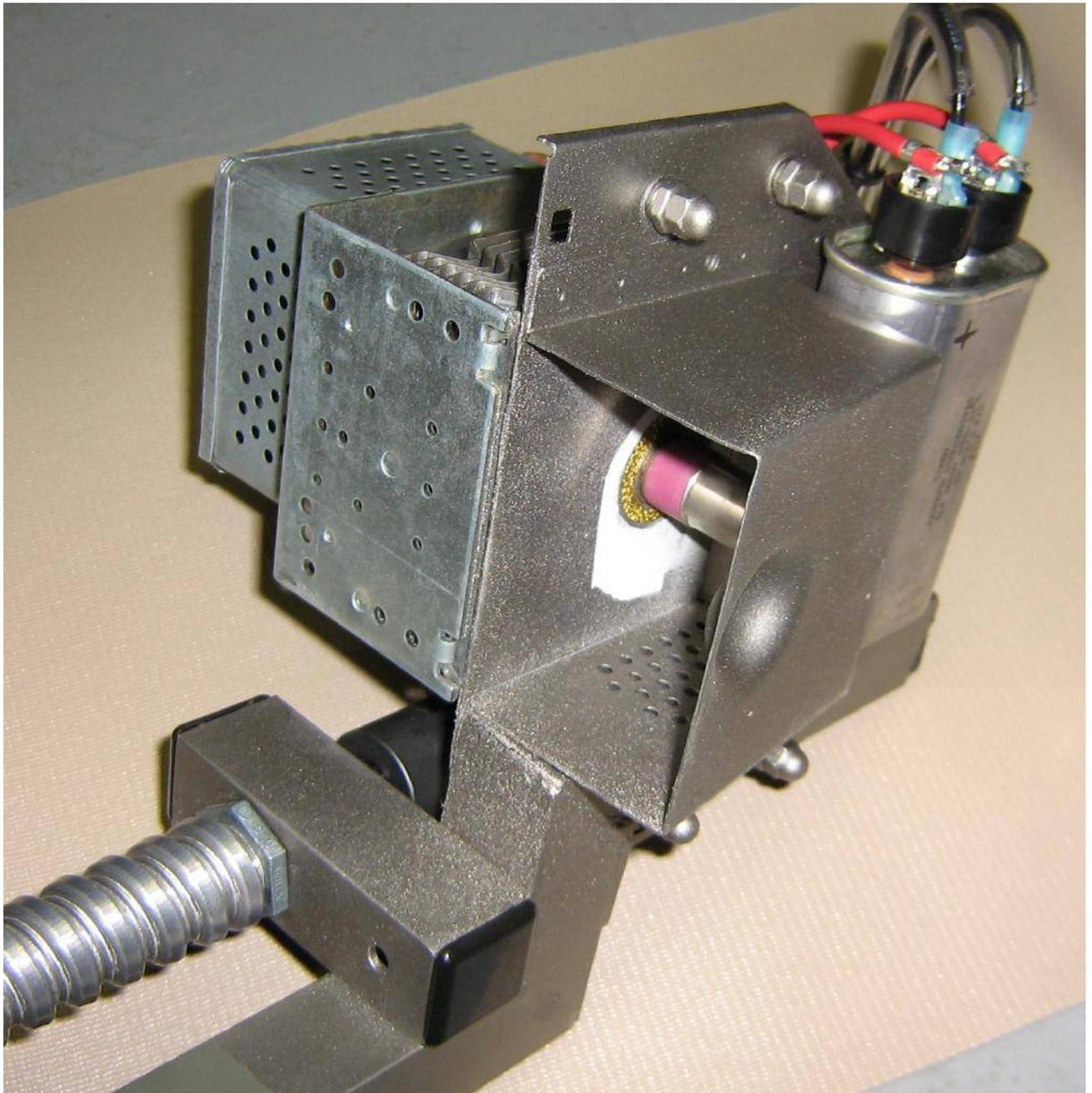
An automotive spark plug will be used for the spark gap. A Champion D14 is shown here. Be sure it *doesn't* have an internal resistor. A copper pipe ground clamp will be used to hold the spark plug, which will then be attached to the side of the magnetron's case.



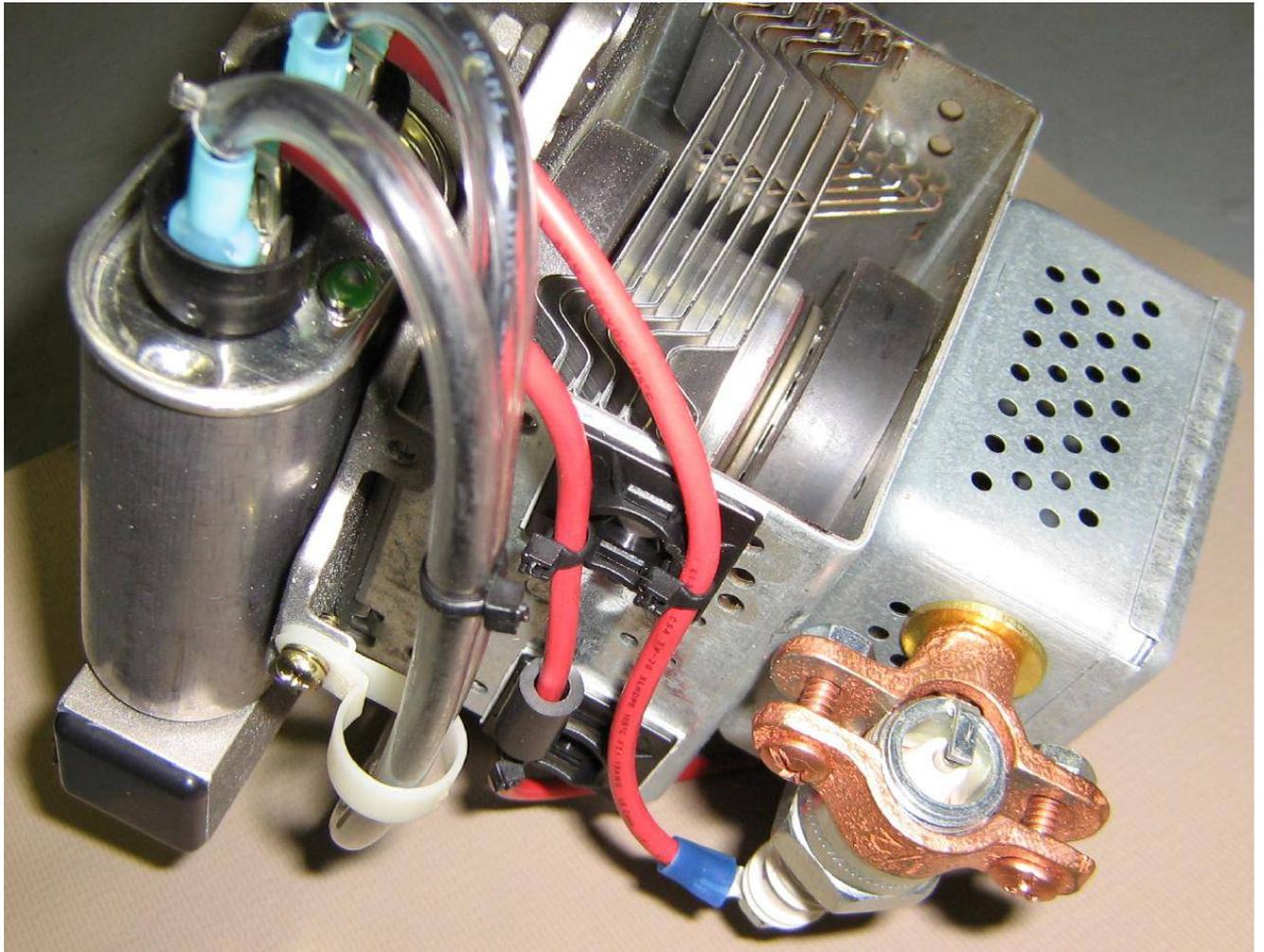
The spark plug is mounted to the magnetron by drilling a hole in the filter box and bolting it to the side. The mounting bolt is 3/8-inch, with brass washers to isolate the copper clamp. Kep nuts were also added to the ground clamp's screws to help secure the spark plug. The spark plug's gap is set to around 0.04-inches, or to fire at around 4,500 volts.



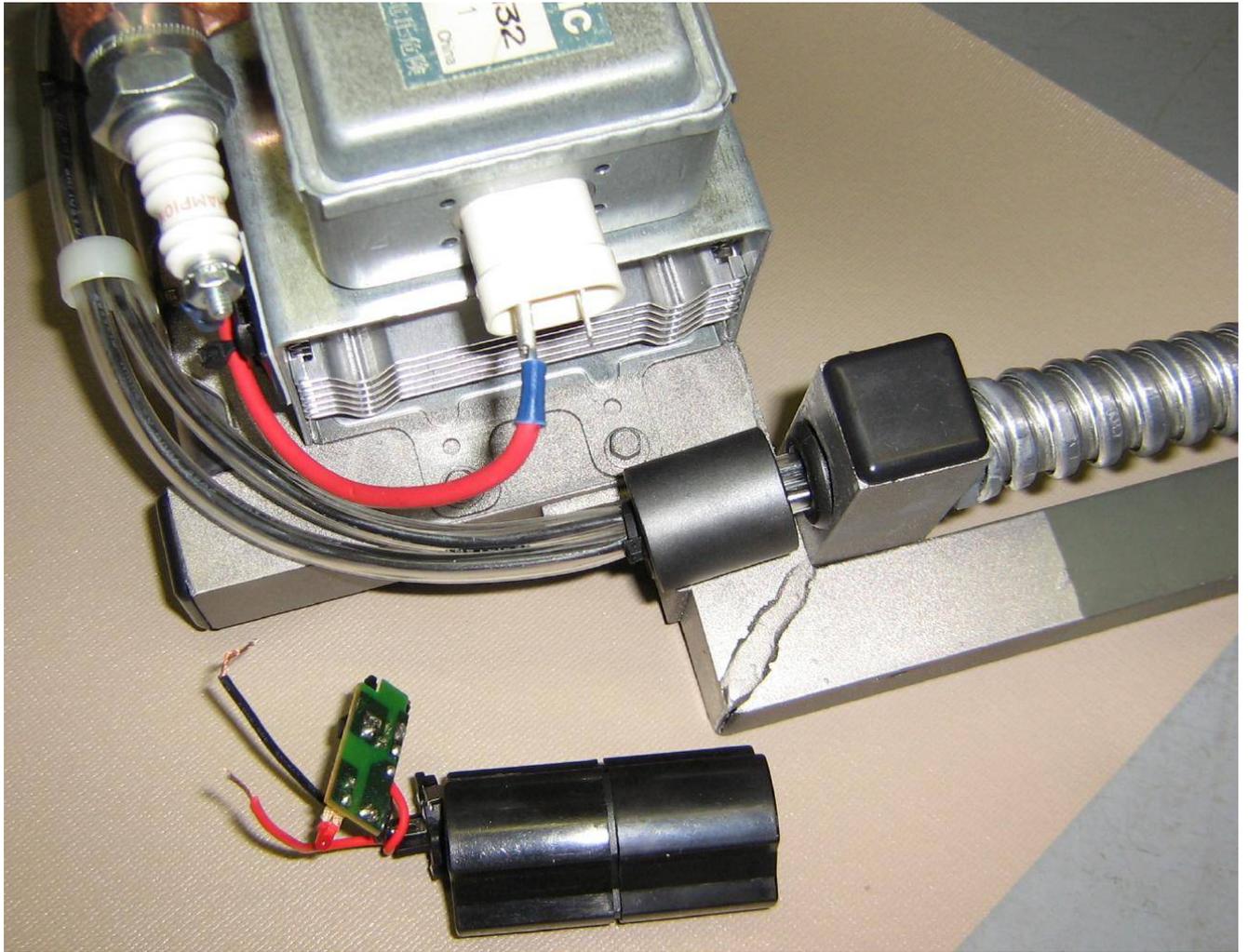
Test setup view showing the feed horn assembly for the magnetron. Refer to the **GBPPR HERF Device** project in issue #29 for more information on how to salvage the feed horn from an old microwave oven.



Completed feed view. The high-voltage capacitor charging line comes in via an armored cable. The high-voltage capacitor is epoxied behind the feed horn. This is only temporary, as the 1  $\mu\text{F}$  capacitor proved to be too small in value to really accomplish anything.

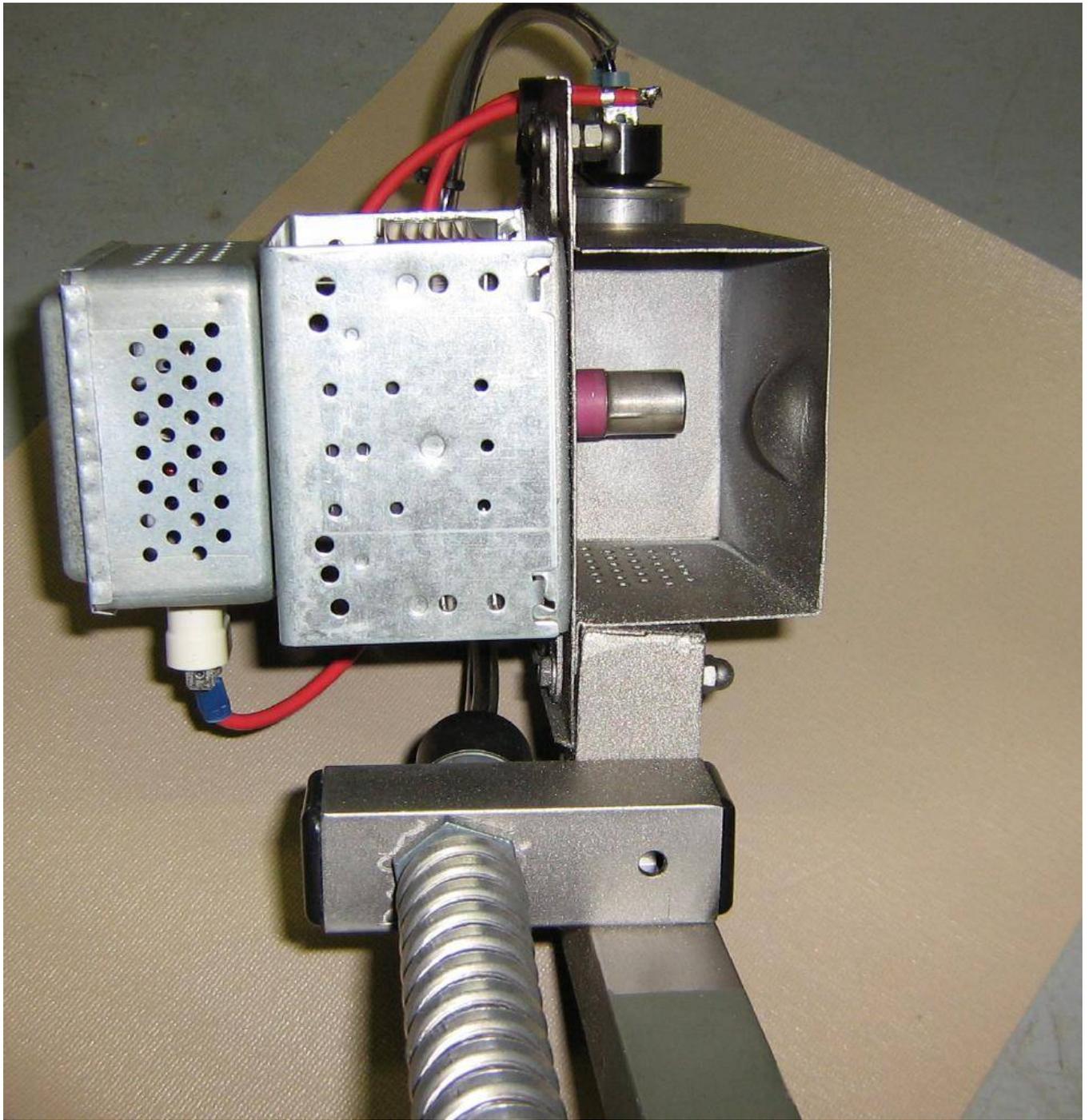


Completed top view. Note the vinyl tubing around the high-voltage charging lines. This worked out quite well. A ferrite bead was slipped around the cathode lead for good luck. Be sure all the high-voltage lines are isolated from the magnetron's case (anode). The spark plug has a handy #8 binding post if you remove the screw cap.

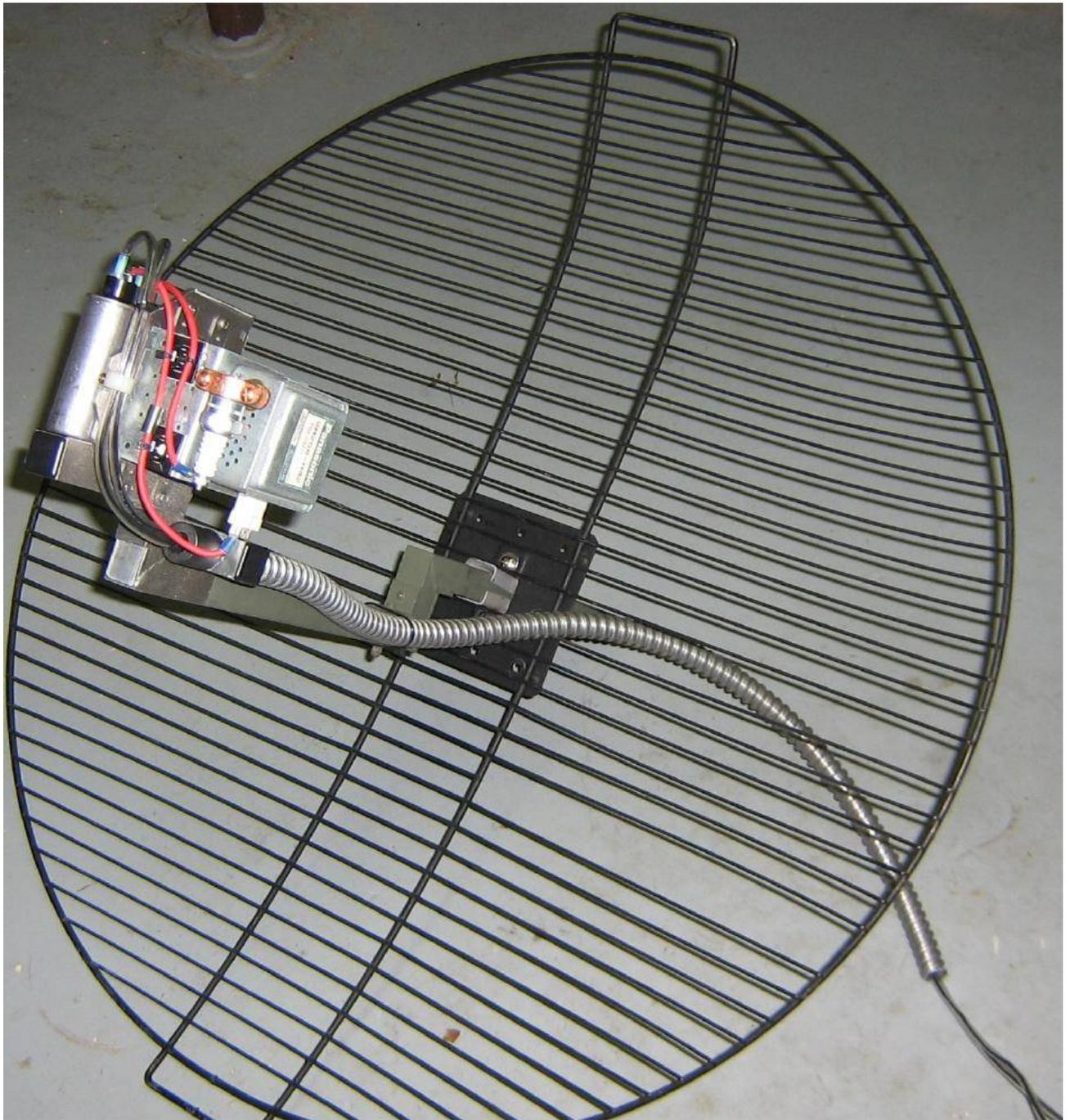


Filament feed view. A 3.6 VDC nickel–cadmium battery pack from a cheap cordless drill is used for the filament supply voltage. This sorta worked out. The filament current is very high, drawing at least 10 amps continuously. The (cheap) nicad battery would only last for about 30 seconds before needing a recharge. Additional experiments used a separate microwave oven transformer to supply 3.3 VAC filament power. Microwave oven magnetron's have a direct–heating cathode, so the filament voltage can be either DC or AC. The filament supply will need to have high–voltage isolation which means solid–state power supplies are out.

Connect the battery pack via short, heavy–gauge wires and alligator clips. It takes at least two seconds for the filament to properly heat up. Increasing the filament voltage might help to increase the output RF power.



Completed view, looking down the feed horn. The microwaves are emitted from the pink ceramic probe, with the "cap" acting as a capacitor tuning hat.



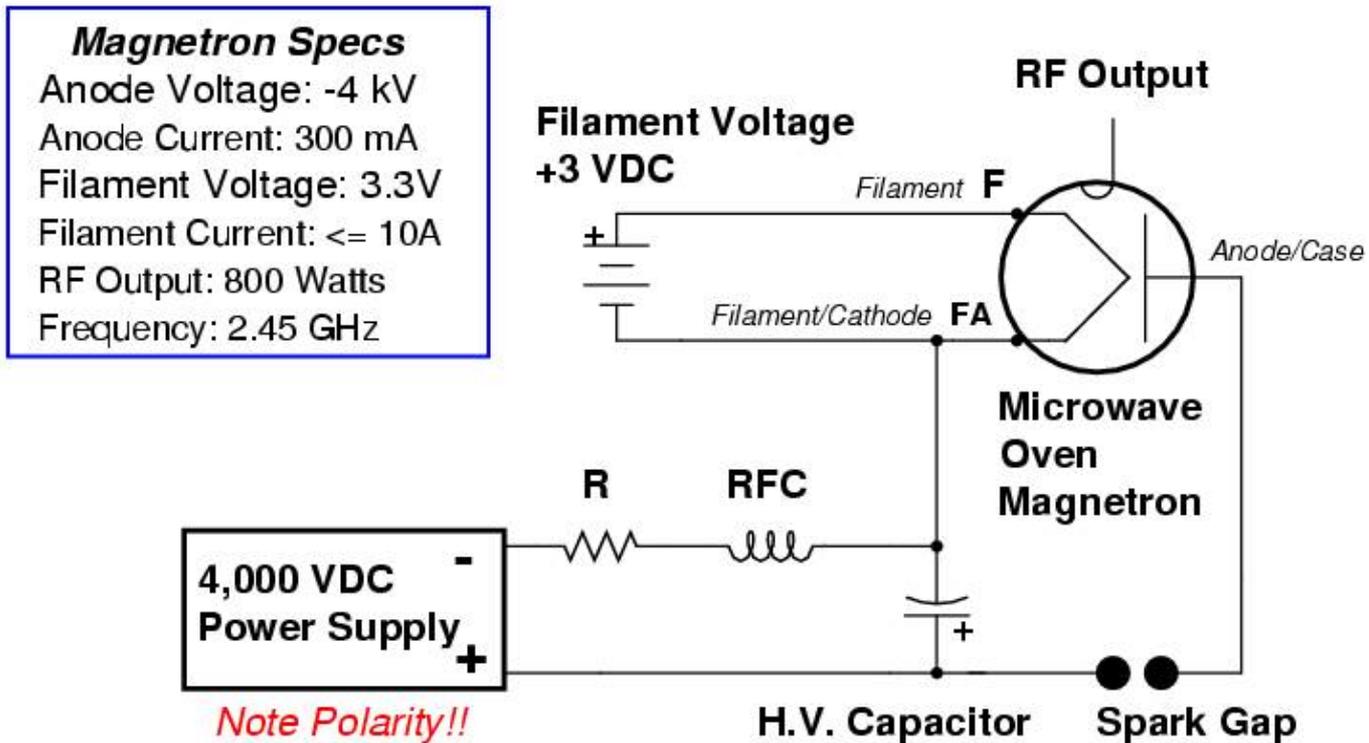
Completed overall view. This thing does work – sorta. It messed up the screen on an Atari Lynx placed about 2 feet away! Not exactly ground breaking, but there is definitely room for improvements.

Experimenters may wish to try:

- Bypassing the input filament/cathode capacitor and inductor filter network.
- Increasing the filament voltage up to 6 volts.
- Adding extra magnets around the magnetron to increase flux density.
- Increasing the cathode voltage to  $-5,000$  or more.

Does this magnetron experiment stuff kinda sound like how a radar works? Stay tuned!!!!

## Experimental Magnetron EMP Setup



**R = Current Limiting, High-Voltage Resistor**

100 k $\Omega$  to 2 M $\Omega$ , depending on power supply current limit.

**RFC = Radio Frequency Choke**

Couple of ferrite beads to knock down any voltage spikes.

**H.V. Cap = High-Voltage Pulse Capacitor**

Determine capacity value empirically. 1  $\mu F$  did jack-shit.

**Spark Gap = Champion D14 Spark Plug**

Set gap to around 0.04-inches.

## Bonus

**"The most important thing, though, is to get the information out."**

--- \$2600 Magazine Volume 6, Number 3.

Steve Rombom, a.k.a Steve Rambam, is a regular at \$2600 Magazine's Horny Old Pedophiles Everywhere (HOPE) and on *Off The Hook*.



**"Two reputed Jewish Defense League members were arrested yesterday on charges of grabbing three teenage trick-or-treaters on a Brooklyn street, assaulting them with baseball bats and fists and imprisoning them in a car, police said.**

**Ronald Kahn, 30, of E. 17th St., and Steven Rombom, 24, of E. 18th St. were charged with unlawful imprisonment and assault after they were identified by the trick-or-treaters as two of their four assailants, police said. The other two are still being sought, police said.**

**The teenagers were grabbed by a group of men near Congregation Beth Torah Synagogue, 1060 Ocean Parkway, about 10:30 p.m. They were beaten and thrown from a car at E. Eighth St. and Avenue I, said police who took them to Kings County Hospital. They were treated there for scrapes and bruises.**

**Washington Cemetery, across the street from the synagogue has been a target of Halloween vandals in the past, according to area residents."**

## End of Issue #39



Any Questions?

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### **Editorial and Rants**

*Your typical Eurosave \$ocialist greed. Sanctions? What sanctions? Those month long vacations don't come cheap!*

### **German Magnetic Train for Iranian Pilgrims**

May 29, 2007 – From: [www.spiegel.de](http://www.spiegel.de)

Germany's high-tech railway manufacturer Transrapid could have a new international customer: Iran. Tehran wants to build a rail link to an important pilgrimage site, and has asked a Munich-based engineering company to prepare a feasibility study for the project, Germany's *Suddeutsche Zeitung* newspaper reports Tuesday.

The company, *Regierungsbaumeister Schlegel*, is to look into whether it will be possible to build the 800-kilometer track, director Harald Spath told the newspaper. He said he had met with the Iranian ambassador, Mohammad Akhondzadeh, and his economics attaché in Berlin last Tuesday.

**The Iranian government is prepared to finance the project to the tune of \$1.5 billion in start-up capital. The new train line would transport between 12 and 15 million pilgrims a year from the capital to Mashhad in the north east of the country. A Transrapid link would make the 800-kilometer journey possible in between two and three hours.**

The Transrapid elevated monorail train is propelled at speeds of up to 450 km/h (270 mph) by a frictionless electromagnetic system. It was developed by Transrapid International, a joint venture between Siemens and ThyssenKrupp.

The Iran project's origins lie in business contacts that were struck during a visit to Tehran by the former Bavarian economics minister Otto Wiesheu in May 2004, *Suddeutsche Zeitung* reports. Wiesheu, who is now a member of the management board at Deutsche Bahn, said the Iran project is still at a very early stage. "Iran is undoubtedly a difficult country," he told the newspaper. "But I hope that the circumstances and the international relations will improve once more," referring to the country's controversial nuclear program.

Wiesheu feels the Transrapid project has a shot and is convinced economics sanctions against Tehran won't get in the way. "The transport of pilgrims in Iran is certainly not a project that is covered by the political boycott measures."

The Bavarian economics ministry confirmed that it had supported Schlegel in its bid to secure the feasibility study contract. The engineering firm has previously been involved in planning a new Munich airport and a high-speed ICE rail track linking Munich and Nuremberg.

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*Old, but interesting read.*

### **We are Biased, Admit the Stars of BBC News**

October 16, 2006 – From: [www.dailymail.co.uk](http://www.dailymail.co.uk)

By Simon Walters

**It was the day that a host of BBC executives and star presenters admitted what critics have been telling them for years: the BBC is dominated by trendy, Left-leaning liberals who are biased against Christianity and in favour of multiculturalism.**

A leaked account of an 'impartiality summit' called by BBC chairman Michael Grade, is certain to lead to a new row about the BBC and its reporting on key issues, especially concerning Muslims and the war on terror.

It reveals that executives would let the Bible be thrown into a dustbin on a TV comedy show, but not the Koran, and that they would broadcast an interview with Osama Bin Laden if given the opportunity. **Further, it discloses that the BBC's 'diversity tsar', wants Muslim women newsreaders to be allowed to wear veils when on air.**

At the secret meeting in London last month, which was hosted by veteran broadcaster Sue Lawley, BBC executives admitted the corporation is dominated by homosexuals and people from ethnic minorities, deliberately promotes multiculturalism, is anti-American, anti-countryside and more sensitive to the feelings of Muslims than Christians.

One veteran BBC executive said: 'There was widespread acknowledgement that we may have gone too far in the direction of political correctness.

'Unfortunately, much of it is so deeply embedded in the BBC's culture, that it is very hard to change it.'

In one of a series of discussions, executives were asked to rule on how they would react if the controversial comedian Sacha Baron Cohen – known for his offensive characters Ali G and Borat – was a guest on the programme Room 101.

On the show, celebrities are invited to throw their pet hates into a dustbin and it was imagined that Baron Cohen chose some kosher food, the Archbishop of Canterbury, a Bible and the Koran.

Nearly everyone at the summit, including the show's actual producer and the BBC's head of drama, Alan Yentob, agreed they could all be thrown into the bin, except the Koran for fear of offending Muslims.

In a debate on whether the BBC should interview Osama Bin Laden if he approached them, it was decided the Al Qaeda leader would be given a platform to explain his views.

And the BBC's 'diversity tsar', Mary Fitzpatrick, said women newsreaders should be able to wear whatever they wanted while on TV, including veils.

Ms Fitzpatrick spoke out after criticism was raised at the summit of TV newsreader Fiona Bruce, who recently wore on air a necklace with a cross.

The full account of the meeting shows how senior BBC figures queued up to lambast their employer.

Political pundit Andrew Marr said: 'The BBC is not impartial or neutral. It's a publicly funded, urban organisation with an abnormally large number of young people, ethnic minorities and gay people. It has a liberal bias not so much a party-political bias. It is better expressed as a cultural liberal bias.'

Washington correspondent Justin Webb said that the BBC is so biased against America that deputy director general Mark Byford had secretly agreed to help him to 'correct', it in his reports. Webb added that the BBC treated America with scorn and derision and gave it 'no moral weight'.

Former BBC business editor Jeff Randall said he complained to a 'very senior news executive', about the BBC's pro-multicultural stance but was given the reply: 'The BBC is not neutral in multiculturalism: it believes in it and it promotes it.'

Randall also told how he once wore Union Jack cufflinks to work but was rebuked with: 'You can't do that, that's like the National Front!'

Quoting a George Orwell observation, Randall said that the BBC was full of intellectuals who 'would rather steal from a poor box than stand to attention during God Save The King'.

There was another heated debate when the summit discussed whether the BBC was too sensitive about criticising black families for failing to take responsibility for their children.

Head of news Helen Boaden disclosed that a Radio 4 programme which blamed black youths at a young offenders' institution for bullying white inmates faced the axe until she stepped in.

**But Ms Fitzpatrick, who has said that the BBC should not use white reporters in non-white countries, argued it had a duty to 'contextualise' why black youngsters behaved in such a way.**

Andrew Marr told The Mail on Sunday last night: 'The BBC must always try to reflect Britain, which is mostly a provincial, middle-of-the-road country. Britain is not a mirror image of the BBC or the people who work for it.'

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*Ever wonder why Canadians are so stupid? Here's proof!*

## **Failure is not an Option**

June 9, 2007 – From: [www.thestar.com](http://www.thestar.com)

By Louise Brown

She has skipped 30 classes in a row and hasn't handed in an assignment all term, but the principal wants her teacher to cut this Grade 12 student some slack.

"He told me, 'Look, the student says she's finally willing to hand in all her work, so I want you to mark it and don't take off points for being late,'" sighs the English teacher at a west Toronto high school.

"Whatever happened to deadlines? We bend over so far for kids these days, it's a joke."

With the school year almost done, the pressure for marks is on – and not just for students, but also teachers.

A growing chorus of educators say Queen's Park's new drive to keep kids in school to 18 is pushing them to coddle students with inflated marks, too many second, third and fourth chances and too few flunking grades, adding to an already lofty sense of entitlement.

In a new survey of nearly 1,000 high school teachers in Durham Region, four out of 10 say they feel principals push them to drop standards so more students will pass. One in four feels pressured not to give an F.

Yet some say it's time to bring back the F-word – Fail – to a school system that has shunned it for a generation.

"Everyone wants what's best for the student, but teachers are asking, 'Have we gone too far?'" says math teacher Ken Coran, president of the Ontario Secondary School Teachers' Federation.

"I can't say every principal is pushing teachers to raise marks, but the buzz we're hearing in staff rooms is, 'Are we making it too easy to get a credit?'"

Worried about the true value or integrity of school credits, a new provincewide teachers' work group on "credit integrity" has called for sweeping steps to lock in standards, including letting teachers give a "zero," something discouraged by the province in lieu of giving teens another chance.

The group is planning a symposium this fall to address mounting teacher complaints, and will meet June 19 with the Ontario Principals' Council to discuss the hot-button issue.

"One teacher ran into a student last summer who thanked her for a final mark of 50," said Oshawa math teacher Rudy Schmidt, "but the teacher was confused because she had given the girl 30-something. The principal had raised it to a pass.

"Many schools want teachers to keep failure rates below 10 per cent, but how is that possible when kids skip more than 15 classes with no consequence?"

Following the murder of Jordan Manners at C.W. Jefferys Collegiate, complaints about inflated marks have been swept into a larger debate about the shifting power balance between students and teachers.

Coran says many teachers feel increasingly powerless to keep schools safe because the office won't back them up on report cards or behaviour. Indeed, Ontario's new focus is to help at-risk kids, not crack the whip over their heads.

The McGuinty government has spent \$1.3 billion on a smorgasbord of new supports, from summer literacy camps and free tutoring to "credit recovery" programs that let teens who fail a subject redo just the parts they flubbed, not the whole course.

While kids still fail courses, especially Grade 9 math, schools throw sinking students more and more remedial lifelines, and few are ever held back in grade school. Last year, for example, the York Region District School Board failed only six Grade 8 students out of 8,064 across the board. The year before that? One.

Together with Ontario's near-ban on deducting marks for late work – brought in by the Harris government so marks reflect what you know, not how you work – even some students ask if schools dole out too much help.

"It's not fair to good kids when no one gets marks off for being late," complained one Grade 10 student who handed in a final project by the May 3 deadline, only to be told to take it back because no one else was ready. "I don't think it's a good way to teach us to meet deadlines at work."

While Education Minister Kathleen Wynne says this kinder, more thoughtful approach to schooling helps more children learn, others charge it can drag standards down.

"Whatever happened to being allowed to fail?" asks Durham Region music teacher Jeff Pighin, who says he is one of a vanishing breed of teachers who fails several students each year in his Grade 9 music course and hands out exactly the marks he believes students deserve.

"I gave one student 8 per cent on his interim report card because he hadn't done a single assignment," said Pighin. Yet rather than let the student fail, the school is looking for alternate ways for the teen to earn this arts credit, he says.

**"No wonder kids come to school thinking they're getting a free ride. There's some sense that you just can't fail," said Pighin. "We hand out credits like tic tacs."**

Toronto student trustee Nick Kennedy thinks Ontario is right to let teachers deduct marks for lateness only as a last resort, and mark tardiness on a report card under "learning skills" instead.

"It's good because it doesn't confuse your work habits with your knowledge," says the Grade 12 student at North Toronto Collegiate. "School isn't there to teach you all life's lessons."

Jon Cowans disagrees. The Pickering English teacher has called for the return of the F as an educational form of tough love, and says the theory that 'failure is not an option' produces students who simply aren't prepared to move on.

"I call it Credits Lite, the whole byzantine apparatus teachers must go through before you're allowed to fail a student." Principals ask how often a teacher called parents before failing the student, he says, and whether the teacher modified the work enough.

"But I teach a class of students, not just one. I'm not a tutor. If I work only with some students, the others will be climbing the wall," said Cowans.

"You don't dare give a student a mark between 45 and 49 because the school will push you to raise it to 50."

On the other hand, does failing work?

Research by Queen's University shows students who fail more than one Grade 9 course are more likely to drop out.

"I've been teaching long enough to remember those 15-year-old boys who were held back with 12-year-olds. It was horrible for their self-esteem," recalls Lynn Sharratt, York Region's curriculum superintendent. "I don't think we knew what to do with them."

York schools lead Ontario's remediation wave. The four weakest readers in every Grade 1 class get 12 to 20 weeks of daily tutoring through a program called Reading Recovery. And the board tops the province in reading and writing scores.

Nancy Vail agrees that failing students fails to help kids.

"The teacher used to say, 'Look, I taught it, you just didn't learn it. My job's done: you try again,'" said Vail, instructional co-ordinator for the Peel District School Board.

"Now we know if it didn't work the first time, more of the same won't work. The onus is on the educator to find a way to reach every student."

With what we now know about the different ways people learn – auditory or visual? male versus female? left brain/right brain? – Education Minister Wynne says there's pedagogical bedrock under this whole new focus on help. She points to the 6,000 more high school graduates every year as proof.

"It's true, we're going to extraordinary measures to help kids who are at risk, but I won't apologize for that. It's what we need to do to reach all kids who have been struggling on the fringes."

Wynne says she's open to teachers' suggestions about ensuring the value of a high school diploma, but said she trusts they're not lowering standards to help students at risk.

To principal Blair Hilts, president of the Ontario Principals' Council, it's simple: "There's no such thing as giving a student too much help."

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*"The Daily Gut" is a website ran by the people from the FOX News show "Red Eye with Greg Gutfeld."*

## **Does 'Do No Evil' Include Their Customer Support?**

February 15, 2007 – From: [www.dailygut.com](http://www.dailygut.com)

By Jim Treacher

The other day I told you guys about my attempt to get the Daily Gut listed as a source at Google News (pictured). Go here if you need to catch up. And now... the rest of the story (e-mails)!

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From: Google

To: Me

We currently only include articles from sources that could be considered organizations, generally characterized by multiple writers and editors, availability of organizational information, and accessible contact information. When we reviewed your site we weren't able to find this evidence of an organization.

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From: Me

To: Google

Multiple writers and editors:  
<http://dailygut.com/Contributors.php>

Accessible contact information:  
<http://dailygut.com/Contact.php>

Availability of organizational information:  
Could you be more specific? What sort of information?

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From: Google

To: Me

Thank you for your reply and for providing us with this additional information about your contributors. As we mentioned in our previous email, we currently only include sites that could be considered organizations. We currently characterize organizations by multiple writers and editors, general information about the organization, and easily accessible contact information. We were still unable to find the necessary information on your site.

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From: Me

To: Google

I understand. Could you give me a hint as to what this "general information about the organization" would be? That still seems vague. I'm hoping we can comply, but do you mean an organizational chart, some sort of bio page, **a scan of a personal check from George Soros...**?

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From: Google  
To: Me

Thank you for your message. Although we're unable to provide specific information at this time, we sincerely appreciate your interest in Google News and your willingness to provide us with your articles. As we mentioned in our previous email, we'll log your site for future consideration.

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From: Me  
To: Google

You bet! It's been a pleasure, but then I get a big kick out of Kafka.

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From: Google  
To: Me

Can you help us improve Google News support? We welcome feedback about your recent experience so that we can improve the way we serve you.

Share your thoughts by answering five quick questions via the link below. [Link removed]

Your thoughts will help us to serve you better in the future.

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From: Me  
To: Google

LOL  
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*Earth warns starving third-world trash to stop having 15 babies each.*

## **U.N. Warns it Cannot Afford to Feed the World**

July 15, 2007 – From: [www.ft.com](http://www.ft.com)

By Javier Blas & Jenny Wiggins

Rising prices for food have led the United Nations programme fighting famine in Africa and other regions to warn that it can no longer afford to feed the 90m people it has helped for each of the past five years on its budget.

The World Food Programme feeds people in countries including Chad, Uganda and Ethiopia, but reaches a fraction of the 850m people it estimates suffers from hunger. It spent about \$600m buying food in 2006. So far, the WFP has not cut its reach because of high commodities prices, but now says it could be forced to do so unless donor countries provide extra funds.

Josette Sheeran, WFP executive director, said in an interview with the Financial Times: "In a world where our contributions are holding fairly steady, this [cost increase] means we are able to reach far less people."

She said policymakers were becoming more concerned about the impact of biofuel demand on food prices and how the world would continue to feed its expanding population.

The warning could re-ignite the debate on food versus fuel amid concerns biofuel production will sustain food inflation and hit the world's poorest people.

The WFP said its purchasing costs had risen "almost 50 per cent in the last five years". The UN organisation said the price it pays for maize had risen up to 120 per cent in the past six months in some countries.

Biofuel demand is soaking up grain production as is rising consumption in emerging countries for animal feed.

"We face the tightest agriculture markets in decades and, in some cases, on record," Ms Sheeran said. Global wheat stocks have fallen to the lowest level in 25 years, according to the US Department of Agriculture.

Ms Sheeran added: "We are no longer in a surplus world."

