

GBPPR 'Zine



Issue #46 / The Monthly Journal of the American Hacker / February 2008

"Old Me: An important social and educational movement designed to foster appreciation of the achievements of ethnic and racial minorities previously unacknowledged by a Eurocentric culture. Of special importance in promoting the self-esteem of disenfranchised youth.

New Me: A movement that pretends to promote tolerance by rewriting history and otherwise debasing standards. Seeks to deny the inconvenient truth that actual self-respect can come only through rigor and genuine achievement."

--- Quote about multiculturalism from Harry Stein in *How I Accidentally Joined the Vast Right-Wing Conspiracy*.

Table of Contents

- ◆ **Page 2 / Bell System Station Protection and Grounds – Part 1**
 - ◆ Outside plant lightning protection straight from Ma Bell. Also useful while doing TSCM sweeps.
- ◆ **Page 20 / Nortel DMS-100 Lines Related User Interface Commands**
 - ◆ Overview of line maintenance levels and commands on a DMS-100 switch.
- ◆ **Page 43 / GBPPR 2.45 GHz Magnetron to Coax Assembly**
 - ◆ I'm not normal.
- ◆ **Page 70 / Wisconsin 1-393 Special Services Numbers**
 - ◆ Old listing for Wisconsin Bell/Ameritech internal directory numbers.
- ◆ **Page 75 / Bonus**
 - ◆ Niggers Don't Hack!
- ◆ **Page 76 / The End**
 - ◆ Editorial and rants.

Bell System Station Protection and Grounds – Part 1

BELL SYSTEM PRACTICES
AT&TCo Standard

SECTION 460-100-400
Issue 6, September 1980

STATION PROTECTION AND GROUNDS

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL	1	15. MAINTENANCE	57
2. LOCATION OF PROTECTORS	4		
3. SELECTING PROTECTORS, PROTECTOR MOUNTINGS, AND CLOSURES	4	1. GENERAL	
PROTECTORS	4	1.01 This section covers the requirements for protection of subscriber stations (including coin telephones), provides information for identification, selection, and installation of station protectors. It identifies signaling grounds, describes bonding procedures, and outlines requirements for protecting PBX circuits.	
PROTECTOR MOUNTINGS	13	1.02 This section is reissued to add information on the following:	
CUSTOMER SERVICE CLOSURES	16	• Suspected energized protectors (DANGER, paragraph 15.03).	
PROTECTOR MOUNTING POSTS	16	• 142A1A and 191A2 protectors.	
4. INSTALLING PROTECTORS	18	• C and D customer service closures.	
5. FUSED PROTECTORS	23	• 106C protector in C customer service closure (Fig. 43).	
6. GROUNDING AND BONDING	24	• AT-7796X connector.	
7. SIGNALING GROUND	36	• 188A test set (Stop Lite), safety glasses, and rubber gloves with leather protectors.	
8. COIN STATION GROUND	38	• Restrictions on connections to aluminum conduit and conductors.	
9. LOCATING AND INSTALLING GROUND RODS	39	• Conversion from fuse to fuseless operation.	
10. INSTALLING SNEAK CURRENT FUSES	42	• Metric equivalents to English units in figure references to dimensions and wire gauge.	
14A FUSE HOLDER	43	• Delete text, table, and figure references to No. 14 AWG ground wire, which has been rated manufacture discontinued (MD), and show it replaced by No. 12 wire.	
1094A PROTECTOR	43		
191A1-20 PROTECTOR	43		
11. PBX PROTECTION	45		
12. EXPOSED DROP WIRES CONNECTED TO UNEXPOSED CABLE	49		
13. 118B PROTECTOR	51		
14. CONVERTING PROTECTORS	54		

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

Printed in U.S.A.

Page 1

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

- Rerate 93C, 93D1, and 305A2 protector mountings and 1293C protectors to MD.
- Rerate 6A3A terminal block to MD.
- Revise Tables A, B, C, D, E, F, and G.
- Change READ to CAUTION, prior to paragraph 14.01.
- Replace Fig. 65 to show current model of B ground clamp.
- Show specific omission of the DIMENSION® PBX in READ statement of paragraph 3.10 and prior to paragraph 11.01.

Revision arrows are used to emphasize the more significant changes.

1.03 Cable, wire, strand, etc, which are subject to disturbance by lightning, possible contact or induction from electric circuits in excess of 300 volts to ground, or ground potential rises from nearby power generating stations, substations, or higher voltage industrial transformers (34 kilovolts and above), are called **exposed** cable, wire, or strand.

1.04 Cable, wire, strand, etc, which are not subject to disturbances by lightning, possible contact or induction from electric circuits in excess of 300 volts to ground, or ground potential rises from nearby power generating stations, substations, or higher voltage industrial transformers, are called **unexposed** cable, wire, or strand.

1.05 In nonlightning areas, the exposure status of cable or wire is based only on power exposure. In lightning areas, protection is required regardless of power exposure.

1.06 Isolated sections of aerial cable are considered as open wire, for the purpose of determining the type of protectors required, unless the cable is effectively grounded to a multigrounded neutral of a power system.

1.07 Station protectors are used in areas where telephone plant is considered exposed as outlined in paragraph 1.03. Station protectors are designed to provide safety to customers and telephone company personnel and to limit damage to telephone equipment from abnormally high

voltages. Protector units limit the magnitude of a foreign voltage at the station by arcing to ground and by shorting permanently to ground when there is excessive follow-through current.

1.08 Nearby lightning strokes can develop large potential (voltage) differences between telephone wiring, power wiring, water pipes, and building steel. Therefore, it is important these systems be bonded together on the telephone premises of the customer and the bonding conductors be as short and as straight as possible (Fig. 1).

1.09 When installing protectors at mobile home locations, refer to Section 461-220-100.

1.10 Grounding and special protection requirements for key telephone systems (KTSs) are covered in Section 518-010-105.

1.11 Stations requiring special protective measures are:

- Stations located at power substations or generating stations.
- Stations located in hazardous atmospheres containing explosive vapors, gas, or dust (Section 502-415-100).
- Customer-owned stations or stations connected to privately-owned circuits or facilities. Interfaces required for connecting to these stations are covered in other sections and will be coded on the service orders. If they are not, consult your supervisor.

1.12 Where stations are served by open wire, rural wire, or drop wire run on the same poles with primary power conductors, a **fusible link, consisting of a 2-foot minimum length of block wire**, must be installed at the pole serving the station as outlined in Section 460-300-121; otherwise, a fused protector must be used.

1.13 Stations served by rural wire or drop wire that is run on jointly used poles, supporting power distribution circuits having voltages of more than 2900 volts to ground or more than 5000 volts between conductors and include a multigrounded neutral wire, may require a 118B protector. Refer to Section 624-730-200 and Part 13 of this section for requirements. The 118B protector is designed to protect telephone circuits in the event of a

Bell System Station Protection and Grounds – Part 1

ISS 6, SECTION 460-100-400

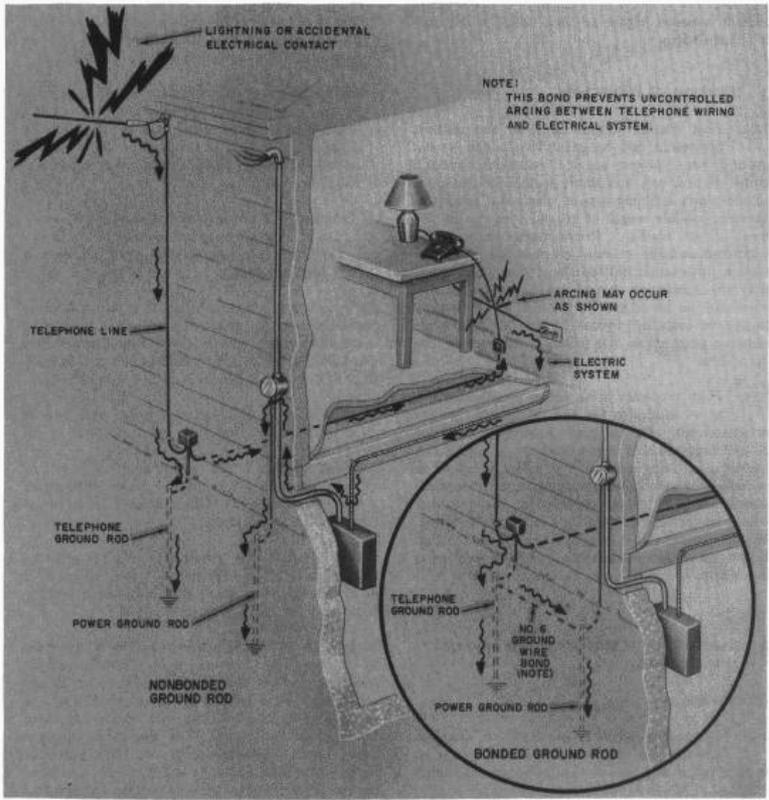


Fig. 1—How Bonding Reduces Differences of Potential Between Telephone Wiring and Electrical Systems That are Grounded to Separate Electrodes

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

contact between higher voltage power wires and telephone wires.

2. LOCATION OF PROTECTORS

2.01 Plan station installations so the station protectors can be grounded to the power ground wire, power service entrance conduit, power ground rod, acceptable metallic water pipe or acceptable building ground electrode, using the shortest possible length of ground wire run in the most direct route. **Protectors should be mounted outside whenever possible.** Fuseless station protectors installed indoors should be located near the protector ground source so the ground wire can be as short as possible. Fuse-type protectors installed indoors must be located as close as practical to the point of entrance of the drop wire.

2.02 Place protector in an accessible location so as to minimize the possibility of damage or immersion. Do not place protectors on front of buildings where appearance is a significant factor, in living quarters, or where a ladder is necessary for installation and maintenance. Protectors installed indoors without covers must not be located where inadvertent contact by a customer is likely. Mount protectors in a dry, well ventilated location. Mount protection underneath buildings only as a last resort.

3. SELECTING PROTECTORS, PROTECTOR MOUNTINGS, AND CLOSURES

PROTECTORS

3.01 Determine whether a fused or fuseless protector is required. A **fused** protector is required if any one of the following conditions exists:

- (a) The station is served by open wire or rural wire and (1) the power is not multigrounded neutral, and (2) there is no acceptable water pipe for grounding.
- (b) The station is served by open wire or rural wire and no bridle wire fusible link (at least 2 feet of E block wire) has been provided between the aerial wire and the drop wire.

(c) The station is served by multiple drop wire fed by open wire or multiple wire and no bridle wire fusible link has been provided.

(d) Underground service wire is connected via an encapsulated splice (16A2 or 16AA2 closure with D encapsulant) to 19-gauge or 22-gauge cable that is exposed (in the aerial or buried portion) to power circuits in excess of 300 volts to ground.

Note: Where local instructions do not specify use of a fused protector, it may be necessary to consult the engineer to verify if such a condition exists.

An exception to paragraph 3.01(d) is that a fuseless protector can be installed provided it is located **outdoors** and mounted on a **noncombustible surface**. A #9A1A-54 terminal block can be used in a PC6 or PC12 closure.

(e) A battery supply circuit is fed from two or more drop wires.

3.02 If none of the conditions outlined in paragraph 3.01 exist, use Table A to select a fuseless protector. Where a fused protector is required, refer to Part 5.

3.03 The **123A1A protector** (Fig. 2) provides protection for one pair of wires. It consists of a nonconductive base containing three binding posts and two 2B2A protector units.

3.04 The **123B1A protector** (Fig. 3) provides protection for one pair of wires and is recommended for use only at stations served by aerial wire (as described in paragraph 3.08). It consists of a nonconductive base containing three binding posts and two 6B1A gas tube protector units (Fig. 4) in parallel with two 2B2A protector units. The 6B1A protector units are not grounded permanently by lightning surges but may be damaged by power currents. Therefore, carbon protector backup is provided to assure fail-safe protection.

3.05 The **123E1A protector** (Fig. 5) provides protection for one pair of wires and is intended for use at stations served by cable or multiple wire having a high level of lightning activity. It consists of a nonconductive base containing three binding posts and two 11B1A gas tube protector units (Fig. 6). The 123E1A protector

Bell System Station Protection and Grounds – Part 1

ISS 6, SECTION 460-100-400

♦TABLE A♦

FUSELESS PROTECTOR SELECTION

NUMBER OF PAIRS PROTECTED	PROTECTOR	TYPE PROTECTOR UNIT USED	SEE FIGURE NUMBER	USE		PARAGRAPH REFERENCE
				INDOOR	OUTDOOR	
1	123A1A	2B2A	2	•	•	3.03
1	123B1A	2B2A 6B1A	3	•	•	3.04
1	123E1A	11B1A	5	•	•	3.05
2	128A1A-2	2B2A	7	•	•	3.06
2	128E1A-2	11B1A	8	•	•	3.07
1-3	6A3A (MD)	2A1A or 11A1A	10		†	3.12
1-5	9A1A-5	2A1A or 11A1A	12		†	3.14
3-6	116C	2A1A or 11A1A	13		•	3.15
3-6	117B	2A1A or 11A1A	14	•		3.16
1-5	142A1A	2A1A or 11A1A	23		•	3.28

* Provide a B, C, or D customer service closure, or 150B cover, and 93D1 (MD) protector mounting for outdoor installations.

† Used in PC-type closure.

may be safely used anywhere the 123A1A protector is used.

Note: The 11B1A protector unit (Fig. 6) incorporates a 471A electron (gas) tube which provides nominal 500-volt protection. The ultimate failure mode of the 11B1A protector unit is a short circuit (to ground); therefore, it does not require the use of carbon blocks in parallel. The 471A tube is mounted in a brass cap along with a stainless steel spring, a fusible disc, and a solder tinned brass cage. These parts are arranged so heating of the tube melts the fusible disc and allows the cage to contact the grounded surface of the station protector. This short-circuits the gas tube and provides a path to ground. During

a lightning surge or short duration power surge, the 471A gas tube provides a path to ground through its internal spark gap. The 11B1A protector unit can be substituted for the 2B2A protector units in the 123A1A and 128A1A-2 protectors. Station protectors equipped with 11B1A protector units are preferred over protectors which feature gas tubes in parallel with carbon blocks (eg. 123B1A) where cable or multiple wire plant is involved. The 11B1A protector unit can be identified by a circle machined into the cap and by a dab of white paint on the cap.

3.06 The 128A1A-2 protector (Fig. 7 and 27) provides protection for two pairs of wires. It consists of a nonconductive base containing five

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

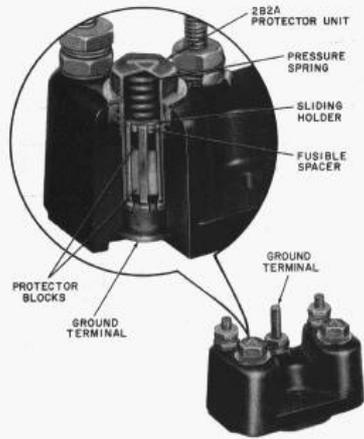


Fig. 2—123A1A Protector



Fig. 4—6B1A Protector Unit

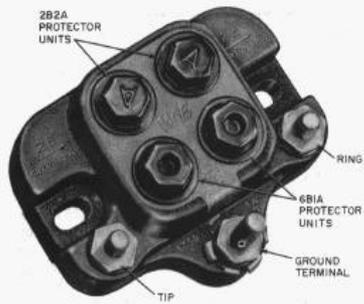


Fig. 3—123B1A Protector



Fig. 5—123E1A Protector

binding posts and four 2B2A protector units. The bottom left and right binding posts are tip and ring for the first line, and the top left and right binding posts are tip and ring for the second line. The two bottom 2B2A protector units protect the first line, and the two top 2B2A protector units

Bell System Station Protection and Grounds – Part 1

ISS 6, SECTION 460-100-400

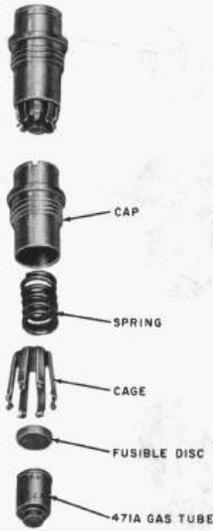


Fig. 6—11B1A Protector Unit

protect the second line. The center binding post is the ground terminal. The 128A1A-2 protector should be grounded with a ground wire no smaller than a No. 12 ground wire (Table B).

3.07 The 128E1A-2 protector (Fig. 8) provides protection for two pairs of wires. It consists of a nonconductive base containing five binding posts and four 11B1A protector units. The bottom left and right binding posts are tip and ring for the first line, and the top left and right binding posts are tip and ring for the second line. The two bottom 11B1A protector units protect the first line and the two 11B1A protector units protect the second line. The center binding post is the ground terminal. The 128E1A-2 protector should be grounded with a No. 12 ground wire (Table B) and may be used anywhere the 128A1A-2 protector is used.



Fig. 7—128A1A Protector

♦TABLE B♦

GROUND WIRE CAPACITY

GROUND WIRE SIZE	MAXIMUM NUMBER OF PROTECTED CIRCUITS	
	FUSELESS	FUSED
No. 12 (2mm)	2	6
No. 10 (2.5mm)	6	7
No. 6 (4mm)	7 or more	8 or more

Note: The ground wire between protectors shall be the same size as the ground wire between the protector and the grounding electrode.



Fig. 8—128E1A-2 Protector

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

3.08 The 11B1A protector unit was designed for loops served by grounded shielded cable, multiple rural wire, or urban wire. The 11B1A protector unit and the 123E1A and 128E1A protectors may be used safely on loops served by C-rural wire or open wire, but the trouble reduction over carbon block protection may not be significant, depending on exposure of the loop. In cases where the loop contains a C-rural or open wire segment not exceeding 1/4 mile in length, the presence of the C-rural or open wire should not degrade performance of the gas tube. For loops having longer segments of C-rural or open wire, use the 123B1A protector where gas tube protectors are authorized.

3.09 Because of their higher cost, the 11B1A protector units and the 123E1A and 128E1A protectors should be used only in areas designated by engineering.

3.10 The 11A1A protector unit (Fig. 9) incorporates the same 471A electron (gas) tube as the 11B1A protector unit (see Note following paragraph 3.05) to provide nominal 500-volt protection. The gas tube, along with a fusible disc, is mounted in a machine threaded brass cap. The cap has a screwdriver slot and a recessed circle. The top of the cap is painted white to identify it as satisfactory for use on customer premises.



Neither the 11A1A or 11B1A protector unit should be used with 800A, 801A, and ESS 101 PBXs. †(DIMENSION PBX grounding must be done in accordance with Section 554-101-101.)

3.11 The parts of the 11A1A protector unit are arranged so during a sustained power fault the current causes the gas tube to heat and melt the fusible disc. This allows the spring in the protector base to move the base terminal into contact with the edge of the protector unit cap, providing a ground short. During a lightning surge, the 471A gas tube provides a path for the surge current to ground through its internal spark gap.



The 11A1A protector unit can be used as a direct field replacement for 2A1A protector units in the terminal blocks, protectors, cable terminals, and connecting blocks covered in paragraphs 3.12 through 3.23.

3.12 The 6A3A (MD) terminal block (Fig. 10) can be used in lieu of fuseless station protectors where stations are served by buried cable and the cable closure (such as PC6 or PC12 cable closure) is installed on the premises served. The 6A3A (MD) terminal block mounts inside the



Fig. 9—11A1A Protector Unit

Bell System Station Protection and Grounds – Part 1

ISS 6, SECTION 460-100-400

cable closure as shown in Fig. 11. The 6A3A (MD) terminal blocks should not be used for station protectors when a PC6 or PC12 cable closure is used to feed separate buildings and is located remotely from them. Individual 123- or 128-type protectors should be provided at each building.

3.13 The 6A3A (MD) terminal block consists of a nonconductive base containing six binding posts with a 2A1A protector unit associated with each binding post. The terminal block is equipped with six color-coded 24-gauge leads (white-blue, white-orange, white-green), one to each binding post and 2A1A protector unit. Two mounting studs are provided to mount the terminal block in a cable closure and provide for ground connection.

3.14 The 9A1A-5 terminal block (Fig. 12) consists of a nonconductive base containing five pairs of binding posts, ten 2A1A protector units, and replaces the 6A3A (MD) terminal block. One 24-gauge insulated lead is connected internally to each binding post. The 9A1A-5 block provides facilities for protecting subscriber stations and terminating wire service. It is intended for mounting in PC-type cable closures.

3.15 The 116C protector (Fig. 13) consists of a nonconductive base containing twelve binding posts, twelve 2A1A protector units, and two binding posts for signaling ground connections. The base is housed in a metal container with a hinged metal cover. The metal housing is equipped with a clamp for the station ground wire. The wire used to ground the 116C protector should be

no smaller than a No. 10 (Table B). The 116C protector is designed for outdoor or indoor use and generally used with 6-pair multiple drop wire.

3.16 The 117B protector (Fig. 14) consists of a nonconductive base containing twelve binding posts, twelve 2A1A protector units, one binding post for signaling ground, and one binding post (equipped with a pronged washer) for signaling ground and protector ground. The 117B protector should be grounded with a wire no smaller than a No. 10 ground wire (Table B). The 117B protector is designed for indoor use and generally used with 6-pair multiple drop wire.

3.17 Cable terminals, connecting blocks, protectors, or terminal blocks designed to protect 10, 16, 25, 50, or 100 pairs of wires, are used at apartment complexes, commercial or industrial locations. These large capacity (10 pairs or more) protectors may be referred to as multipaired protectors. Multipaired protectors (Table C) used for station protection must be equipped with:

- 2A1A or 11A1A protector unit
- A ground clamp for grounding to an approved ground electrode.

3.18 The NH16 and NH25 cable terminals are equipped with a 24-gauge stub and consists of gastight solid-cast resin blocks containing binding posts and 2A1A protectors installed in metal housings. The metal housings are equipped with a ground clamp, and the cable terminals should be grounded

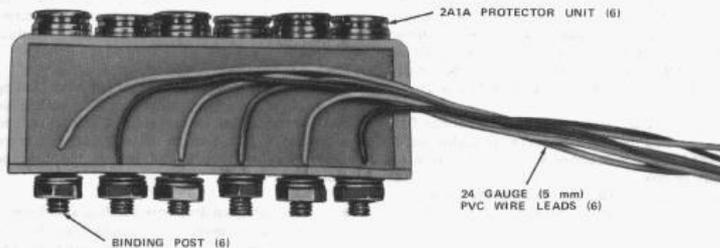


Fig. 10—6A3A (MD) Terminal Block

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

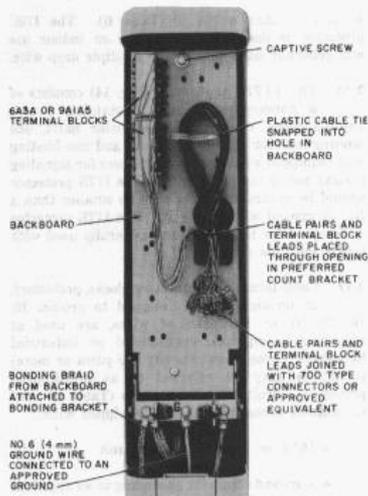


Fig. 11—6A3A or 9A1A5 Terminal Blocks Installed in PC6/48 Closure

with a wire no smaller than a No. 6 ground wire (Table B).

3.19 The NH16 cable terminal has thirty-two binding posts, thirty-two 2A1A protector units, and the housing is equipped with a hinged cover. It may be strand, pole, or wall mounted. Where the NH16 cable terminal is wall mounted on the premise of a customer, it must be bonded (grounded) to an acceptable ground (Table D).

3.20 The NH25 cable terminal (Fig. 15) has fifty binding posts, fifty 2A1A protector units, and the housing is equipped with a drop-type cover. It may be pole or wall mounted. Where the NH25 cable terminal is wall mounted on the premise of a customer, it must be bonded (grounded) to an acceptable ground (Table D).

3.21 The 1A4A-type terminal blocks (Fig. 16) are gastight cast-resin blocks equipped with

binding posts, 2A1A protector units, fanning strip, ground clamp, and a removable linkage feature. The terminal blocks are available in 10-, 16-, 25-, and 50-pair sizes (Table C). The terminal blocks may be mounted in cable terminal boxes or cable terminal sections. The removable ground linkage provides a means of establishing an insulating joint, for corrosion reasons, between the lead stub and the grounds within the terminal block. The fanning strip provides a means of fanning out the connecting wires. The ground clamp permits the connection of a station protector ground. The 1A4A-type terminal blocks should be grounded with a wire no smaller than a No. 6 ground wire (Table B).

3.22 The 57B1A-type (MD) connecting blocks consist of binding posts and 2A1A protector units in injection-molded blocks (Fig. 17). The blocks are equipped with insulation-crushing hardware, fanning strips, and a ground clamp. The ground clamp permits the connection of a station protector ground. The connecting block should be grounded with a wire no smaller than a No. 6 ground wire (Table B). The connecting blocks were made in 10-, 16-, 25-, and 50-pair sizes (Table C). The 57B1A-type connecting block may be installed in G-type terminal boxes, 1A1 or H202 cable terminal sections (see Section 461-603-100).

3.23 The 134-type protectors (Fig. 18) consist of a cast-resin block containing 2A1A protector units, a 26-gauge stub cable (to serve as a fusible link), a 24-gauge terminating stub cable, and two ground lugs. The protectors are available in 16-, 25-, 50-, and 100-pairs sizes (Table C). Either of the ground lugs can be used for a protector ground, and a ground wire no smaller than a No. 6 should be used to ground the protectors (Table B). The 134-type protectors can be installed in cable closures, cable terminal sections, or on B cable terminal frames.

3.24 The 134-type protectors do not have binding posts; therefore, the terminating stub cable must be terminated on connecting blocks or spliced to cables. See Section 631-460-111 for more descriptive information and use of the 134-type protectors.

3.25 Noninsulated drop wire building attachments should be used with fuseless protectors or with fused-type protectors that have been converted to fuseless operation. See Section 460-300-123, Drop and Block Wire, Attaching, and Fastening.

Bell System Station Protection and Grounds – Part 1

ISS 6, SECTION 460-100-400

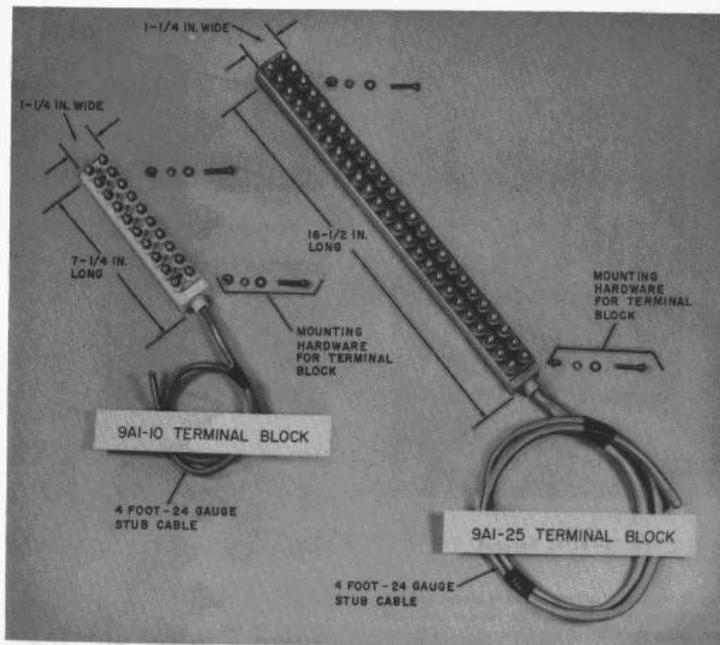


Fig. 12—9A1-Type Terminal Block

3.26 Where the 123- or 128-type protectors are installed outside, a 150B cover (Fig. 19) is installed over the protector, or the protectors may be housed in a 93D1 (MD) (Fig. 20), a 305A2 (Fig. 21) protector mounting, or a B customer service closure (Fig. 22). The 150B cover may be used to cover protectors installed indoors when a protective covering is required.

Caution: The 150B cover is made of semiflexible plastic and, in extremely hot locations, may become soft and

not hold over the protector. In extremely cold locations, the 150B cover may become brittle and be difficult to remove from the protector. The B customer service closure or the 305A2 protector mounting is preferred in lieu of the 150B cover for extremely hot or extremely cold locations.

3.27 When using the 150B cover, bring all the wires together under a common clamp. The

Page 11

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

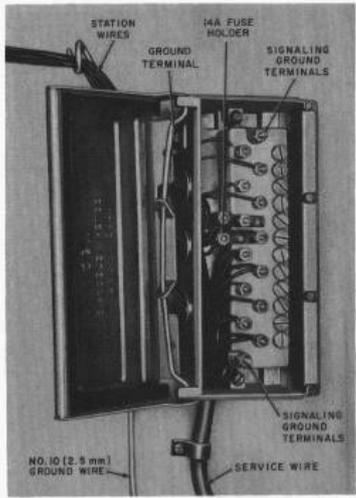


Fig. 13—116C Protector

clamp is the last attachment and is placed about 2 inches below the protector. To remove the 150B cover, grasp the sides of the cover with the thumb and forefinger and, at the same time, apply pressure with the middle finger at the central tapered portion in an upward direction. When the cover lugs clear the base of the protector, the cover may be lifted off.

3.28 The 142A1A protector (Fig. 23) is intended for use where the station is served by 5-pair service or drop wire. It consists of an insulating base with a threaded-stud grounding connector and five pairs of 2A1A protector units, though 11-type (gas filled) protector units may be used, wired to a 5-pair terminal block. It may be mounted in either a C or D customer service closure.

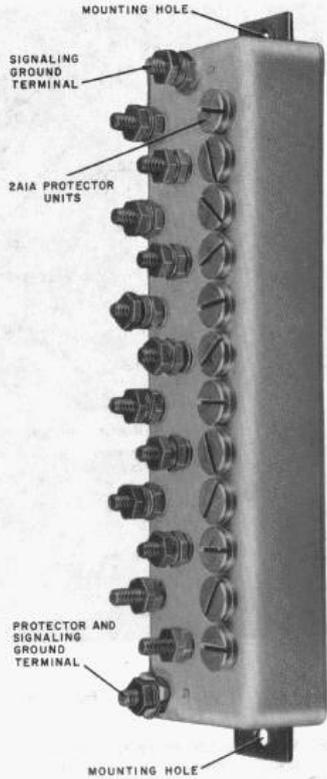


Fig. 14—117B Protector

Bell System Station Protection and Grounds – Part 1

ISS 6, SECTION 460-100-400

♦TABLE C♦

MULTIPAIR STATION PROTECTORS

TYPE PROTECTOR	PAIRS PROTECTED	SEE FIGURE NUMBER	REFERENCE SECTION
Cable Terminals	NH-16	16	631-210-101
	NH-25	25	
Terminal Blocks	1A4A-10	10	631-440-211
	1A4A-16	16	
	1A4A-25	25	
	1A4A-50	50	
Connecting Blocks	57B1A-10	10	461-603-100
	57B1A-16	16	
	57B1A-25	25	
	57B1A-50	50	
Protectors	134A1A-16	16	631-460-111
	134A1A-25	25	
	134A1A-50	50	
	134A1A-100	100	

♦PROTECTOR MOUNTINGS♦

3.29 The 93D1 ♦(MD)♦ protector mounting is designed to house four 123- or 128-type protectors. It is intended to be mounted on a protector mounting post (PMP) where stations are served by buried service wire (Fig. 24) or may be installed on any flat surface.

3.30 The 93D1 ♦(MD)♦ protector mounting consists of a base, an adapter plate, a cover, a grounding connector, and four screws. The back of the base has two slotted mounting holes for installing on a flat surface and two round holes (about 1-3/4 up from the bottom) for mounting on a PMP. Two other holes in the back of the base are provided for attaching the adapter plate. Three openings in the bottom of the base are equipped

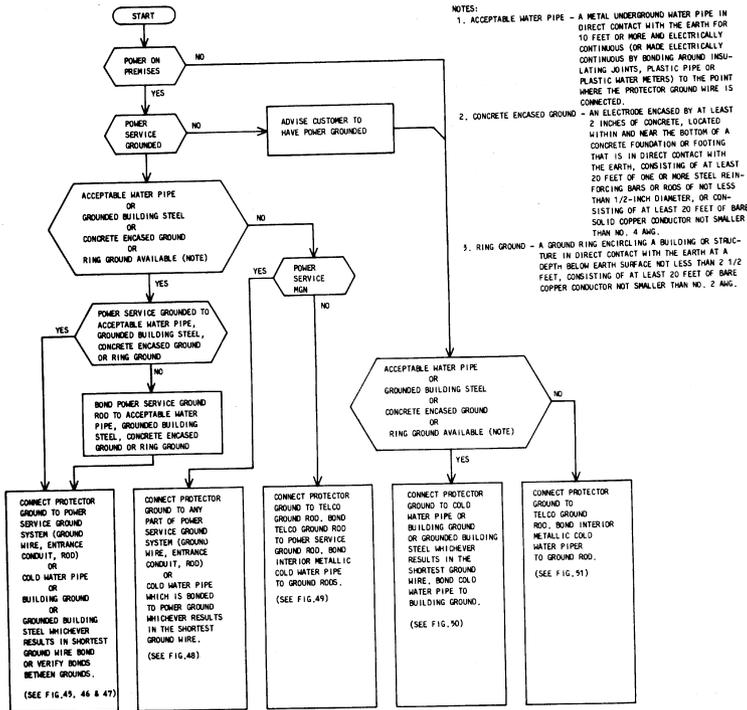
with grommets as an entry for service wires, station wires, and ground wire. A knockout is provided in the back of the base. Where it is more practical for station wires to enter the back of the protector mounting, the knockout can be removed and a B plastic tube inserted through the opening. The B plastic tube offers mechanical protection to station wires. Cut the B plastic tube to the desired length and plug it to prevent an open path between the closure and the interior of the building.

3.31 The 123- and 128-type protectors are mounted in a vertical position on the adapter plate of the 93D1 ♦(MD)♦ protector mounting. The ground connector provides a method of connecting the shield of a service wire to the ground terminal of a protector mounted in one of the lower positions on the adapter plate. The ground connector is

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

TABLE D
SELECTION OF APPROVED GROUND



Bell System Station Protection and Grounds – Part 1

ISS 6, SECTION 460-100-400

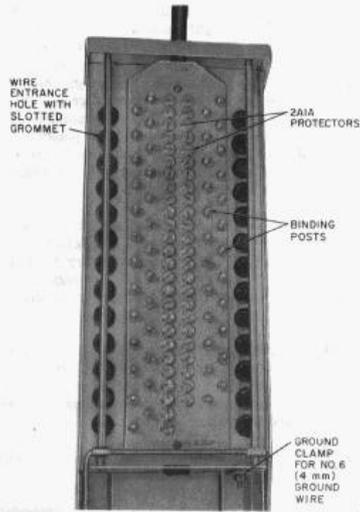


Fig. 15—NH25 Cable Terminal

connected to the shield of a service wire in the same manner as the F connector (Fig. 25).

Note: When installing the 93D1 (MD) protector mounting on a PMP, the adapter plate must be removed to provide access to the mounting holes in the back of the protector mounting base.

3.32 The 305A2 (MD) protector mounting consists of a metal base and a removable metal cover. The base has two slotted mounting holes and four tapped holes, two vertical and two horizontal, for installing 123- and 128-type protectors. Two screws are furnished with the mounting. The 305A2 (MD) protector mounting can be mounted on any flat surface (Fig. 26) or on a PMP (Fig. 27).

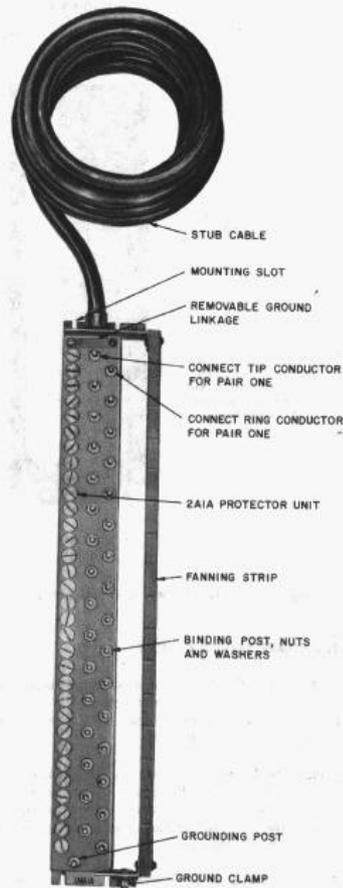


Fig. 16—1A4A-16 Terminal Block

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400

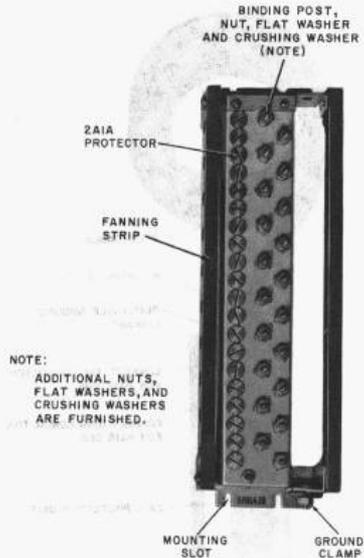


Fig. 17—57B1A-10 (MD) Connecting Block

CUSTOMER SERVICE CLOSURES

3.33 The AT-8813 customer service closures are used as exterior protective housings for protectors, connecting blocks, and various other telephone company devices.

3.34 The AT-8813 customer service closures come in three sizes (B, C, and D) and consists of a plastic base, removable cover, two cable ties for locking the cover to the base, and mounting screws for attaching protectors.

3.35 The B, C, or D closure can be mounted on any suitable flat surface, PMP, or a vertical or horizontal pipe. An adapter at the bottom of the base allows it to be attached to service wire conduit. A typical installation is shown in Fig. 28.

3.36 Inside wiring (station and ground wire) can be brought into a customer service closure through either the back or bottom grommets only. Since they are constructed entirely of plastic, ground contact cannot be made through the base but must be provided by a separate ground wire. When wires enter through the back grommet, they should be protected by a length of B plastic tube inserted through the hole. Plug the tube to prevent formation of an open path between the closure and the interior of the building.

3.37 When a closure is mounted on a pipe, it should be attached with a C lashed cable support (Fig. 29). It will be necessary to break out either vertical or horizontal openings in the back of the closure with a screwdriver or similar tool.

3.38 Complete instructions for installing B, C, and D customer service closures are printed on a separate sheet and packed with each new unit. More complete information on these closures is contained in Section 463-121-120.

3.39 The AT-8813 customer service closures will accommodate the following:

- B closure—a single 123- or 128-type protector
- C closure—two 123- or 128-type protectors or combination, one 106C protector, or one 142A1A protector, or a combination of protectors, 66B4-3 connecting blocks, 1A termination units, and loop electronic devices.
- D closure—up to four 123- or 128-type protectors or combinations of all previously mentioned devices.

PROTECTOR MOUNTING POSTS (PMP)

3.40 The protector mounting posts, PMP-38 (Fig. 30) and PMP-50, are designed to mount a 93D1 (MD) protector mounting, a 305A2 (MD) protector mounting, a 123- or 128-type protector, or a B customer service closure, where protectors are served by buried service wire. The PMP is available in 38-inch and 50-inch sizes to suit various conditions. It can be installed freestanding, at the edge of a mobile home, or can be installed on the side of a permanent building or a power service entrance conduit. When used freestanding, the

Bell System Station Protection and Grounds – Part 1

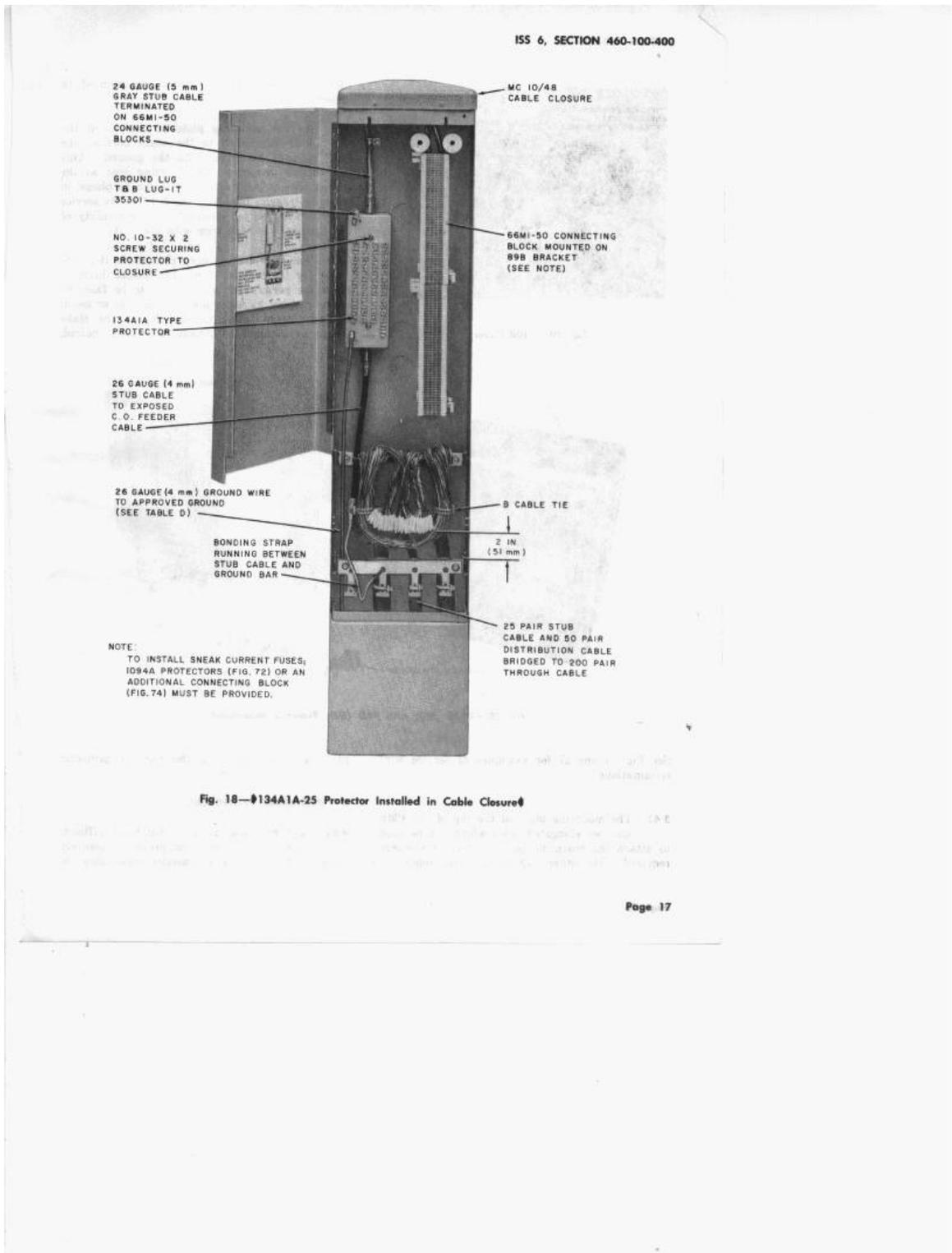


Fig. 18—134A1A-25 Protector Installed in Cable Closure

Bell System Station Protection and Grounds – Part 1

SECTION 460-100-400



Fig. 19—150B Cover

PMP must be in the ground a minimum of 12 inches.

3.41 As the mounting plate at the top of the PMP is riveted to the stake portion, the PMP *cannot* be driven into the ground. This necessitates installing the mounting post as the service wire is being buried so it can be placed in the open trench. Installing the PMP as the service wire is being buried eliminates the possibility of damaging the service wire with the stake.

3.42 The PMP has an open channel in the back for the service wire. The slotted holes in the stake permit the service wire to be fastened in the channel by using plastic cable ties or metal sealing clamps. The round holes in the stake permit attachment to structures where required.

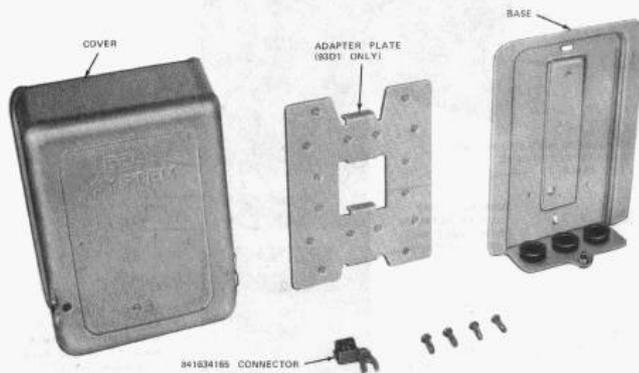


Fig. 20—93C (MD) and 93D (MD) Protector Mounting

See Fig. 24 and 27 for examples of service wire terminations.

3.43 The mounting plate at the top of the PMP has two elongated holes which can be used to attach the mounting post to structures where required. The other five holes in the mounting

plate are for mounting the various protector mountings or closures.

4. INSTALLING PROTECTORS

4.01 All screws and fasteners shall be of sufficient length and size to mount protectors securely. Division 080 contains information concerning the

Nortel DMS-100 Lines Related User Interface Commands

User Interface

Maintenance is performed by operating company personnel by means of a user interface. The user interface consists of the Maintenance and Administration Position (MAP) terminal and the software required to convert human information to machine information, and for machine information to be communicated to maintenance personnel.

Input functions are user commands for activities to:

- Test Equipment
- Determine Equipment Configuration
- Request Status
- Alter Equipment Status
- Display Equipment Location

Output functions include:

- Menu of Selectable Input Commands
- Display of Equipment Status
- Display of Equipment Location
- Display of System Results
- Display of Results of User Requests

Most of the trouble tests are conducted from the Line Test Position (LTP) MAP level and from the following sublevels:

- LTPLTA
- LTPMAN
- IBNCON
- LTPDATA
- DCTLTP

Commands for most of the tests are included in menus at each level, together with commands for maintenance actions used in conducting the tests. The commands for these tests are listed in the respective table associated with the section discussing the menu level.

This document also lists all the commands and responses for the Virtual Line Concentrating Module (VLCM). The Automatic Lines Testing (ALT) function of the DMS-100 switch is accomplished through the ALT level and ALT sublevels.

User Interface for the Lines (LNS) Subsystem

This section highlights the commands used for maintaining lines from the LNS Maintenance Administrative Position (MAP) level. *Figure 1* shows the LNS menu level.

Figure 1 - LNS Level Menu Display

```

CC      CMC      IOD      Net      PM      CCS      Lns      Trks      Ext
.       .       .       .       .       .       .       .       .

LNS
0 Quit_
2
3 LTP
4 ALT
5 LNSTRBL
6
7
8
9
10
11
12
13
14
15
16
17
18
(User ID)
Time hh:mm>

```

Figure 2, "Maintenance Level Chart for Lines" and Figure 3, "Line Maintenance Commands" shows the association between the various line sublevels. The tables in this section list all the commands that appear in each line sublevel menu. Descriptions of non-menu commands (that is, commands that do not appear in the menu) for each line sublevel are also provided.

Figure 2 shows the maintenance level chart for lines.

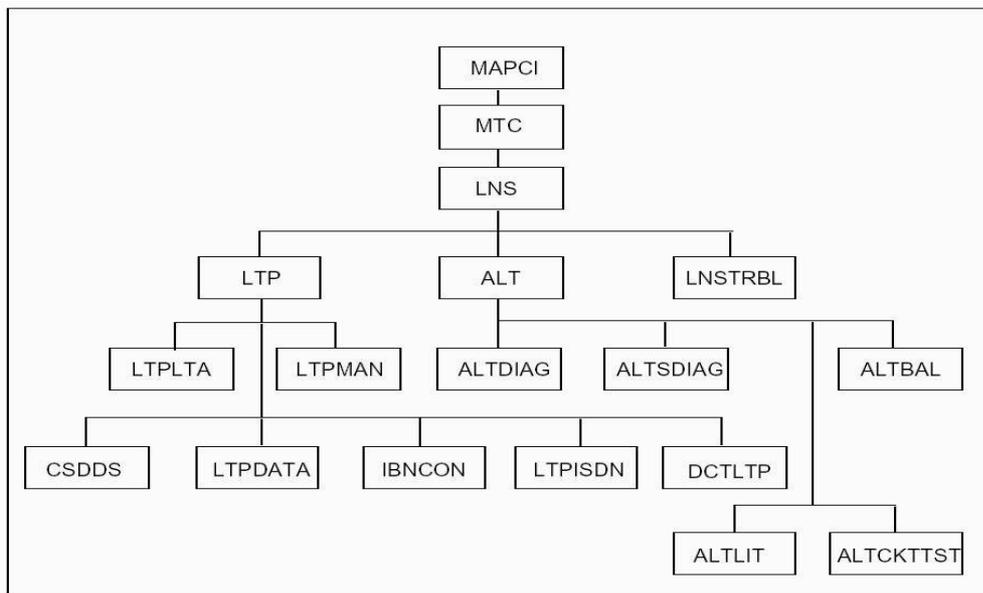


Figure 2 - Maintenance Level Chart for Lines

User Interface for AccessNode Lines

The user interface for AccessNode lines involves commands from various MAP levels depending on the type of testing desired, or in some cases, the type of line to be tested.

Following the command overview tables, there are tables that list the commands available at the various MAP levels for AccessNode line maintenance. Each command is described in terms of whether it is supported and whether a specific configuration is required.

Figure 3 shows the lines maintenance commands for the line levels and sublevels.

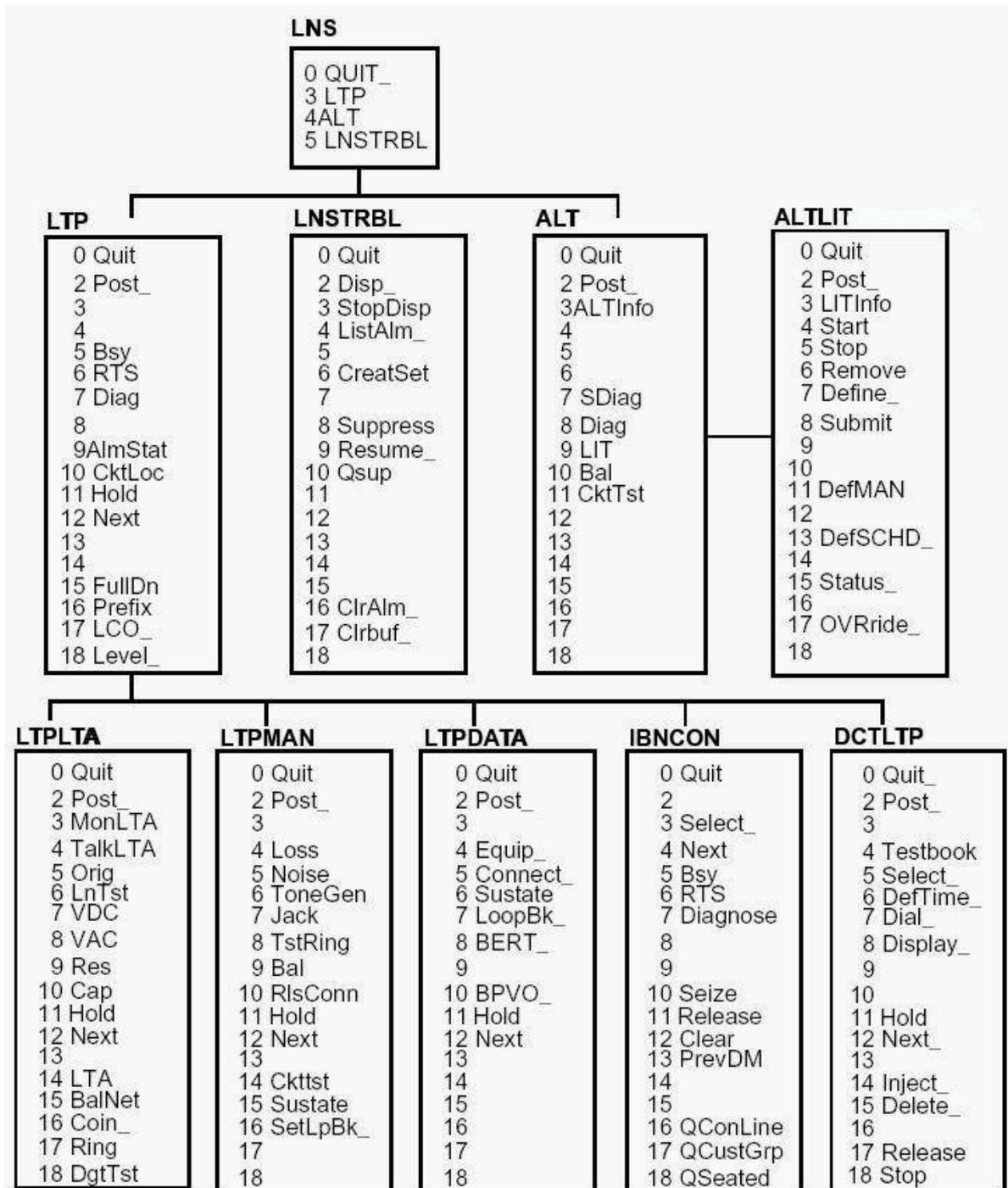


Figure 3 – Line Maintenance Commands

Note: The menu of commands for the ALTLIT level is the same as for the other ALT sublevels except that command LITINFO in the ALTLIT level does not appear at any other ALT sublevel.

Command Interpreter (CI) Level Command

An overview of the line maintenance commands at the CI level of the MAP is provided in *Table 1*.

Table 1 - Overview of the Commands at the CI Level

Command	Description
QBNV	The QBNV command is used at the CI level to display a range of lines in the Line Concentrating Module (LCM) with existing Balance Network Value (BNV) and the recommended BNV.

Line Test Position (LTP) Level Menu Commands

An overview of the line maintenance commands at the LTP level of the MAP is provided in *Table 2*.

In the LTP MAP level, the only command the Metallic Test Unit (MTU) autoloader process supports is `Diag`. The output of the `Diag` command provides no indication of the autoloader process request. If the `Diag` command fails, the user must check for TRK360 logs to determine if autoloader began.

The following LTP level commands are not supported for the VLCM lines:

- `Diag`
- `LCO`

If you attempt to use a LTP-level command that is not supported on a VLCM line, one of the following error messages displays:

```
<command> is not valid on a VLCM line.  

<command> is not valid on a POTS/COIN line.
```

Table 2 - Overview of Commands at the LTP Level

Menu Item	Command	Description
0	Quit	The QUIT command is used to leave the current level and return to a higher level.
2	Post	Posts a line or set of lines to the LTP.
3-4	Not Used	
5	Bsy	The BSY command changes the state of the line in the control position, or optionally all lines that are posted, to a specified state.
6	RTS	The RTS command changes the state of the line in the control position, or optionally the complete set of posted lines, from MB (Maintenance Busy) to IDL (Idle).
7	Diag	The DIAG command performs an extended diagnostic on a line in the control position that is in the MB or IDL state, and displays the results on the LTP screen.

8	Not Used	
9	AlmStat	The ALMSTAT command interrogates the alarm system of the LNS subsystem and displays the status of alarms in the full switch by type of alarm, when used without parameters. The command is used with parameters to display all or selected alarms at specified units in the host or remote sites, or to change the thresholds of the alarm classes in the full switch.
10	CktLoc	The CKTLOC command locates and identifies the circuit card used for the line circuit in the control position, and displays circuit characteristics.
11	Hold	The HOLD command moves the line in the control position to a spare hold position, and the next line from the posted set, if any, to the control position.
12	Next	The NEXT command moves the line in a specified HOLD position to the control position, or replaces the line in the control position with the line in a specified hold position; and exchanges, saves, or drops the replaced line from LTP control.
13-15	Not Used	
16	Prefix	The PREFIX command clears the LTP of prefix digits. Optionally it sets or changes prefix digits.
17	LCO	The LCO command operates or releases the cutoff relay that is in the line circuit in the control position; or, optionally, operates or releases the cutoff relay in all the lines in the posted set.
18	Level	The LEVEL command gives the user access to the sublevels LTPLTA, LTPMAN, LTPDATA, IBNCON, and DCTLTP at the MAP.

LTP Level Unlisted Commands

Table 3 - Overview of Unlisted Commands at the LTP Level

Command	Description
LTP_AUX_GATE_COM	The LTP_AUX_GATE_COM command is used automatically by the system and is not available for manual use.
LTP_AUX_COM	The LTP_AUX_COM command is used automatically by the system and is not available for manual use.
DATA_SCREEN	The DATA_SCREEN command is used automatically by the system during the command code screening process and is not available for manual use.
DAV_SCREEN	The DAV_SCREEN command is used by the system during the command code screening process and is not available for manual use.
EBSMSG	The EBSMSG command enables or disables the Electronic Business Set (EBS) warning message and prompt.
FRLS	The FRLS command forcibly disconnects a line circuit from test equipment or any other circuit and changes its state to MB.
POTSDIAG	The POTSDIAG command modifies the line diagnostic to allow certain POTS line cards to use a termination with a modified Metallic Test Unit (MTU) to perform a terminated transhybrid loss test.

Note 1: The termination used is an 1,800 ohm resistance in parallel with a 10 µF capacitance.

Note 2: This command affects the diagnostics for the following line cards: NT6X17AA, NT6X17AB, NT6X18AA, NT6X18AB, and NT6X19AA.

RECORD_DTSR The RECORD_DTSR command enables or disables the storing of DTSR information.

VOICE_SCREEN The VOICE_SCREEN command is used automatically by the system during the command code screening process and is not available for manual use.

HAZSUSP (N) The HAZSUSP command suspends the testing of the lines in the Shower Queue, Hazardous (HAZ) audit list, and Ring-Ground (RG) audit list. The optional parameter "N" is the number of minutes that operating company personnel can suspend the testing of lines.

CAUTION – Loss of Service: Because Semipermanent Connections (SPC) are generally used for data connections, do not inadvertently release a connection since this will cause data loss.

CAUTION – Traps May Result: Do not enter the FRLS command while other line maintenance functions are in progress (such as line testing from the LTPLTA sublevel) or software traps may result indicating that the previous test could not be completed.

LTP Level Commands for AccessNode Lines

By using the Line Test Position (LTP) level of the MAP, the operating company can run various tests for lines off the AccessNode. Note that the functions of these commands can be conceptually divided as those used for:

- Integrated testing and which are *not* configuration dependent.
- Integrated testing and which are configuration dependent.
- Setting up nonintegrated testing and which are *not* configuration dependent.
- Setting up nonintegrated testing and which are configuration dependent.

Table 4 includes the types of line cards that are supported. When the command is supported by Plain Old Telephone Service (POTS), coin, and Meridian Business Set (MBS) lines, the word "All" appears in the "Line Types" column.

Table 4 – LTP Level Commands for Testing AccessNode Lines

Command	Line Types	Description
Quit	All	Not Applicable
Post	All	Not Applicable
Bsy	All	Not Applicable
RTS	All	Not Applicable
Diag	All	Uses a Transmission Test Unit (TTU) and a Multiline Test Unit (MTU).
AlmStat	All	Not Applicable
CktLoc	All	Not Applicable

Hold	All	Not Applicable
Next	All	Not Applicable
Prefix	All	Not Applicable
LCO	None	Not supported. The line cutoff function would have the effect of busying out one of the S/DMS AccessNode test buses.
Level	All	Not Applicable
FRLS	All	Not Applicable
POTSDIAG	None	Not supported. This test would require that the S/DMS AccessNode apply a nonstandard termination to the line card under test.
RECORD_DTSR	All	Not Applicable

Integrated Business Network (IBN) Console Sublevel Menu Commands

An overview of the line maintenance commands at the IBN console sublevel of the MAP is provided in *Table 5*. The IBNCON level is accessible only if software package NTX100AA is installed.

The following IBN console sublevel commands are supported for the Virtual Line Concentrating Module (VLCM) lines:

- Quit
- Post

Table 5 - Overview of Commands at the IBNCON Sublevel

Menu Item	Command	Description
0	Quit	The QUIT command is used at the IBNCON sublevel in the same way as described in the LTP level.
2	Not used	
3	Select	The SELECT command selects an IBN attendant console or a set of consoles.
4	Next	The NEXT command selects the next attendant console from the set of consoles that was selected.
5	Bsy	The BUSY command changes the state of an attendant console from UNJK to MB, and optionally to OFFL.
6	RTS	The RTS command changes the state of the attendant console to UNJK, CPB, or SB.
7	Diagnose	The DIAGNOSE command initiates a test of the attendant console and its voice and data loops, or optionally only the loops are tested.
8-9	Not used	
10	Seize	The SEIZE command changes the state of the console in the control position from the state MB or OFFL to the state SZD.

11	Release	The RELEASE command removes the currently seized console from access by maintenance action.
12	Clear	The CLEAR command clears the MAP display of data, concerning the currently selected console, and removes the selected set, if any, from maintenance control.
13	PrevDM	The PREVDM command displays the CLLI of the digital modem that was allocated to the console in the control position before its state was changed to MB.
14-15	Not used	
16	QConLine	The QCONLINE command displays details concerning the voice and data lines that are connected to the selected console.
17	QCustGrp	The QCUSTGRP command displays customer group and subgroup identification data corresponding to a specified console line.
18	QSeated	The QSEATED command checks if the headset or handset is plugged into the jack of the console in the control position when it is in the state SZD.

IBNCON Sublevel Unlisted Commands

Table 6 - Overview of Unlisted Commands at the IBN Console Sublevel

Command	Description
BSY	The BSY command denotes the menu command BUSY.
FRLS	The FRLS command causes the attendant console to be forcibly released from the state CPB and placed in the state MB.
SENDMSG	The SENDMSG command is used by the NT support group and is not intended for use by an operating company. The WAITFMSG command is used by the Nortel support group and is not intended for use by an operating company.

IBNCON Sublevel Commands for AccessNode Lines

Table 7 lists the commands available at the IBNCON sublevel for testing an IBN console from AccessNode lines.

Table 7 - AccessNode Lines IBNCON Sublevel Commands

Command	Supported?	Configuration Dependent?
Quit	Yes	No
Select	Yes	No
Next	Yes	No
Bsy	Yes	No
RTS	Yes	No
Diagnose	Yes	Yes
Sieze	Yes	No
Release	Yes	No
Clear	Yes	No
PrevDM	Yes	No
QConLine	Yes	No

QCustGrp	Yes	No
QSeated	Yes	No

LTPDATA Sublevel Menu Commands

Table 8, "Overview of Commands at the LTPDATA Sublevel" shows the commands available at the LTPDATA sublevel.

The following LTPDATA sublevel menu commands are *not* supported for VLCM lines:

- Equip
- Connect
- Sustate
- LoopBk
- BERT
- BPVO

If you attempt to use a LTPDATA sublevel command that is not supported on a VLCM line, one of the following error messages displays:

```
<command> is not valid on a VLCM line.
<command> is not valid on a POTS/COIN line.
```

Table 8 - Overview of Commands at the LTPDATA Sublevel

Menu Item	Command	Description
0	Quit	The QUIT command is used at the LTPDATA sublevel in the same way as it is described in the LTP level.
2	Post	The POST command is used at the LTPDATA sublevel in the same way as it is described in the LTP level.
3	Not Used	
4	Equip	The EQUIP command defines and seizes data line test and monitor equipment and lines.
5	Connect	The CONNECT command connects any or all of test equipment, monitor equipment, or a digital trunk, to a posted data line.
6	Sustate	The SUSTATE command reports on the loop status of the subscriber data line.
7	LoopBk	The LOOPBK command activates or releases loopback at specified locations on a data line, or displays current loopback locations.
8	BERT	The BERT command measures the transmission quality of a data line or a modem pool.
9	Not Used	
10	BPVO	The BPVO command determines the quantity of bipolar violations in the DLC loop of posted data lines that exceed a threshold value.
11	Hold	The HOLD command is used at the LTPDATA level in the same way as it is described in the LTP level.
12	Next	The NEXT command is used at the LTPDATA sublevel in the same way as it is described in the LTP level.

LTPDATA Sublevel Unlisted Command

Table 9 shows the unlisted command available at the LTPDATA sublevel.

Table 9 - Overview of Unlisted Commands at the LTPDATA Sublevel

Command	Description
BERTTime	The BERTTIME command is used to set a maximum test time or query what the value is.

LTPLTA Sublevel Menu Commands

Table 10, "Overview of Commands at the LTPLTA Sublevel" shows the commands available at the LTPLTA sublevel.

The following LTPLTA commands are supported by the MTU autoloading process:

- VDC
- VCA
- RES
- CAP
- LNTST

If one of the above commands fails, the autoloading process displays the following message:

```
MTU <circuit> failed calibration, autoloading initiated.
Check TRK360 logs for autoloading status.
```

The above message indicates that the autoloading process began. A second TRK360 log generates after the autoloading process completes correctly. The delay between the first and second TRK360 logs while the MTU autoloading process completes is between 13 and 15 minutes.

The only four LTPLTA sublevel menu commands that are supported for VLCM lines are:

- Quit
- Post
- Hold
- Next

If you attempt to use a LTPLTA sublevel command that is not supported on a VLCM line, one of the following error messages displays:

```
<command> is not valid on a VLCM line.
<command> is not valid on a POTS/COIN line.
```

Table 10 - Overview of Commands at the LTPLTA Sublevel

Menu Item	Command	Description
0	Quit	The QUIT command is used at the LTPLTA sublevel in the same way as it is described at the LTP level.

2	Post	The POST command is used in the LTPLTA sublevel in the same way as it is described at the LTP level.
3	MonLTA	The MONLTA command connects a headset circuit to the line in the control position for listening purposes.
4	TalkLTA	The TALKLTA command connects a talk circuit to a subscriber on a subscriber line, and optionally connects a talk battery so that the tester can converse with the subscriber when the CO relay is operated.
5	Orig	The ORIG command configures the loop side of a line circuit in either the off-hook mode or the on-hook mode, or alternates between modes. Optionally, from one to 20 digits can be sent through a line circuit.
6	LnTst	The LNTST command performs resistance, capacitance, and voltage tests on a line.
7	VDC	The VDC command performs a DC voltage measurement on a subscriber loop.
8	VAC	The VAC command performs a AC voltage measurement on a subscriber loop.
9	RES	The RES command performs resistance measurements on a subscriber loop.
10	CAP	The CAP command performs a capacitance measurement on a subscriber loop.
11	Hold	The HOLD command is used at the LTPLTA sublevel in the same way that it is described at the LTP level.
12	Next	The NEXT command is used at the LTPLTA sublevel in the same way that it is described at the LTP level.
13	Not Used	
14	LTA	The LTA command connects the LTA to a line card, or releases the LTA from a line card.
15	BalNet	The BALNET command performs a balance network test on a subscriber loop that is in either the on-hook or off-hook mode.
16	Coin	The COIN command sends a +130V pulse on the subscriber loop to operate the coin collect mechanism in the coin station, or a -130V pulse to operate the coin return mechanism.
17	Ring	The RING command places ringing voltage on the loop of a subscriber line.
18	DgtTst	The DGTST command tests the DIGITONE pad or dial on the subscriber station.

LTPLTA Sublevel Commands for AccessNode Lines

Table 11 contains a list of LTPLTA sublevel commands for testing AccessNode lines. This level of the MAP verifies such parameters as impedance, capacitance, and voltage. When the command is supported by POTS, coin, and MBS lines, the word "All" appears in the "Line Types" column.

Table 11 - LTPLTA Sublevel Commands for Testing AccessNode Lines

Command	Supported?	Line Types	Configuration Dependent?
Quit	Yes	All	No
Post	Yes	All	No
MonLTA	Yes	All	Yes (See Note #1)
TalkLTA	Yes	All	Yes
Orig	Yes	POTS, Coin	Yes
LnTst	Yes	All	Yes
VDC	Yes	All	Yes
VAC	Yes	All	Yes
Res	Yes	All	Yes
Cap	Yes	All	Yes
Hold	Yes	All	No
Next	Yes	All	No
LTA	Yes	All	No (See Note #2)
BalNet	No	N/A	N/A (See Note #3)
Coin	Yes	Coin	Yes
Ring	Yes	POTS, Coin	Yes
DgtTst	Yes	POTS, Coin	Yes

Note #1: The S/DMS AccessNode can provide a bridged metallic test access connection. In a future release, the S/DMS AccessNode will provide a bridged digital test access connection.

Note #2: The parameters for this command match what the S/DMS AccessNode can offer.

Note #3: The S/DMS AccessNode balance network and pad group functions are not included in the functionality of this command.

LTPMAN Sublevel Menu Commands

Table 12, "Overview of Commands at the LTPMAN Sublevel" shows the commands available at the LTPMAN sublevel.

The only four LTPMAN sublevel menu commands that are supported for VLCM lines are:

- Quit
- Post
- Hold
- Next

If you attempt to use an LTPMAN sublevel command that is not supported on a VLCM line, one of the following error messages displays:

```
<command> is not valid on a VLCM line.
<command> is not valid on a POTS/COIN line.
```

Table 12 - Overview of Commands at the LTPMAN Sublevel

Menu Item	Command	Description
0	Quit	The QUIT command is used at the LTPMAN sublevel in the same way as described in the LTP level.
2	Post	The POST command is used at the LTPMAN sublevel in the same way as described in the LTP level.

3	Not Used	
4	Loss	The LOSS command measures the insertion loss of a test tone sent from the subscriber end of a loop to its line circuit.
5	Noise	The NOISE command measures the C-message weighted circuit noise on a subscriber loop.
6	ToneGen	The TONEGEN command transmits a tone on a subscriber loop.
7	Jack	The JACK command connects a jack-ended trunk to a subscriber line, or a jack to a subscriber loop while bypassing the line card.
8	TstRing	The TSTRING command tests the ringing relay in the line card for proper functioning.
9	Bal	The BAL command performs an on-hook balance network test on a subscriber loop. The command optionally updates the balance network value and the loss pad value in the line circuit according to test results.
10	RlsConn	The RLSCONN command releases test equipment that is connected to a line.
11	Hold	The HOLD command is used at the LTPMAN sublevel in the same way as described in the LTP level.
12	Next	The NEXT command is used at the LTPMAN sublevel in the same way as described in the LTP level.
13	Not Used	
14	Ckttst	The CKTTST command sends test messages to test the posted line.
15	Sustate	The SUSTATE command determines the status of the MBS that is connected to the Business Set line in the control position.
16	SetLpBk	The SETLPBK command sets up the specified loopback on the entity in the control position. The SETLPBK command is only valid for RCU lines.
17-18	Not Used	

LTPMAN Sublevel Commands for AccessNode Lines

Table 13, "LTPMAN Sublevel Commands for Testing AccessNode Lines" contains a list of commands available at the LTPMAN sublevel of the MAP for testing AccessNode lines. This sublevel is used mainly to verify parameters such as noise, signal loss, tone generation, and ringing voltage. When the command is supported by POTS, coin, and MBS lines, the word "All" appears in the "Line Types" column.

Table 11 - LTPMTA Sublevel Commands for Testing AccessNode Lines

Command	Supported?	Line Types	Configuration Dependent?
Quit	Yes	All	No
Post	Yes	All	No
Loss	Yes	All	Yes (See Note #1)
Noise	Yes	All	Yes (See Note #1)

ToneGen	Yes	All	Yes	(See Note #1)
Jack	Yes	All	Yes	(See Note #2)
TstRing	Yes	POTS, Coin	Yes	
Bal	No	N/A	N/A	(See Note #3)
RlsConn	Yes	All	No	
Hold	Yes	All	No	
Next	Yes	All	No	
CktTst	Yes	MBS	No	
Sustate	Yes	MBS	No	
SetLpBk	No	N/A	N/A	

Note #1: Uses external equipment.

Note #2: To test the subscriber lines between the attendant console and the S/DMS AccessNode, a trunk module is required.

Note #3: The S/DMS AccessNode balance network and pad group functions are not included in the functionality of this command.

DCTLTP Sublevel Menu Commands

Table 14 shows the commands available for Data Call Tester Line Test Position (DCTLTP) sublevel.

Table 14 - Overview of Commands at the DCTLTP Sublevel

Menu Item	Command	Description
0	Quit	Use the QUIT command at the DCTLTP sublevel the same way as the description of the Quit command at the LTP level.
2	Post	Use the POST command at the DCTLTP sublevel the same way as the description of the Post command at the LTP level.
3	Not Used	
4	Testbook	Use the TESTBOOK command to complete the functions that follow: <ul style="list-style-type: none"> * To access a testbook or display information on the active testbook. * To count the number of testbooks. * To list a specific number of testbook IDs from the list of testbook IDs. * To move the list index up or down a specific number of items in the list of the testbook IDs.
5	Select	Use the SELECT command to complete the functions that follow: <ul style="list-style-type: none"> * Select a particular IBERT for use in additional dial commands for the "S" option. The IBERT is an ILC or DTU. * Select an outgoing trunk or trunk group and trunk member for use in subsequent dial commands that use the "S" option. * Select the posted item (trunk group or member ILC) for use in subsequent dial commands that use the "S" option. * Select an incoming trunk for translations purposes with optional bearer capability when it is different from the default of 56KDATA. * Select an originating trunk for translations purposes with optional bearer capability when it is different from the default of 56KDATA.

		<ul style="list-style-type: none"> * Select a default translation agent (default incoming trunk and member) that applies for all DCT testbooks in the office. * Deselect all previous selections. * Display selections.
6	DefTime	<p>Use the DEFTIME command to complete the functions that follow:</p> <ul style="list-style-type: none"> * Set the test duration of: <ul style="list-style-type: none"> - All subsequent dial commands issued in the same MAP session. - All test calls started by the current executing dial command in the active testbook. * Set the start time to apply to the next dial command in the same MAP session. * Set the wait time on busy trunks. * Set the delay time in between test calls. * Reset test duration, start time, busywait, or delay to default times. * Query the DefTime settings.
7	Dial	<p>Use the DIAL command to complete the functions that follow:</p> <ul style="list-style-type: none"> * Sequential dial of one or more NSs from table DCTDIAL, and perform BERT testing on each one. Options include: <ul style="list-style-type: none"> - Specify a repetition factor. - Request that BERP testing be dropped for free IBERTS if none is available. - Request the use of preselected trunk resources, IBERT resources, or both. * Temporarily halt the execution of the current executing dial command. * Resume the execution of a halted dial command. * Abort the current executing dial command after the current test call is over.
8	Display	<p>Use the DISPLAY command to complete the functions that follow:</p> <ul style="list-style-type: none"> * Display current selections and settings for trunk, IBERT, duration, busywait, and delay. * Display the test results of a particular test in the active testbook and optionally choose to display test summaries. * Display test results as they occur (real-time) for the current and subsequent tests in an active originating testbook. * Display one of the current tests for TERMRES testbooks. * Stop the display of real-time errors.
9	Not Used	
10	Not Used	
11	Hold	Use the HOLD command at the DCTLTP sublevel the same way as the description of the Hold command at the LTP level.
12	Next	Use the NEXT command at the DCTLTP sublevel the same way as the description of the Hold command at the LTP level.
13	Not Used	
14	Inject	Use the INJECT command to inject up to 16-bit errors in the current test.

15	Delete	Use the DELETE command to delete all or a subset of the test results for the active testbook. Also use the Delete command to delete test results with no errors within a specific test range.
16	Not Used	
17	Release	Use the RELEASE command to terminate the current test call of the active testbook.
18	Stop	Use the STOP command to terminate the current test call and all remaining test calls in the dial sequence in the active testbook.

LNSTRBL Level Menu Commands

Table 15 shows the commands available at the LNSTRBL level.

Table 15 - Overview of Commands at the LNSTRBL Level

Menu Item	Command	Description
0	Quit	The QUIT command is used at the LNSTRBL level in the same way as it is described in the LTP level.
2	Disp	The DISP command displays call processing trouble entries in the upper buffer that is allocated to a LCD.
3	StopDisp	The STOPDISP command discontinues the periodic updating of the call processing trouble displays that were initiated by the command DISP.
4	ListAlm	The LISTALM command displays a list of LCD that have call processing fault alarms, and the class of alarm that exists in each LCD.
5	Not Used	
6	CreatSet	The CREATSET command posts a set of call processing trouble upper buffer entries.
7	Not Used	
8	Suppress	The SUPPRESS command causes specified trouble types to be ignored by the buffering process and by alarm generation.
9	Resume	The RESUME command discontinues the suppression of specified types of call processing troubles.
10	QSup	The QSUP command lists the code number and description of the types of troubles which are currently suppressed.
11-15	Not Used	
16	ClrAlm	The CLRALM command clears the call processing alarms in a specified LCD and resets attempt and failure counters to zero.
17	ClrBuf	The CLRBUF command deletes part or all of the contents of the upper buffer that is allocated to a specified LCD.
18	Not Used	

TTP Level Menu Commands

This section contains information for the autoloading process on the TTP MAP level when the MTU is in the control position. The MTU autoloading process will begin if the TST command generates a TEST FAIL response. The ACTION REQUIRED field of the TRK360 log will display the following output:

Auto Loading

This output indicates that the MTU autoloading process began. A second TRK360 log generates after the autoloading process completes correctly. The delay between the first and second TRK360 logs while the MTU autoloading process completes is between 13 and 15 minutes.

ALT Level Menu Commands

This section contains all of the commands associated with the main Automatic Line Testing (ALT) menu. The commands are in the order that they appear on the MAP display.

The autoloading process initiates at the beginning of a scheduled ALT test if the MTU fails a calibration test when it is first seized. The autoloading process tries to reload the MTU firmware. This process allows the MTU to return to service, and the scheduled ALT test to continue.

Note: ALT level menu commands are not supported for VLCM lines. *Table 16* shows the commands available at the ALT level.

Table 16 - Overview of the Commands at the ALT Level

Menu Item	Command	Description
0	Quit	The QUIT command causes the system to leave the current level and return to a higher level of the MAP.
2	Post	The POST command posts the scheduled ALT TESTID that is stored in memory. (table ALTSCHED)
3	ALTInfo	The ALTINFO command checks test data stored in memory. (table ALTSCHED)
4-6	Not used	
7	SDiag	The SDIAG command accesses the SDIAG sublevel of ALT. If a TESTID is not entered as a parameter, a new TESTID must be defined with the DEFSCHD or DEFMAN command.
8	Diag	The DIAG command accesses the DIAG sublevel of ALT. If a TESTID is not entered as a parameter, a new TESTID must be defined with the DEFSCHD or DEFMAN command.
9	LIT	The LIT command accesses the LIT sublevel of ALT. If a TESTID is not entered as a parameter, a new TESTID must be defined with the DEFSCHD or DEFMAN command.
10	Bal	The BAL command accesses the BAL sublevel of ALT. If a TESTID is not entered as a parameter, a new TESTID must be defined with the DEFSCHD or DEFMAN command.

11	CktTst	The CKTTST command accesses the CKTTST sublevel of ALT. If a TESTID is not entered as a parameter, a new TESTID must be defined with the DEFSCHD or DEFMAN command.
12-18	Not used	

ALT Commands for AccessNode Lines

As explained in section, "Automatic Line Testing Description," the automatic line test is used to run specific tests on specific lines. The schedule for these tests is defined by operating company personnel in table ALTSCHED. These tests are available at the ALT level. *Table 17* lists the commands available at this level.

Note: The commands at the ALT level that involve specific tests (SDIAG, DIAG, LIT, and BAL) are used to set the schedule to run these tests; the actual running of these tests occurs according to the schedule set.

Table 17 - ALT level Commands for AccessNode Lines

Command	Supported?	Configuration Dependent?
Quit	Yes	No
Post	Yes	No
ALTInfo	Yes	No
SDiag	Yes	Yes
Diag	Yes	Yes
LIT	Yes	Yes
Bal	Not Supported	Not Applicable
CktTst	Yes	No

MAP Commands at ALT Sublevels

This section contains the commands associated with the following ALT sublevels:

- SDIAG
- DIAG
- LIT
- BAL
- CKTTST

Because each ALT sublevel has the same menu of commands, this section applies to each of the sublevels unless specified otherwise. The commands are in the order that they appear on the MAP menu.

Table 18 shows the commands available at the ALT sublevels.

Table 18 - Overview of Commands at the ALT Sublevels

Menu Item	Command	Description
0	Quit	The QUIT command causes the system to leave the current level and return to a higher level of the MAP.
2	Post	The POST command posts the scheduled ALT TESTID that is stored in memory and corresponds to the current sublevel.

3	LITInfo	The LITINFO command displays the system default values for the LIT parameters. Note: This command only applies to the ALTLIT menu level.
4	Start	The START command sets the posted scheduled ALT test in a state such that it is ready to run at the next scheduled time.
5	Stop	The STOP command stops a test and changes the status of the TESTID.
6	Remove	The REMOVE command removes the data associated with the posted TESTID from memory (table ALTSCHED). If the TESTID is for a scheduled test, the system prompts for a YES or NO confirmation.
7	Define	The DEFINE command defines test data for the specified TESTID.
8	Submit	The SUBMIT command submits the defined test data for the posted TESTID into memory. (table ALTSCHED)
9-10	Not used	
11	DefMAN	The DEFMAN command is used to assign a TESTID to the test that corresponds to the current ALT sublevel. For example, the DEFMAN command entered at the LIT level of MAP device number 7, will be assigned a TESTID of MANUAL07.
12	Not used	
13	DefSCHD	The DEFSCHD command is used to assign a TESTID to the scheduled test that corresponds to the current ALT sublevel.
14	Not Used	
15	Status	The STATUS command checks the status of the posted TESTID.
16	Not Used	
17	OVRride	The OVRRIDE command overrides a scheduled test so that testing will not start until a specified day and time has passed.
18	Not used	

VLCM Commands and Responses

This section describes the modified commands, the parameters and responses applicable to the Virtual Line Concentrating Module (VLCM).

BSY in VLCMDIR

The BSY command allows users to busy a VLCM (BSY PM) and busy a line drawer of a VLCM (BSY DRWR). BSY is a menu command.

Table 19 - BSY Command Parameters and Variables

Command	Parameters and Variables
BSY	<DEVICE> {PM, DRWR <DRWR_NO> {0 TO 19}} [<NOWAIT> {NOWAIT}] [<ALL> {ALL}]
Item	Description
<DEVICE>	Busy the whole PM.
DRWR to 19	Busy a DRWR.
[<NOWAIT>]	Optional parameter.
[<ALL>]	Optional parameter.

Usage Examples

The following table provides an explanation of an additional response to the BSY command for VLCM.

Table 20 - Responses for the BSY Command

MAP Output	Meaning and Action
VLCM REM 00 1 Bsy Passed	None & None
VLCM REM 00 1 Drwr 0 Bsy Passed	None & None

RTS in VLCMDIR

The RTS command allows users to return a VLCM to service (RTS PM) and return a line drawer of a VLCM to service (RTS DRWR). RTS is a menu command.

Table 21 - RTS Command Parameters and Variables

Command	Parameters and Variables
RTS	<DEVICE> {PM, DRWR <DRWR_NO> {0 TO 19}} [<NOWAIT> {NOWAIT}] [<ALL> {ALL}]
Item	Description
<DEVICE>	RTS the whole PM. RTS a DRWR.
[<NOWAIT>]	Optional parameter.
[<ALL>]	Optional parameter.

Usage Examples

The following table provides an explanation of an additional response to the RTS command for VLCM.

Table 22 - Responses for the RTS Command

MAP Output	Meaning and Action
VLCM REM 00 1 RTS Passed	None & None
VLCM REM 00 1 Drwr 0 RTS Passed	None & None

QUERYPM in VLCMDIR

The QUERYPM command is a menu command and supports the FLT option "QueryPM FLT".

Table 23 - QUERYPM Command Parameters and Variables

Command	Parameters and Variables
QUERYPM	[<OPTION>] {FLT, DRWR}

Item	Description
[<OPTION>]	This parameter queries any fault that exists in the VLCM.

Usage Examples

The following table provides an explanation of an additional response to the QUERYPM command for VLCM.

Table 24 - Responses for the QUERYPM Command

MAP Output	Meaning and Action
PM Type: VLCM Int. no.: 9 Status index: 7 Node_No: 4 VLCM REM1 02 0 Memory size - unit 0: 4m, Unit 1; 4M ESA equipped: No, Intraswitching is off. Loadname: VLCMLoad Node Status: FALSE Unit0 Status: FALSE Unit1 Status: FALSE Site Flr RPos Bay_id Shf Description Slot EqPEC REM1 01 K03 VLCM 02 04 VLCM 02 0 VLCMPC VLCMPC Services: NEUTRAL	None & None

LTP MAP in VLCMDIR

The LTP MAP level command can be used to POST, BSY, and RTS VLCM lines. LTP MAP is a menu command.

Table 25 - LTP MAP Command Parameters and Variables

Command	Parameters and Variables
LTPMAP	No Change

Usage Examples

The following table provides an explanation of an additional response to the LTP MAP command for VLCM.

Table 26 - Responses for the LTP MAP Command

MAP Output	Meaning and Action
The following response will be displayed when the invalid commands are invoked: ...command is not appropriate for a VLCM line.	None & None

DEFINE in VLCMDIR

The DEFINE command is used to access the commands associated with automatic line testing. DEFINE is a menu command and is applicable to the following sublevels.

Table 27 - DEFINE Command Parameters and Variables

Command	Parameters and Variables
DEFINE	MAPCI;MTC;LNS;ALT;SDIAG MAPCI;MTC;LNS;ALT;DIAG MAPCI;MTC;LNS;ALT;LIT MAPCI;MTC;LNS;ALT;BAL MAPCI;MTC;LNS;ALT;CktTst

Error Messages

The following table contains an explanation of the warning messages for the DEFINE command for VLCM.

Table 28 - Error Messages for the DEFINE Command

MAP Output	Meaning and Action
ALT command is not valid for VLCM lines.	None & None

DEFMAN in VLCMDIR

The DEFMAN command is used to access the commands associated with automatic line testing. DEFMAN is a menu command and is applicable to the following sublevels.

Table 29 - DEFMAN Command Parameters and Variables

Command	Parameters and Variables
DEFMAN	MAPCI;MTC;LNS;ALT;SDIAG MAPCI;MTC;LNS;ALT;DIAG MAPCI;MTC;LNS;ALT;LIT MAPCI;MTC;LNS;ALT;BAL MAPCI;MTC;LNS;ALT;CktTst

Error Messages

The following table contains an explanation of the warning messages for the DEFMAN command for VLCM.

Table 30 - Error Messages for the DEFMAN Command

MAP Output	Meaning and Action
ALT command is not valid for VLCM lines.	None & None

DEFSCHD in VLCMDIR

The DEFSCHD command is used to access the commands associated with automatic line testing. DEFSCHD is a menu command and is applicable to the following sublevels.

Table 31 - DEFSCHD Command Parameters and Variables

Command	Parameters and Variables
DEFSCHD	MAPCI;MTC;LNS;ALT;SDIAG MAPCI;MTC;LNS;ALT;DIAG MAPCI;MTC;LNS;ALT;LIT MAPCI;MTC;LNS;ALT;BAL MAPCI;MTC;LNS;ALT;CktTst

Error Messages

The following table contains an explanation of the warning messages for the DEFSCHD command for VLCM.

Table 32 - Error Messages for the DEFSCHD Command

MAP Output	Meaning and Action
ALT command is not valid for VLCM lines.	None & None

GBPPR 2.45 GHz Magnetron to Coax Assembly

Overview

It has always been one of your biggest dreams...

Besides bashing Eric Corley's head in, you've also always wished for an easy way to couple the RF output from a microwave oven's magnetron into standard coaxial cabling. Thanks to the dedicated experimenters working around-the-clock in the GBPPR labs, at least one of your dreams is about to come true!

This project consists of a simple "waveguide-to-coax" transition made from the parts of old microwave ovens. It's probably a good idea to pick up a dozen or so microwave ovens at the thrift store, or from the curbs on garbage night, then rip them all apart for the pieces. Microwave ovens are very robust and the major electrical components almost always still work, even in the "dead" ones. One key component to look out for in your microwave oven quest is one with a long sheet metal waveguide section connecting the output from the magnetron's probe antenna to the cooking chamber. These are fairly easy to find on microwave ovens built during the early 1980s, but as the ovens became physically smaller, this small waveguide section was eventually eliminated. This section of waveguide is crucial, as it already has the proper dimensions for working at 2.45 GHz.

Other components for this project which can be salvaged from old microwave ovens include the high-voltage/filament transformer, the high-voltage capacitor and diode, 15 amp AC fuses or circuit breakers, and miscellaneous bits of high-voltage connecting wires. When salvaging for the high-voltage/filament transformer, try to find one which is physically small, as it only needs to supply the high-current 3.3 VAC filament power to the magnetron. The 4 kV DC power supply will be external. These can be hard to find, so you may end up making your own. Details on a suitable magnetron high-voltage power supply should appear in a future issue of *GBPPR Zine*.

The basis for this particular device is to eventually work it into a personal air surveillance radar system. You know you always wanted one! Well, I think we can pull it off...

It should be possible to monitor your local air space for intruding aircraft, or even incoming rockets. The range and resolution will probably not be very great, and the display still needs a lot more work (i.e. somebody write one in software). You should also be able to point it upwards and look for UFOs! Right now, of course, nothing works – so this will be an ongoing project.

As per all our fairly dangerous projects, Digg and Slashdot posters will be immune to the high-voltage and high-energy RF involved while building and operating this device. Seriously. We don't lie.



Construction Notes & Pictures



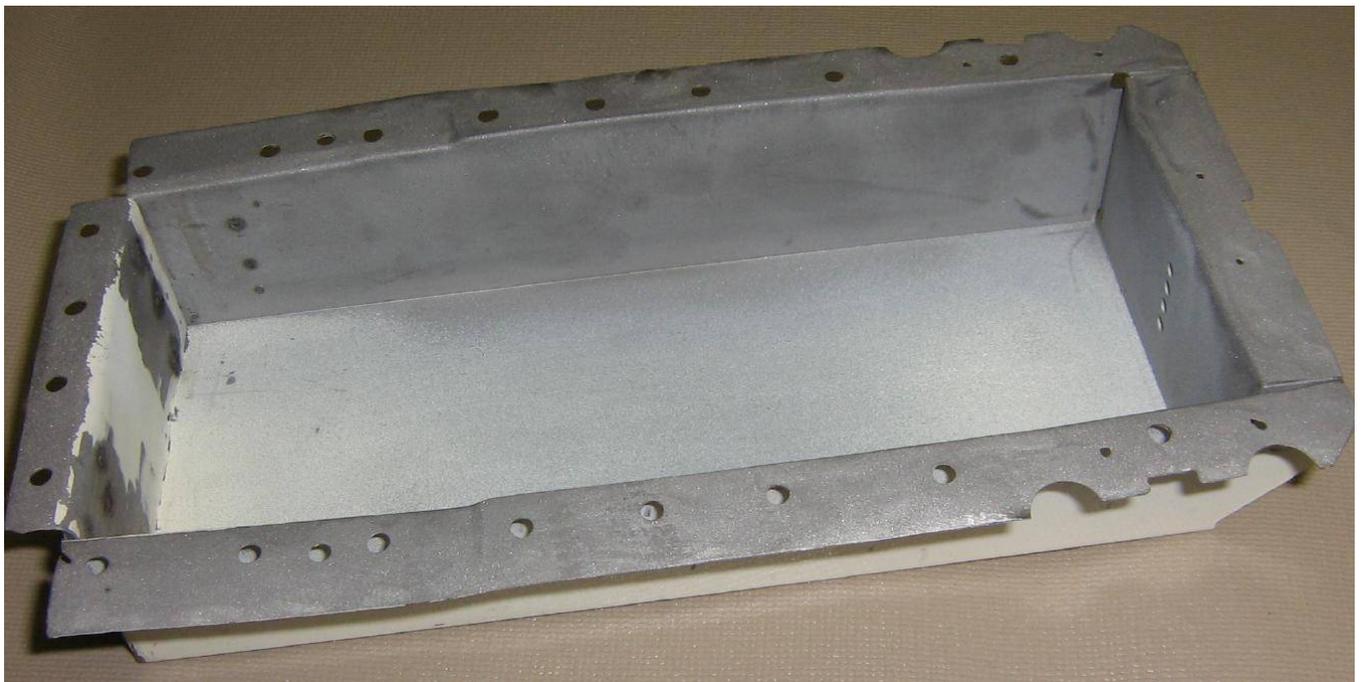
Sheet metal waveguide section salvaged from an old 1980s microwave oven. For this project, you'll need one at least 8 inches long.

You may also wish to pick up a good pair of Wiss tin snips and other sheet metal working tools. You'll also need a rivot gun and some 1/8 inch diameter stainless steel rivots.

The stock waveguide dimensions are approximately 3.15 inches (80 mm) wide with the sides 1.57 inches (40 mm) high.

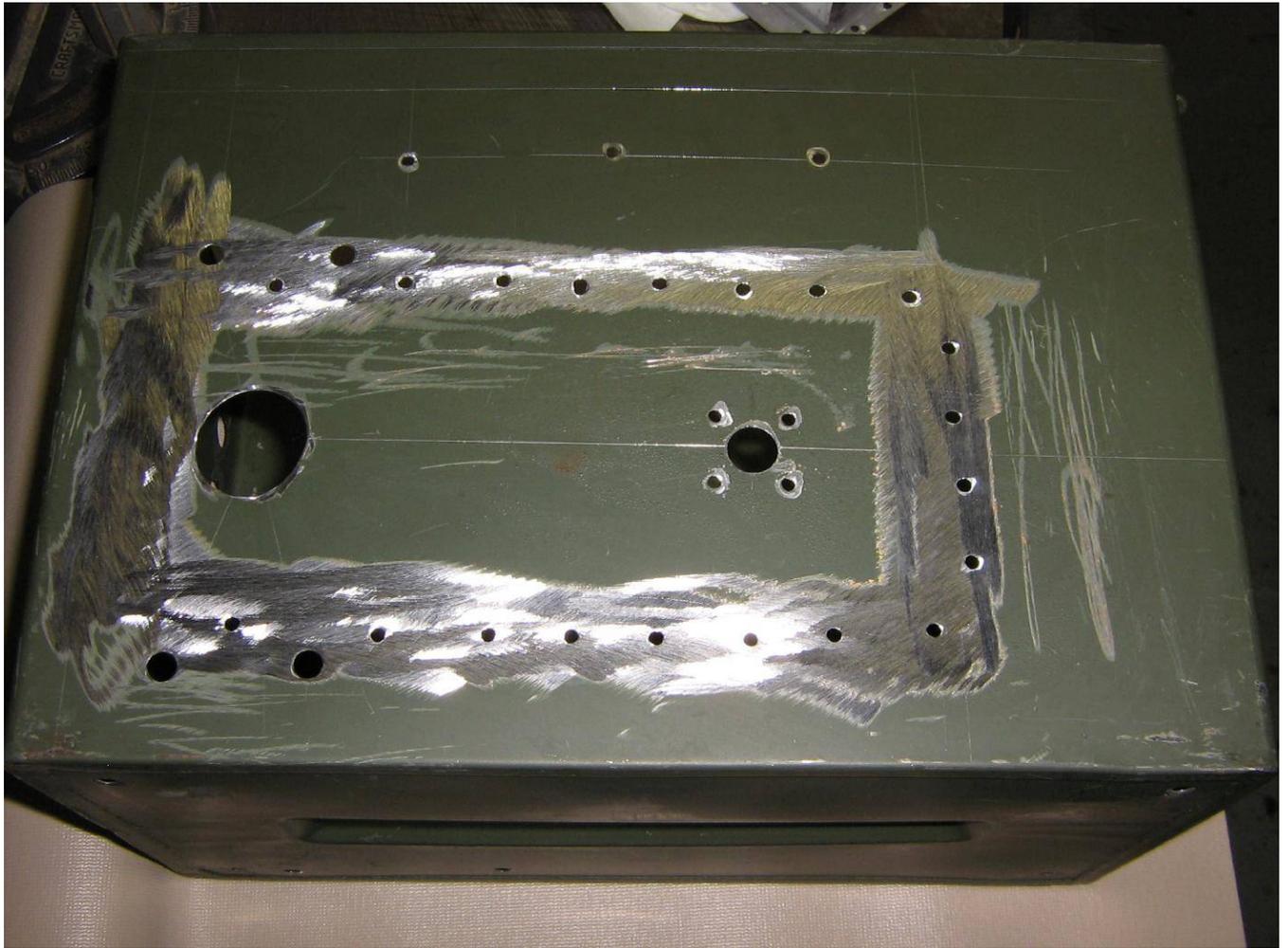


Cut and fold over the open end of the waveguide so it is exactly 7.5 inches (19 cm) long. This is equal to *one waveguide wavelength* at 2.45 GHz. Try to get ahold of a spot welder to secure the sheet metal flaps. Use rivets or epoxy as a last resort. Harbor Freight Tools has a spot welder (#45689) which works nicely on standard 120 VAC wiring.



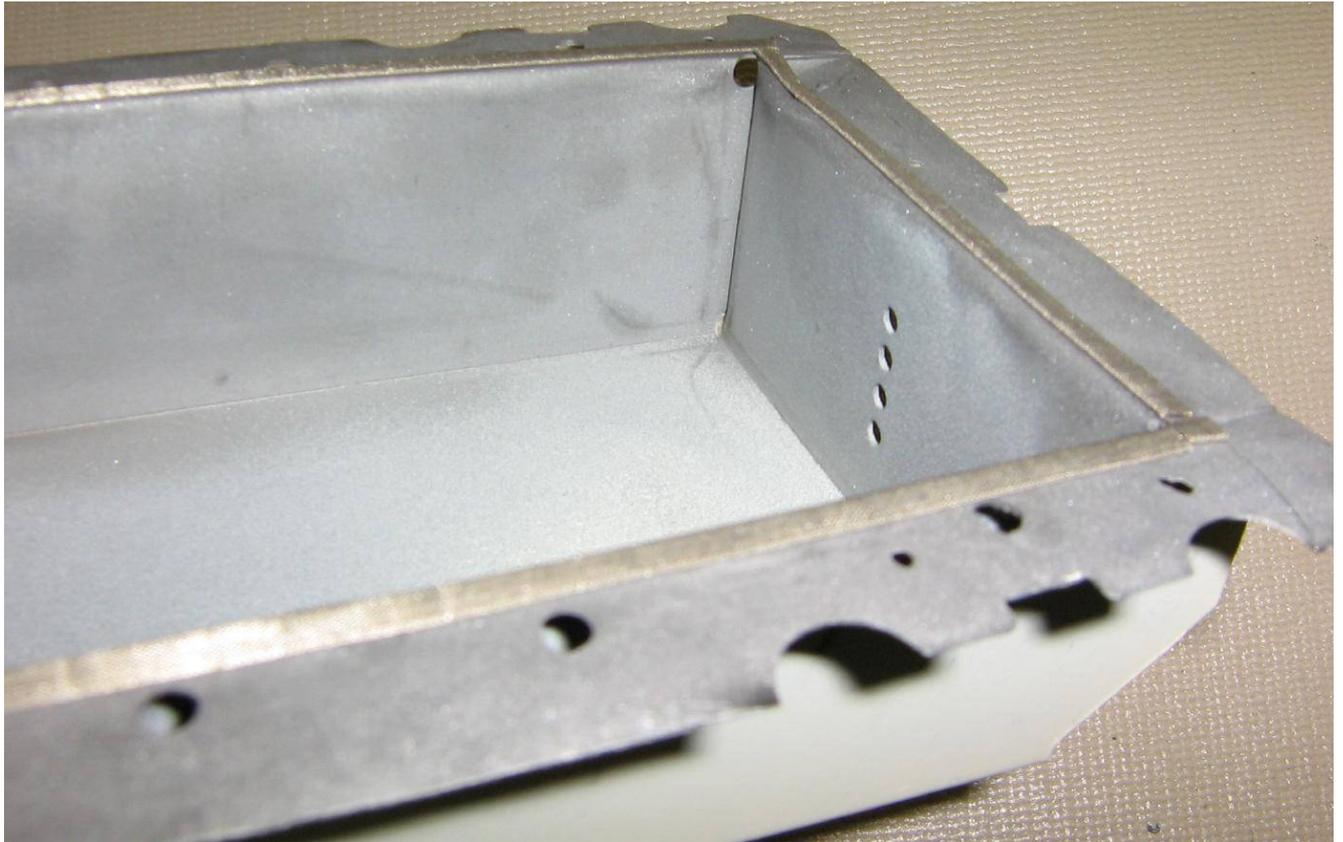
The new waveguide assembly should look something like this. The sealed "new" end is on the left. Drill 1/8 inch diameter holes where the old spot welds on the assembly used to be. These holes will be for rivots to secure the waveguide assembly to the side of an ammo box which the magnetron will be housed in.

Use a Dremel grinding wheel and a small tack hammer to remove any high spots along the waveguide's flange.



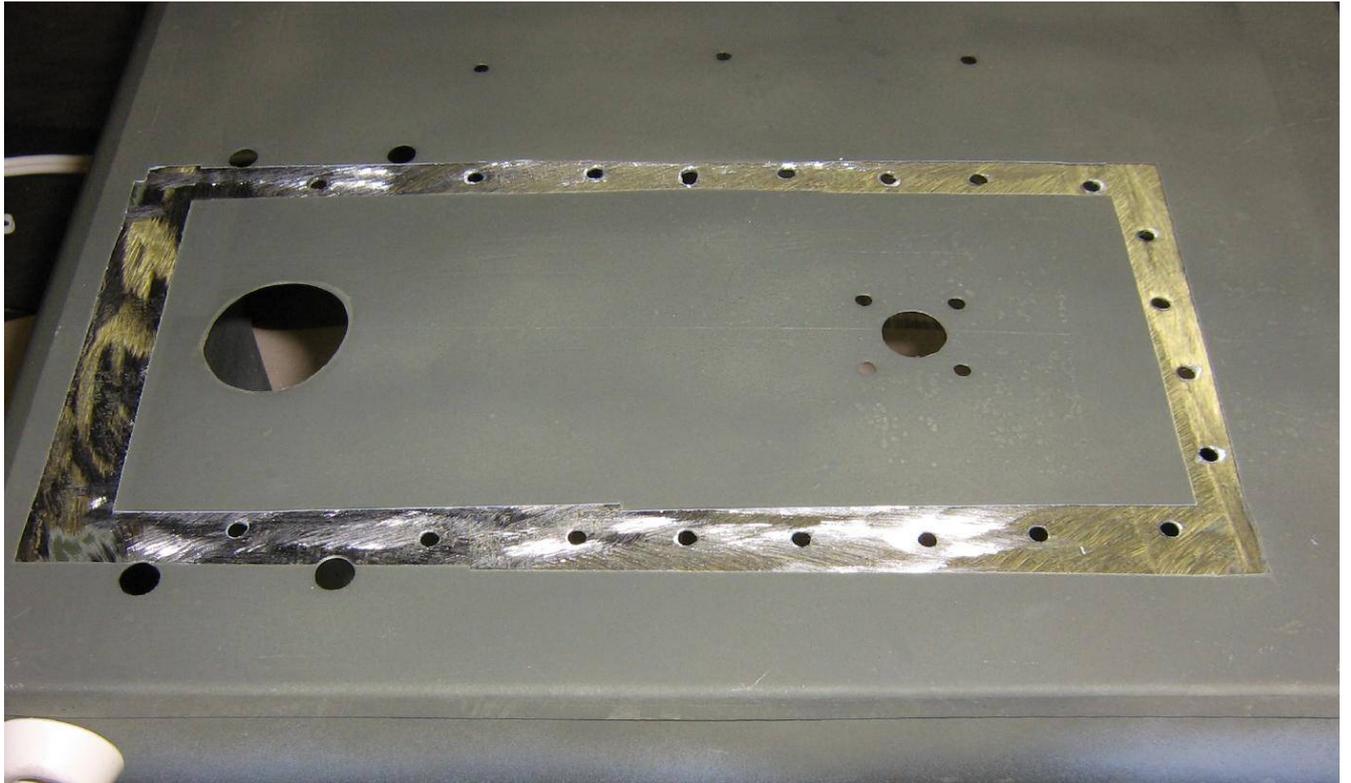
Prepping the ammo box. First layout the waveguide assembly so there is adequate clearance for the magnetron and the N connector pick-off. Mark where the rivot holes should go using the pre-drilled holes as a template. Next, measure $1\frac{7}{8}$ inches (4.75 cm) from the "new" end of the waveguide (opposite of the magnetron). Mark this spot for the center of the N connector. This point is $\frac{1}{4}$ waveguide wavelength from the closed end of the waveguide. On the magnetron end, use the holes or notches which should already be in the waveguide as the reference point for centering the magnetron's RF probe. Use this as a reference point when laying out the rest of the holes to drill.

You'll also want to grind away all the paint around where the waveguide will be rivoted against the ammo box. This needs to have a very secure electrical connection for proper RF shielding.

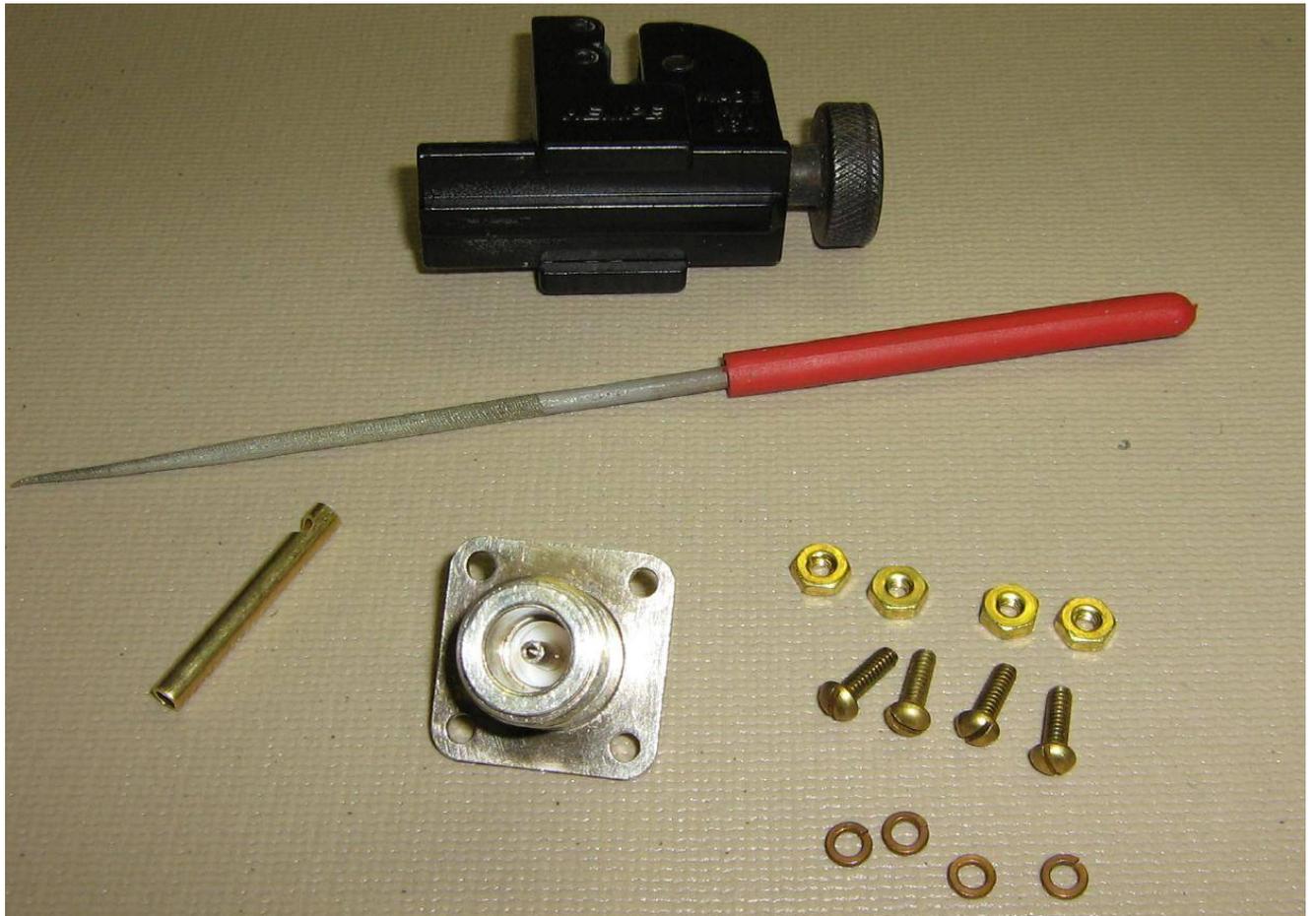


For additional protection from RF leakage, you may wish to add conductive RF fabric to the edge of the waveguide assembly. This will help to seal any dents in the sheet metal which could leak dangerous levels of RF radiation.

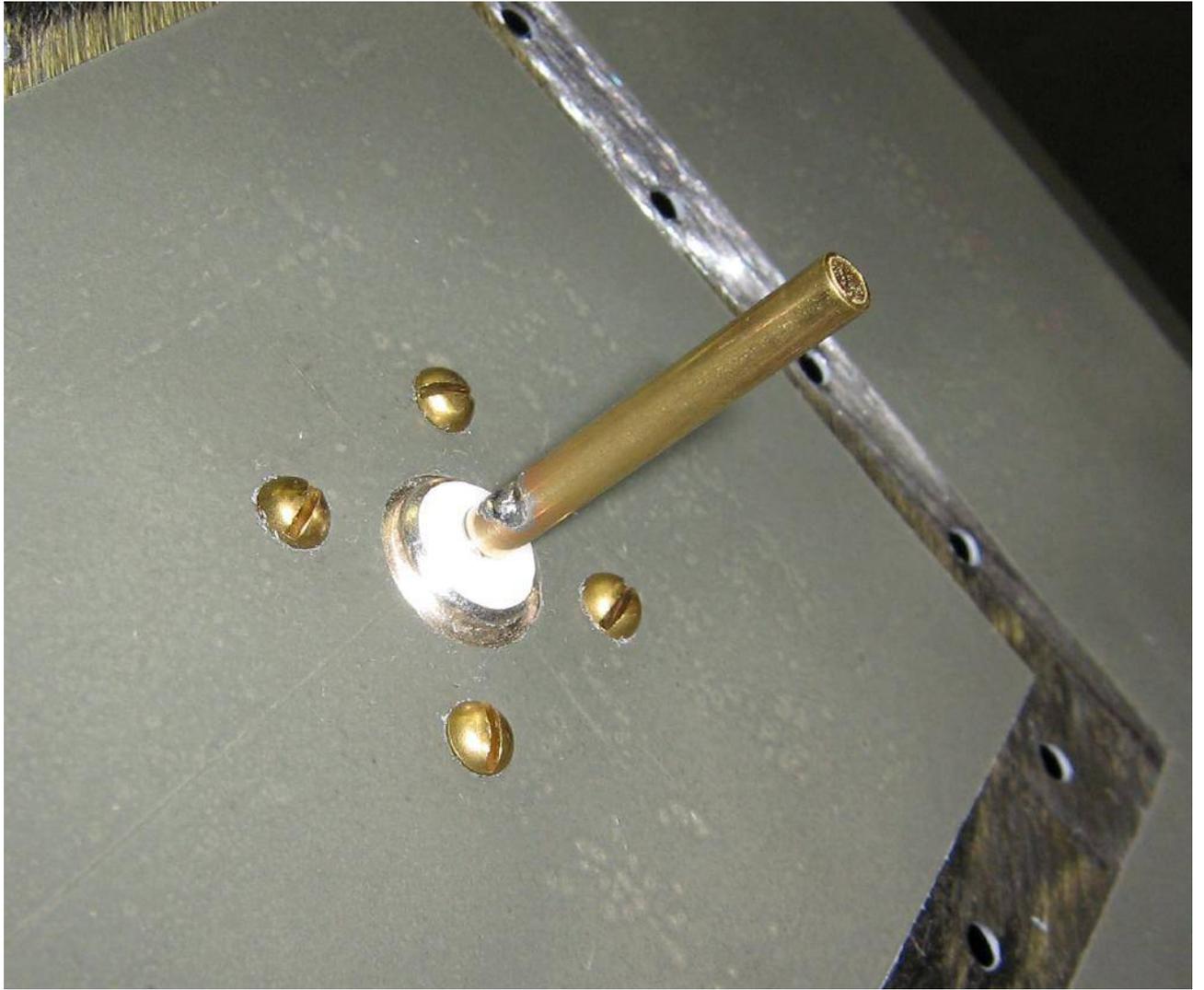
Small strips of FerriShield adhesive-backed EMI gaskets are available from Mouser, part number 861-SG060125R-24.



Mask off the section where the ammo box and the waveguide will meet when painting. This will maintain good electrical integrity between the two pieces.



Parts for the N connector RF pick-off. Use a high-quality Teflon dielectric panel-mount N connector and #4 brass mounting hardware. The actual antenna will be a 1-1/4 inch (31 mm) long piece of 1/8 inch inside-diameter brass tubing from the hobby store. File a small notch towards one end of the antenna element to help the solder flow when soldering it to the N connector's center conductor.

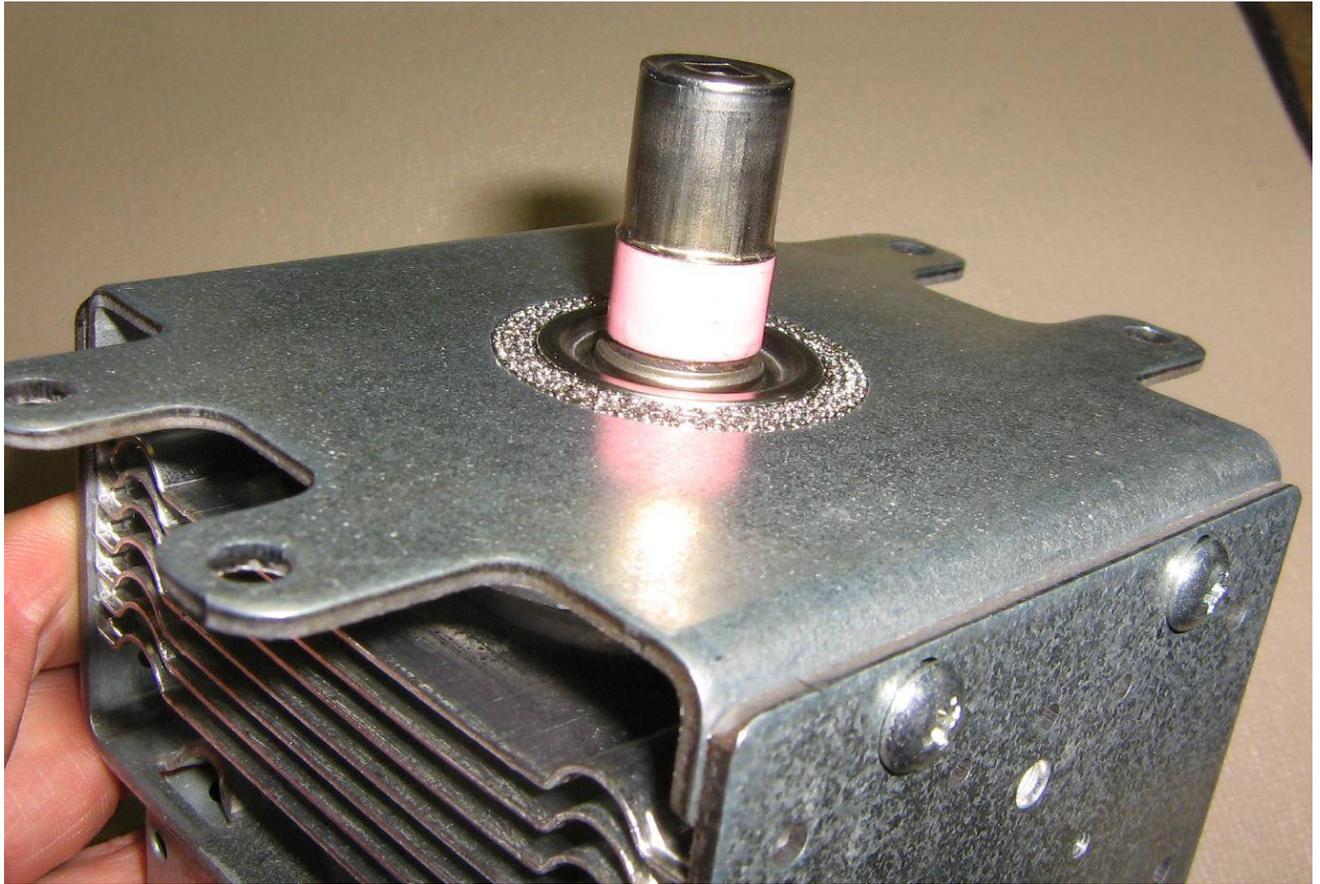


N connector installation.

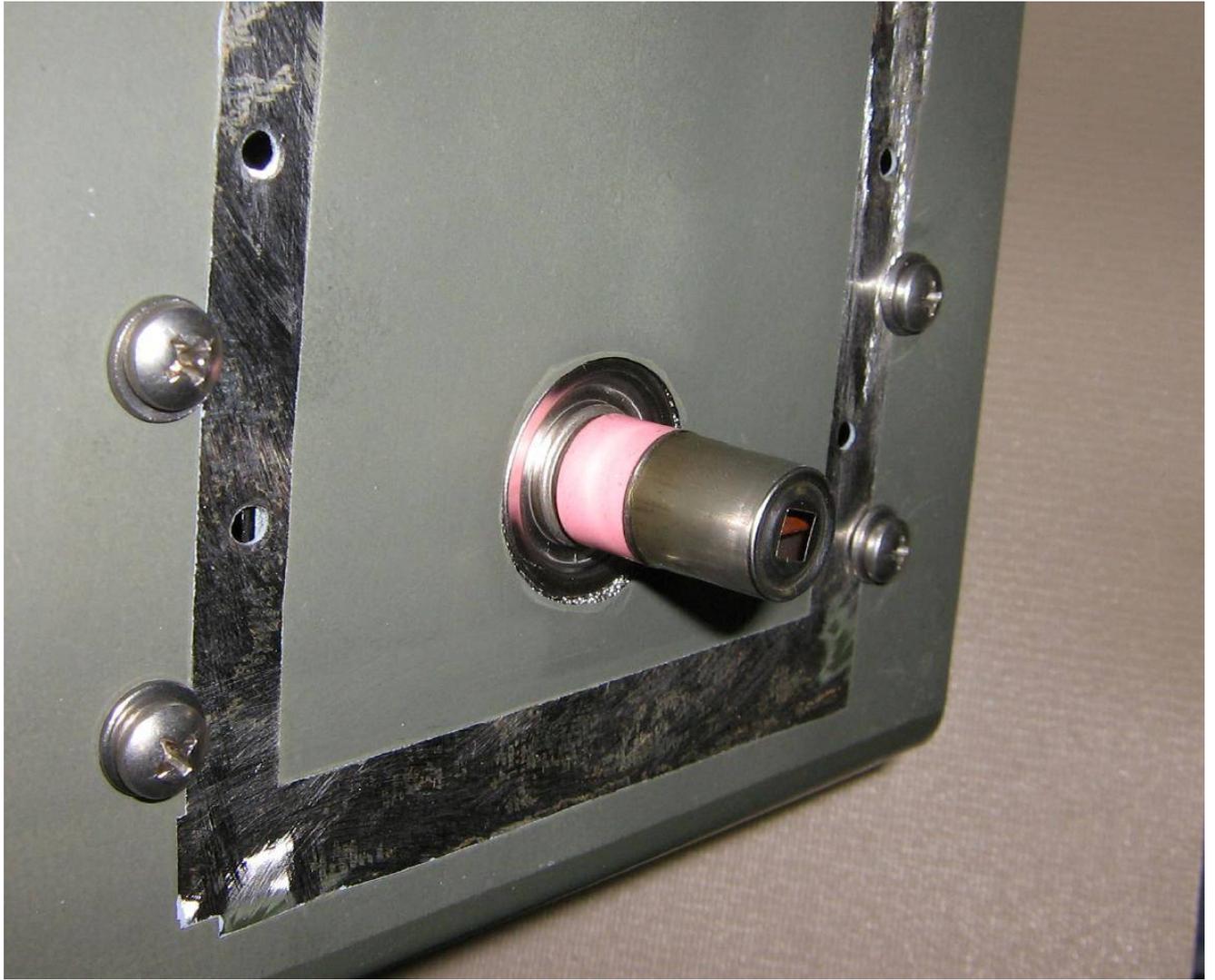


Magnetron used for this project. It's a Litton 2M167-M14. It appears to do around 800 watts CW at 2.45 GHz.

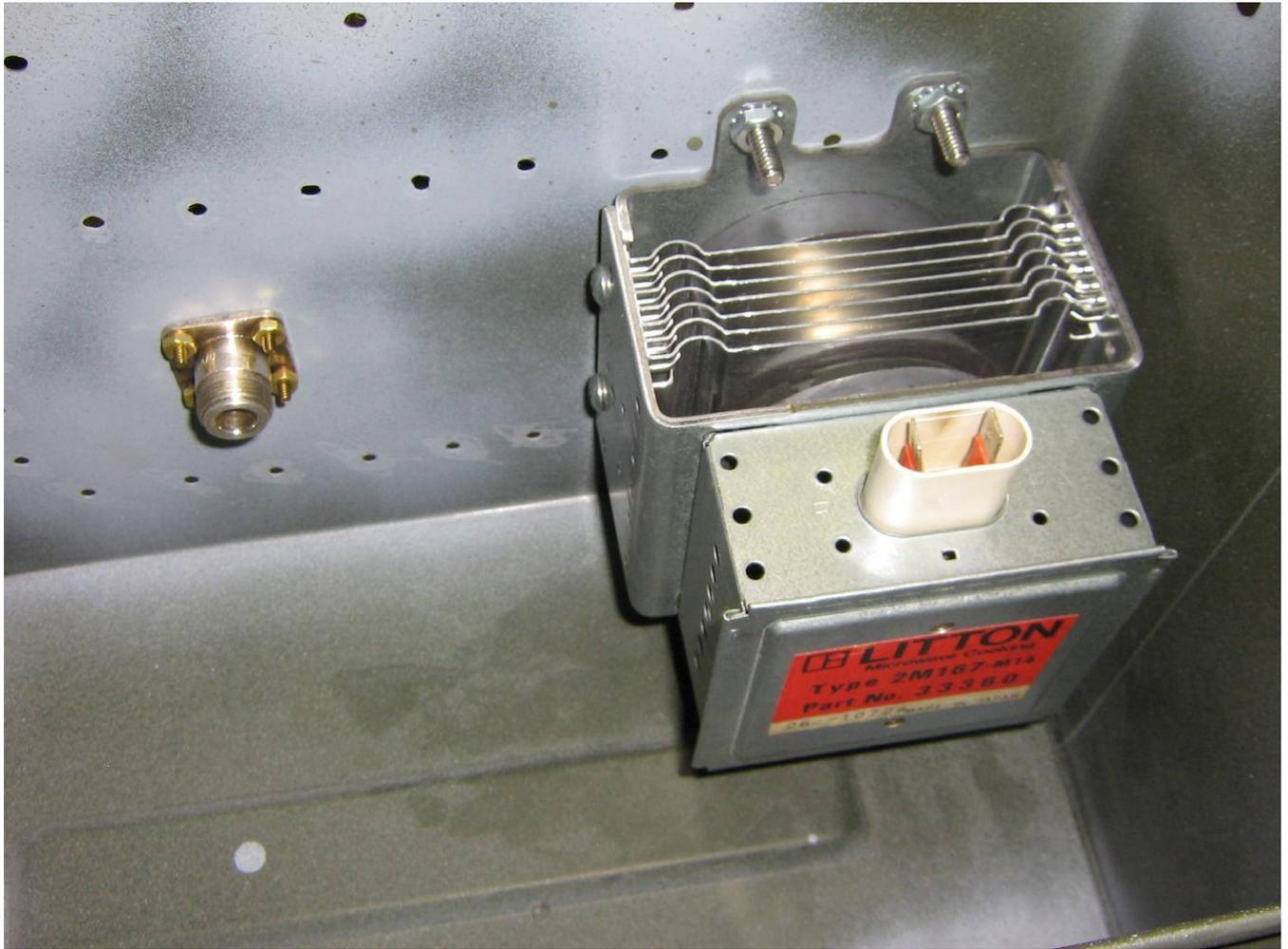
Can you tell I just bought a copy of *The Legend of Litton Industries* by Jeffery L. Rodengen, ISBN 0-945903-51-0?



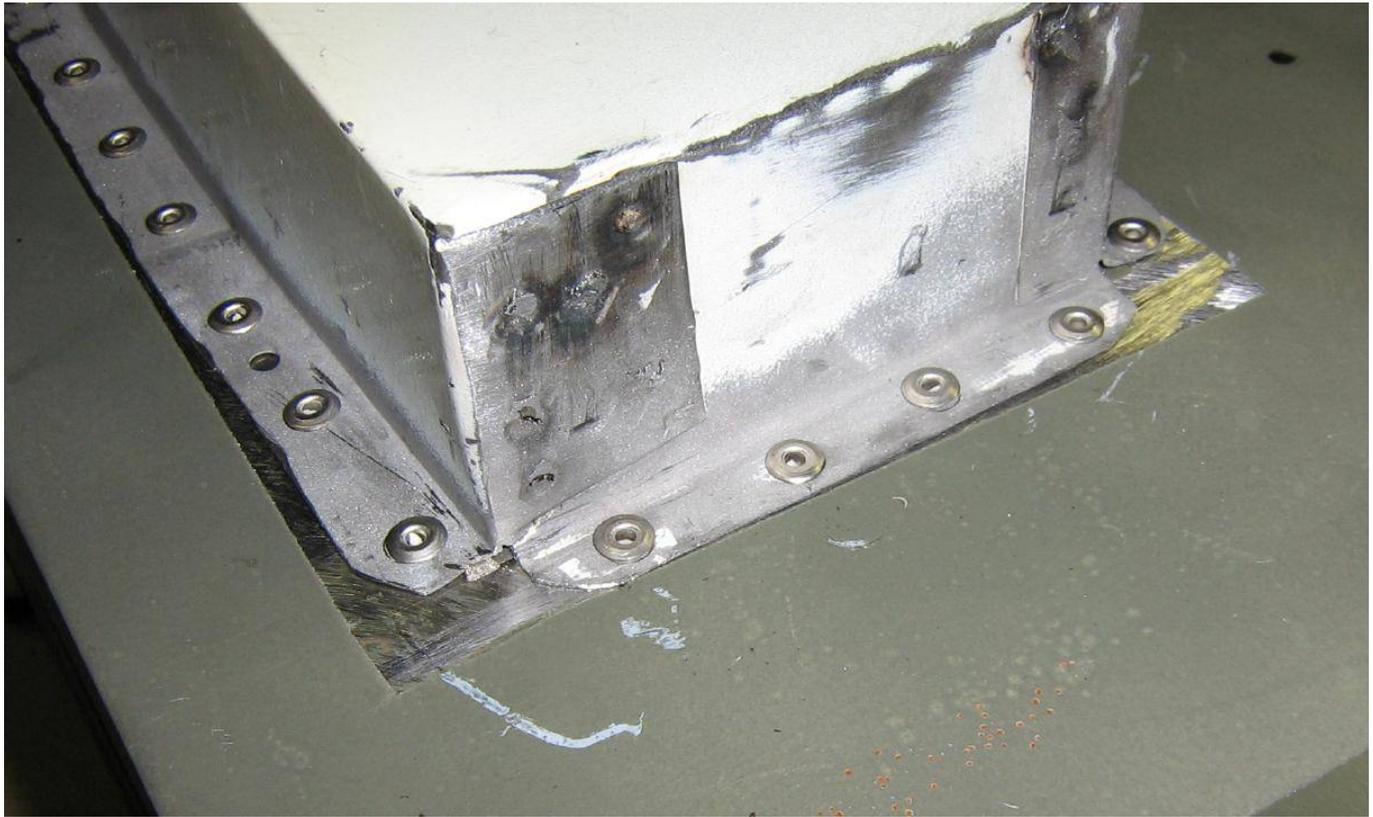
The magnetron's RF output comes from the little ceramic antenna. The metal "cap" acts as a loading capacitor. Note the wire ground mess around the probe.



Mount the magnetron as shown. Be sure the grounding mesh around the magnetron's output probe touches an *unpainted* region inside the mounting hole. This is necessary for proper RF shielding.



Internal view showing the output N connector and the magnetron. There will be around 3 dB of loss with this setup. It can be tweaked for lower loss, but that's a lot of unnecessary fussing around. The load mismatch can slightly alter the magnetron's output frequency and also reduce the life of the tube itself.



Rivot the waveguide assembly to the outside of the ammo box. Be sure there is a good solid mechanical and electrical seal.

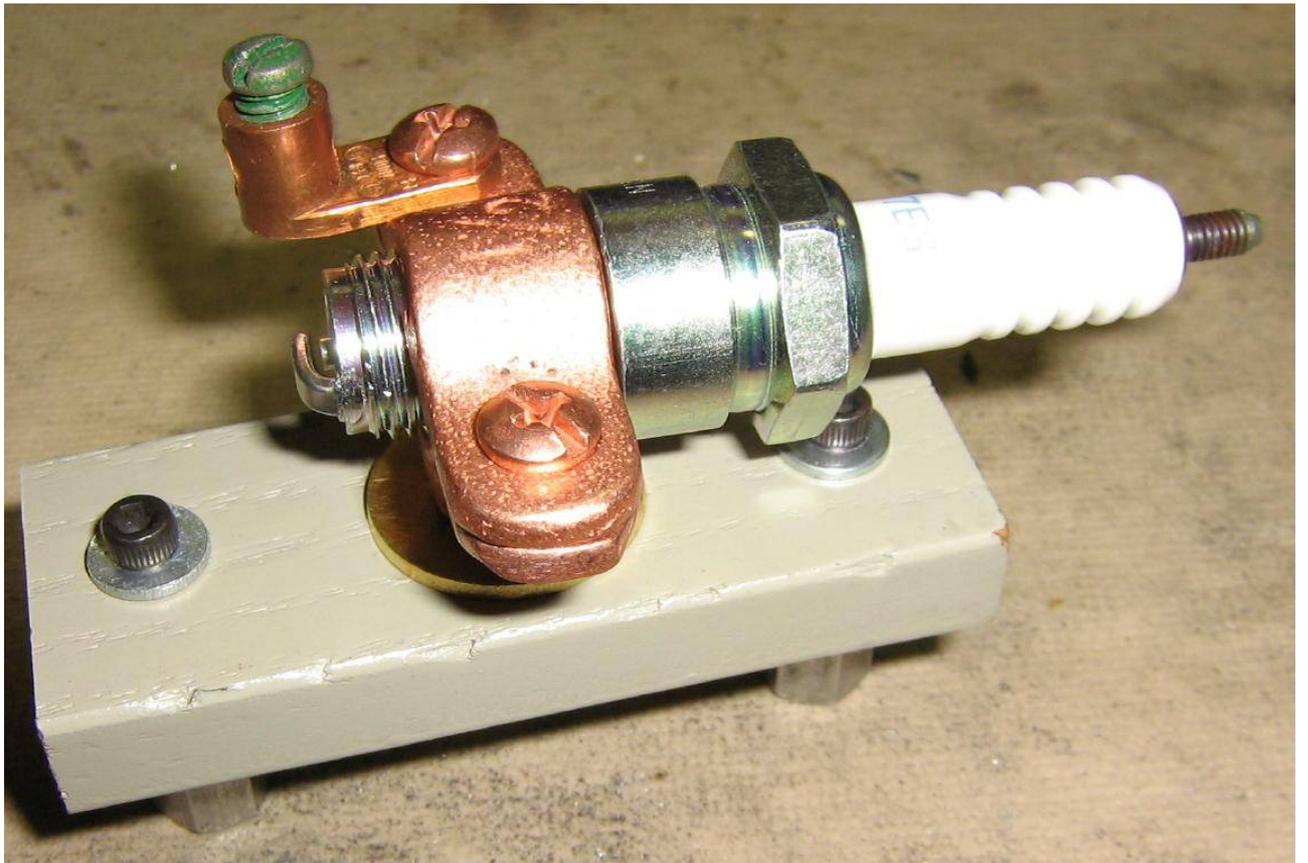


A minor problem securing the waveguide will be around the section where the magnetron is located. It's not possible to use rivots without drilling clearance holes in the magnetron's body. You may wish to use some two-part epoxy putty to secure the sheet metal flaps down.



For this project, which is intended to be used as an experimental radar system, we'll be pulsing the magnetron using a spark plug. The spark plug will be secured to a wood insulator using a 1/2 inch copper split-ring hanging clamp. The main thread in the camp is standard 3/8-16. A small ground lug will connect the pulse wiring to the clamp's body.

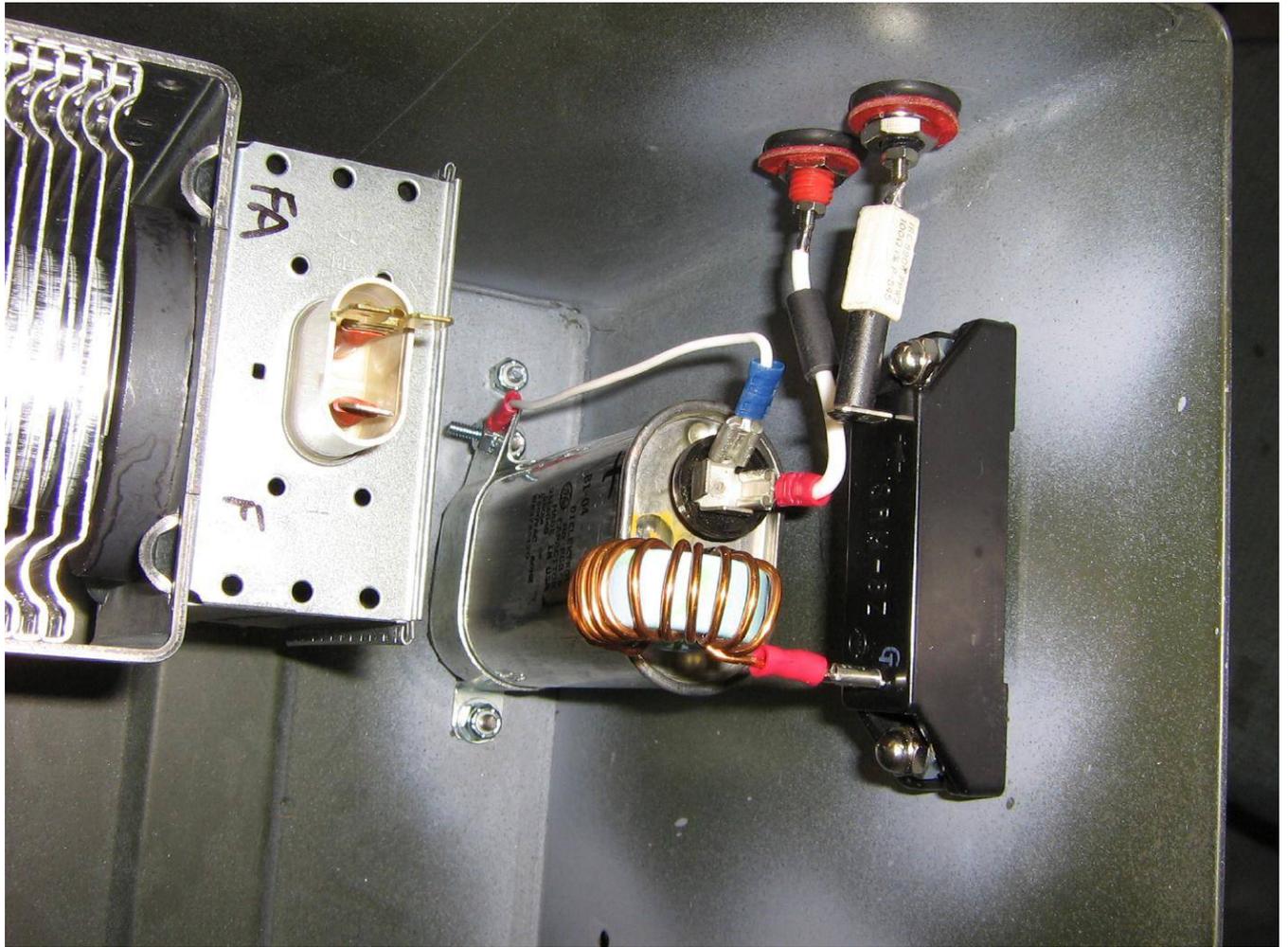
The spark plug shown here is a NGK BR7ES. The spark plug's internal 5,000 ohm resistor will limit current into the magnetron to prevent damage. Set the spark plug's gap to 0.040 inch (#60 drill bit), or to fire at around 4,000 volts.



Completed spark plug firing assembly.



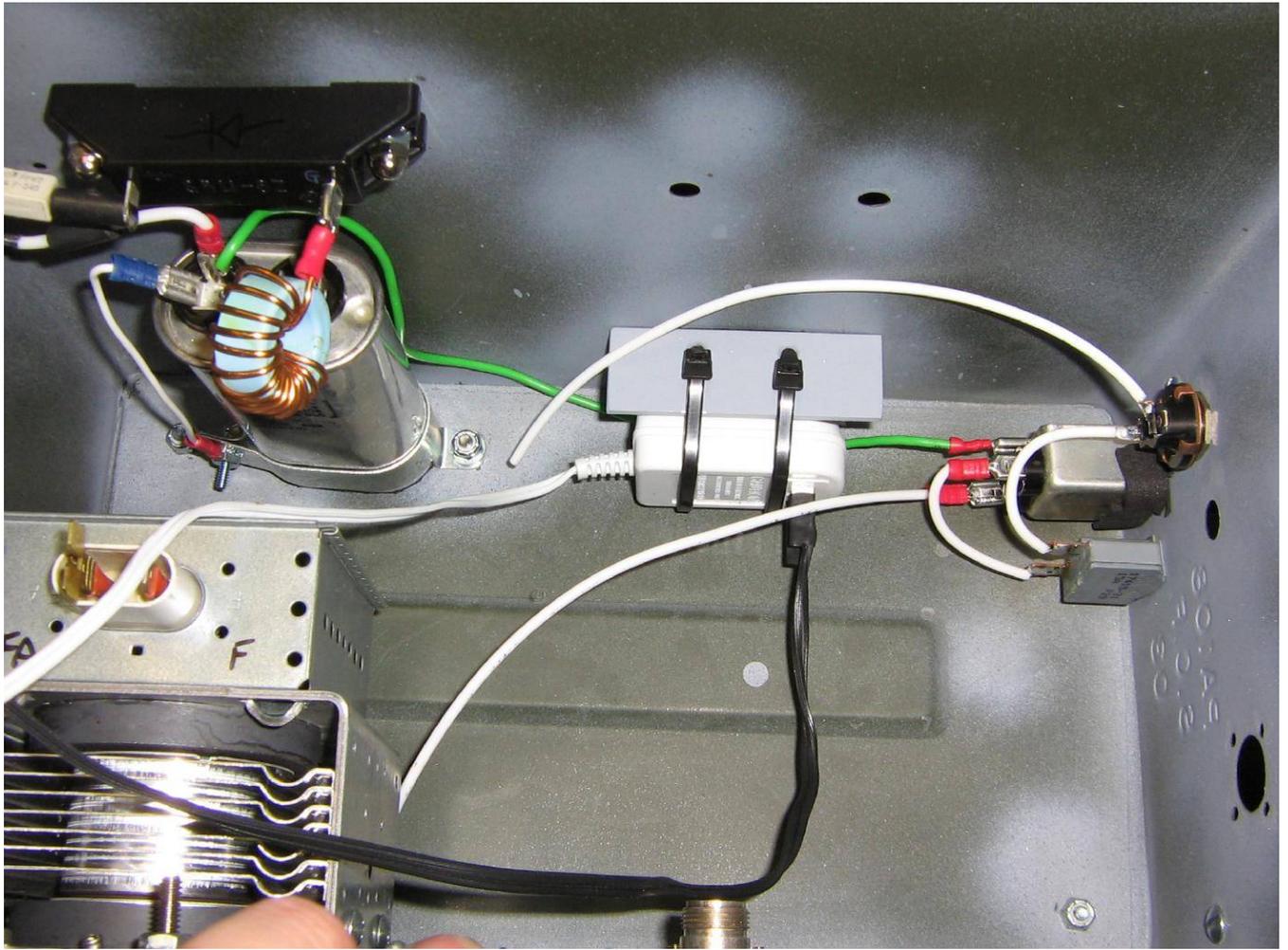
High-voltage capacitor from an old microwave oven. The "positive" side is connected to ground.



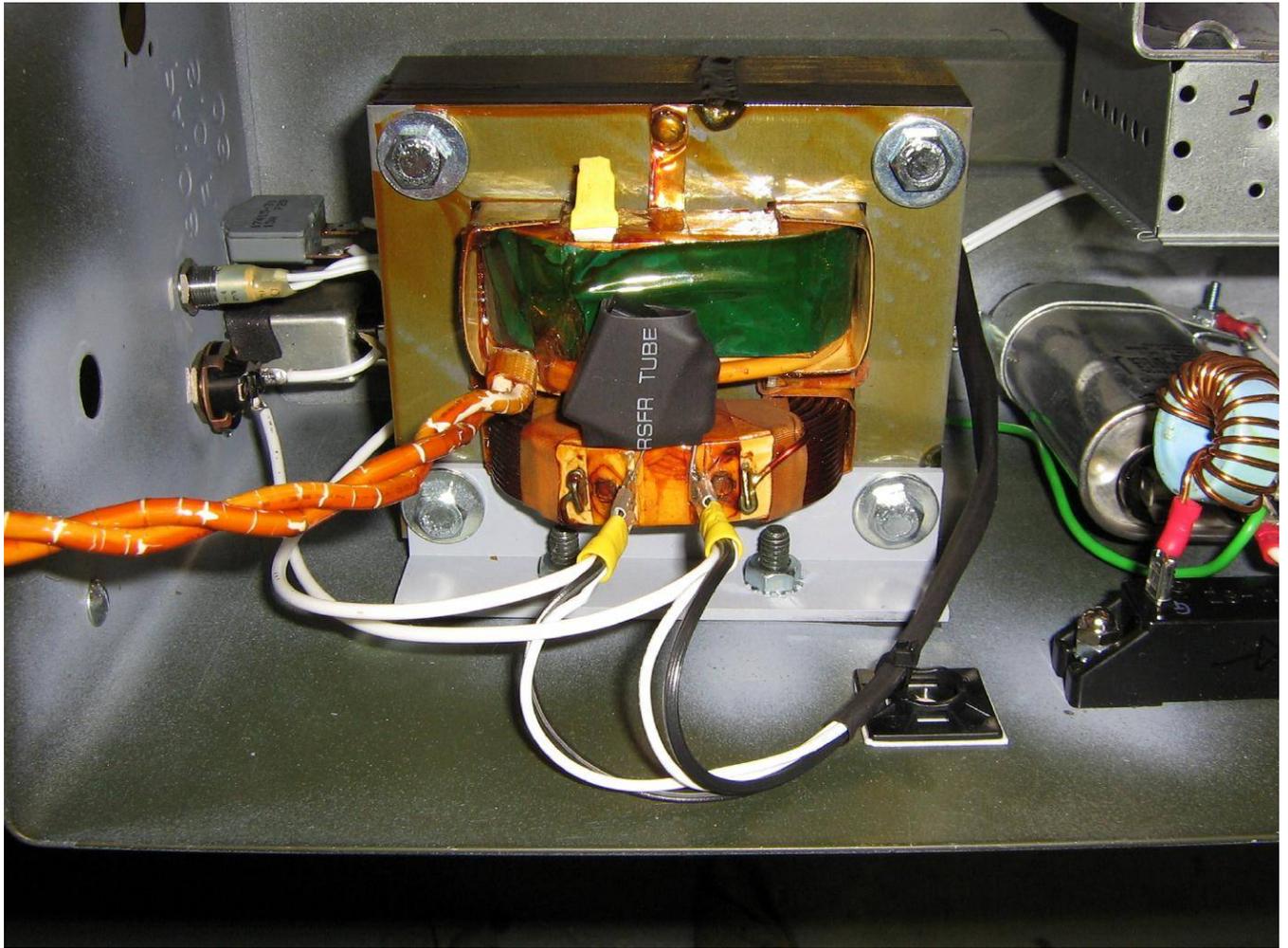
High-voltage input connections. The input banana jack terminals are isolated using rubber grommets. The high-voltage diode is also from an old microwave oven. A 22 μH inductor from an old computer power supply is used as a choke to stop the voltage pulse from effecting the high-voltage power supply. Slip a few ferrite beads over each of the incoming power wires to choke off any voltage spikes.



Find an old 12 VDC wall-wart power supply and secure it to a L-bracket. This will be used to power a small fan mounted above the magnetron. Solder the incoming 120 VAC wires directly to the wall-wart's prongs.



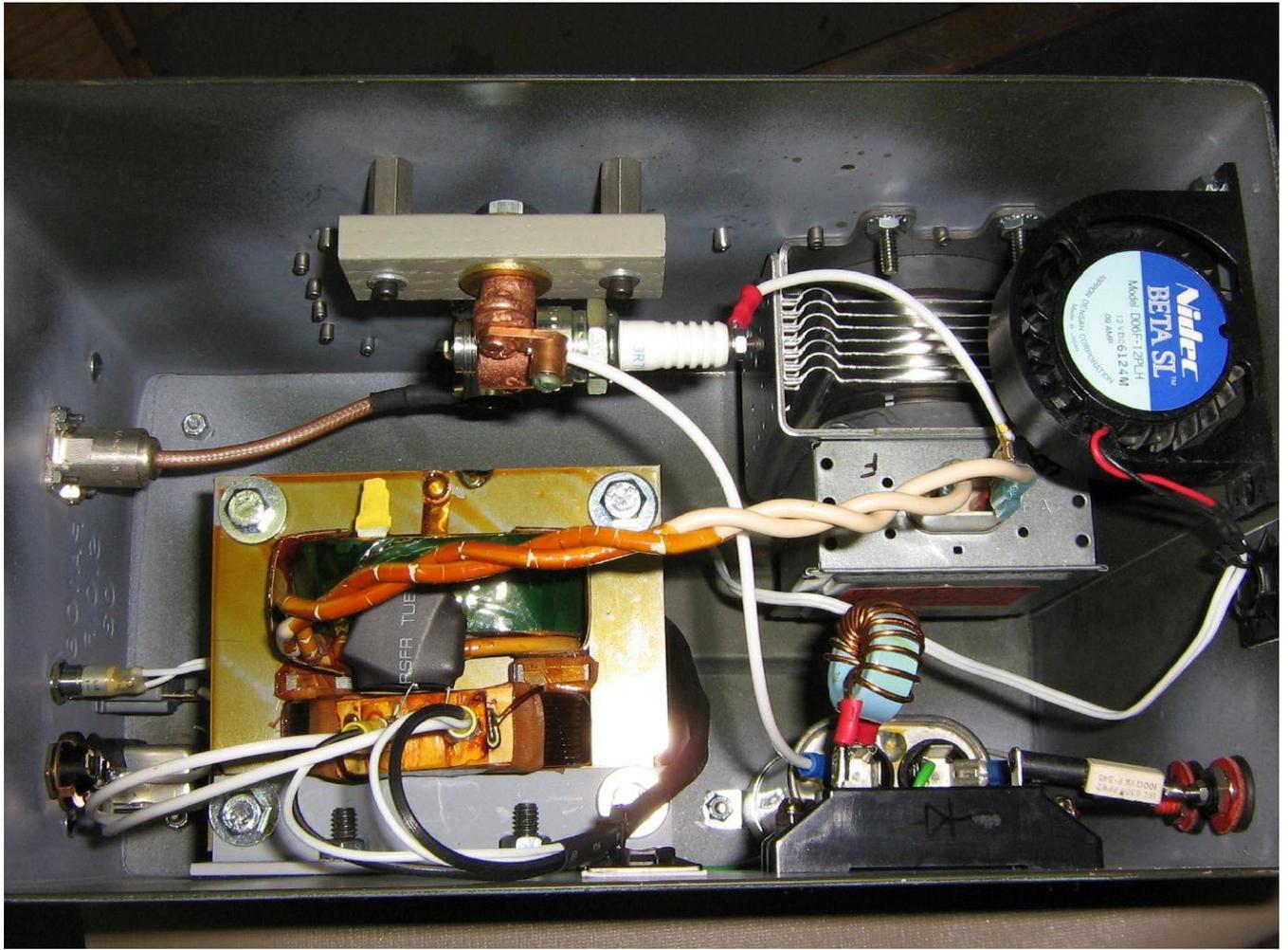
Internal view showing the front panel wiring for the AC input to the filament transformer and also the fan wall-wart power supply mounting.



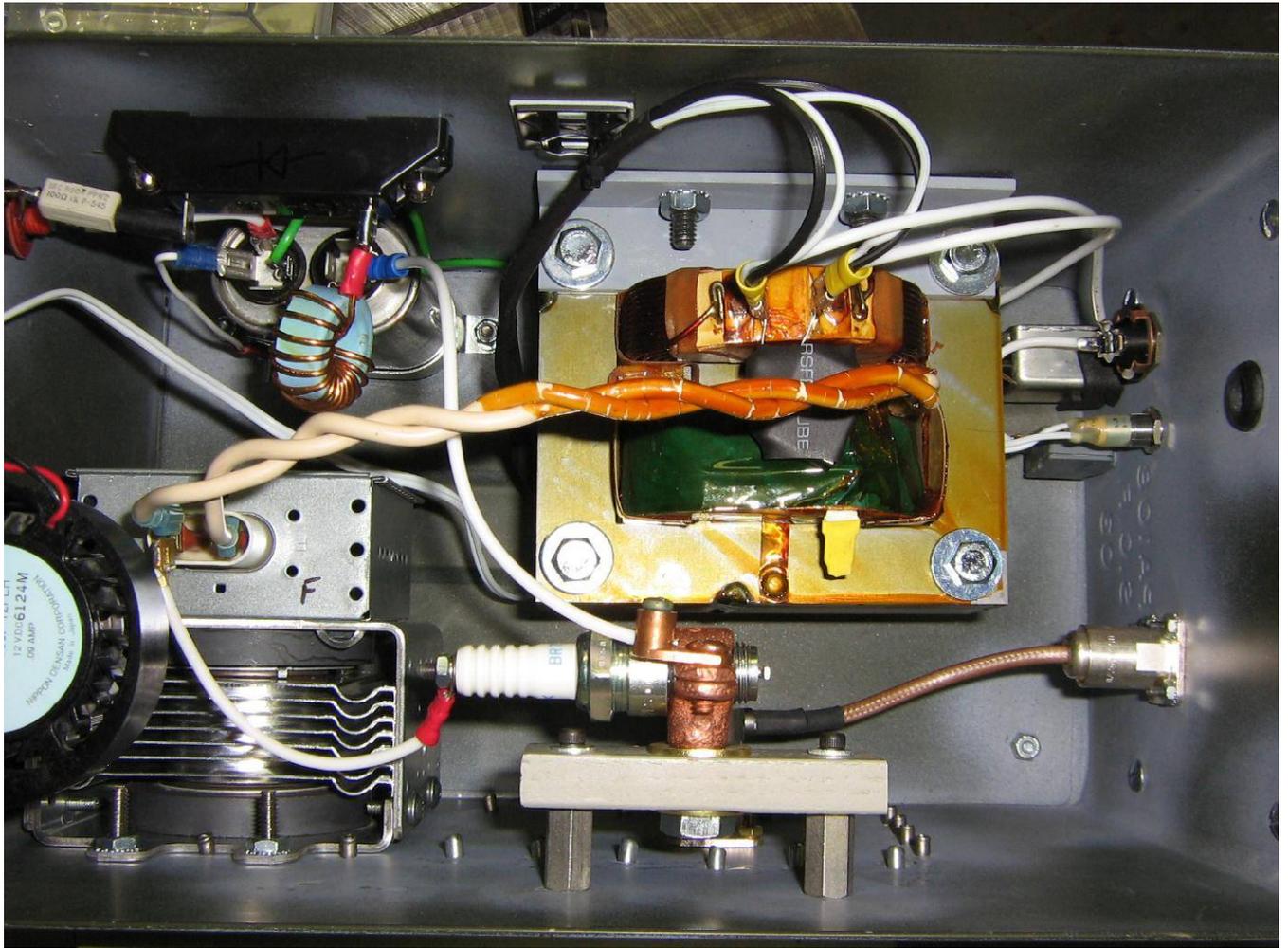
Filament transformer installation. Since only the low-voltage 3.3 VAC filament winding is used, you may remove the high-voltage terminal to prevent accidental shocking. The series 100 ohm resistor and 0.1 μ F AC-rated capacitor form a voltage spike "snubber" on the transformer's primary.



RF output coaxial assembly. Front-panel female N connector connects to a right-angle male N connector with a piece of Teflon dielectric RG-142 coax.



Completed internal view. High-voltage DC power comes in on the lower-right, the AC for the filament transformer on the lower-left. The wire from the screw terminal on the spark plug connects to the cathode terminal on the magnetron. The small fan blows out through a hole in the side of the ammo box.



Alternate view. An experimental "sync" circuit will be designed in the future. This should be useful for triggering an oscilloscope for use as a radar display. It will probably consist of a ferrite torroid picking off the magnetron's high-voltage firing pulse.

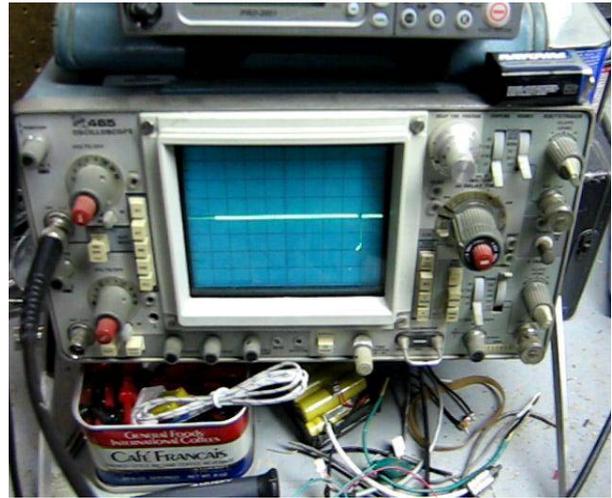
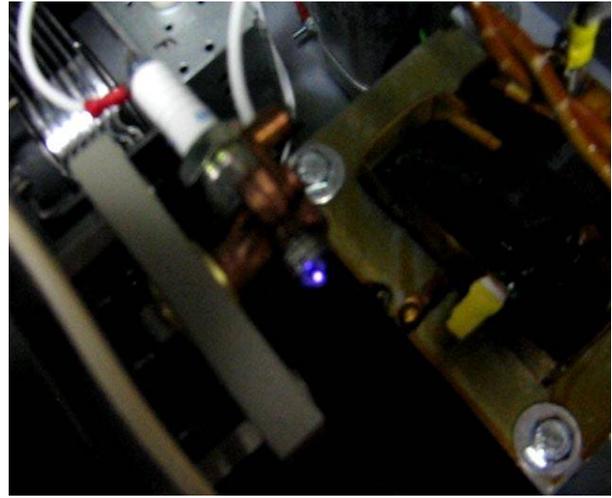
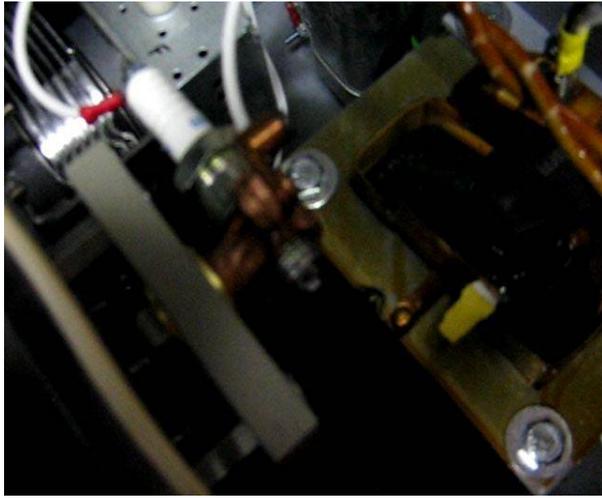


Outside front-panel overview. The **SYNC** output is a 1/4 inch stereo jack and is isolated from the front-panel using a rubber grommet.

Be sure to only operate the device when the RF output is properly loaded.



Outside real-panel overview. The small banana jacks were upgraded to larger ones because they started to arc over.



Screen captures from a video of this device in operation. The volt meter is reading around 4,000 volts DC and the oscilloscope is set to 1 volt per division with a time base of 5 milliseconds per division. The coaxial RF output from the magnetron is run into a 20 dB directional coupler terminated with a high-quality 50 ohm load. An additional 20 dB of attenuation is on the forward-coupled output from the directional coupler. This brings the total attenuation to 40 dB.

Be sure to use high-quality RG-8 coax and Teflon dielectric RF connectors when testing and operating this device. This helps to avoid additional RF loss and also contains the fairly high RF operating voltage.

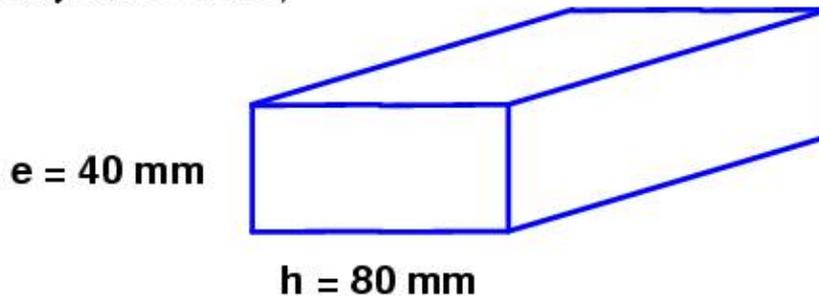
Every time the high-voltage capacitor charges, the spark plug "fires" and the magnetron emits a RF pulse. Be sure to let the filament warm up for a few seconds before applying the high-voltage to the magnetron.

The oscilloscope measures a negative downward spike of about 2 volts during each RF pulse. When factoring all the attenuation, this corresponds to a RF output of approximately 400 watts. The pulse widths are actually quite longer than you'd like, measuring in the hundreds of microseconds or even milliseconds in some cases. The pulse repetition is also quite spotty. We'll just call this an electronic countermeasures countermeasure for the time being.

This video should be available at: zine.gbppr.org/Magnetron-to-Coax.wmv (966k WMV)

Stock Microwave Oven "Waveguide"

(Only three sides)



$$\lambda_c = 2 * h$$

$$F_c = 30 / (2 * h_{cm})$$

$$F_{min} = 1.2 * F_c$$

Minimum Operating Frequency = 2.25 GHz

$$\lambda_m = 2 * e$$

$$F_m = 30 / (2 * e_{cm})$$

$$F_{max} = 0.85 * F_m$$

Maximum Operating Frequency = 3.18 GHz

λ_g = Waveguide Wavelength

λ_o = Wavelength of Operating Frequency

λ_c = Minimum Operating Frequency Wavelength

$$\lambda_g = \frac{1}{\sqrt{(1 / \lambda_o)^2 - (1 / \lambda_c)^2}}$$

$$\lambda_c = 16 \text{ cm}$$

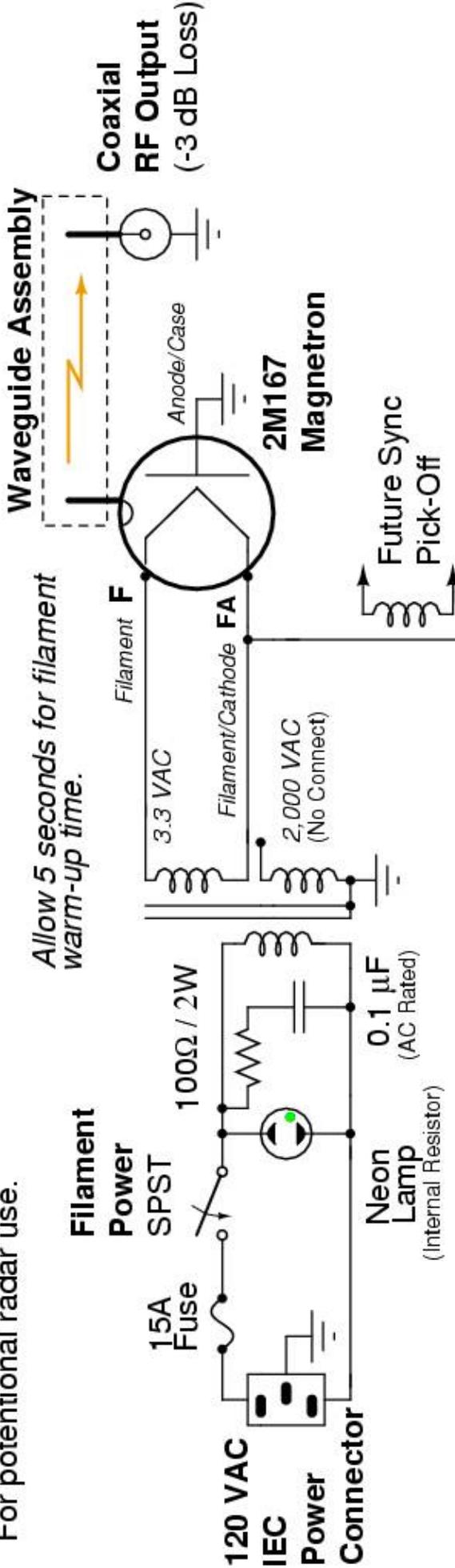
$$\lambda_o = 12.23 \text{ cm}$$

$$\lambda_g = 19 \text{ cm}$$

$$1/4 \lambda_g = 4.75 \text{ cm (1-7/8 inches)}$$

GBPPR 2.45 GHz Magnetron to Coax Assembly

For potential radar use.



Allow 5 seconds for filament warm-up time.

Magnetron Specs

Anode Voltage: -4 kVDC

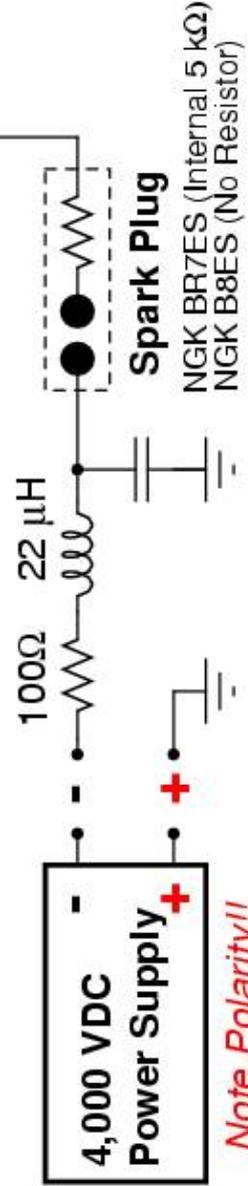
Anode Current: 300 mA

Filament Voltage: 3.3 VAC

Filament Current: <= 10A

RF Output: 800 Watts

Frequency: 2.45 GHz



H.V. Capacitor
 0.85 μF / Internal Parallel 10 MΩ
 (From an old microwave oven)

Note Polarity!!

Wisconsin 1-393 Special Services Numbers

ADVANCED COMM PACKAGE J.I. CASE		2578
ALARM SURVEILLANCE CENTER (24 hour)	24HR	2477
ANNOYANCE BUREAU - MADISON		2402
ARSB/MLT 2MLT)		2658
ASSIGNMENTS - MITCHELL ASNM		2766
ASSIGNMENTS - RACINE ASNR		2767
ASSIGNMENTS-ELY ASNE		2763
ASSIGNMENTS-EUCL/JNVL/MDSN ASNO		2760
ASSIGNMENTS-HOPKINS ASNH		2764
ASSIGNMENTS-WAUKESHA ASNW		2769
AUTOMOTIVE OPERATIONS - APPLETON AUTO		2886
AUTOMOTIVE OPERATIONS - MILWAUKEE CARS		2277
BELL CHANNEL SERVICE TEAM BCSC		2272
BENE OFC -EMPLOYEE SAVINGS PLANS	ESVG	3744
BENE OFC-ACCIDENT BENEFITS	BEN1	2361
BENE OFC-BENEFITS ASSISTANCE REPORTS CENTER	BEN1	2361
BENE OFC-DEATH BENEFITS	BEN7	2367
BENE OFC-DENTAL CARE	BEN2	2362
BENE OFC-DEPENDENT GROUP LIFE	BEN3	2363
BENE OFC-EMPLOYEE UNEMPLOYMENT COMPENSATION	BEN6	2366
BENE OFC-LEAVES OF ABSENCE	BEN3	2363
BENE OFC-LONG TERM DISABILITY	BEN1	2361
BENE OFC-MEDICARE	BEN2	2362
BENE OFC-PENSION INFORMATION	BEN4	2364
BENE OFC-PENSIONER VISITS & DEATH CLAIMS A-F	CLAF	2512
BENE OFC-PENSIONER VISITS & DEATH CLAIMS G-K	CLGK	2514
BENE OFC-PENSIONER VISITS & DEATH CLAIMS L-R	CLLR	2515
BENE OFC-PENSIONER VISITS & DEATH CLAIMS S-Z	CLSY	2517
BENE OFC-SERVICE CREDIT	BEN3	2363
BENE OFC-SICKNESS BENEFITS	BEN1	2361
BENE OFC-TELEPHONE SERVICE-RETIREES	BEN5	2365
BENE OFC-VISION CARE	BEN2	2362
BENE OFC-WORKMENS COMPENSATION	BEN1	2361
BOCC AFTER HOURS CALL-IN		2387
BOCC CRAFTPERSON CALL-IN		2246
BOCC DISPATCHER CALL-IN DIS1		3471
BOCC DISPATCHER CALL-IN DIS2		3472
BOCC DISPATCHER CALL-IN DIS3		3473
BOCC DISPATCHER CALL-IN DIS4		3474
BOCC DISPATCHER CALL-IN DIS5		3475
BOCC DISPATCHER CALL-IN DIS6		3476
BOCC ECON ALARMS		2562
BOCC SENSAPHONE ALARMS		2561
BROADCASTERS TROUBLE REPORT CENTER-APPLETON		3310
BROADCASTERS TROUBLE REPORT CENTER-MADISON		3320
BROADCASTERS TROUBLE REPORT CENTER-MILWAUKEE		3330
BUILDING INDUSTRY - MILW - CONSULTANT #1		3481
BUILDING INDUSTRY - MILW - CONSULTANT #2		3482
BUILDING INDUSTRY - MILW - CONSULTANT #3		3484
BUILDING INDUSTRY - MILW - CONSULTANT #4		3485
BUILDING INDUSTRY - MILW - CONSULTANT #5		3486
BUILDING INDUSTRY CONSULTANTS-APPLETON	BICA	2422
BUILDING INDUSTRY CONSULTANTS-EAU CLAIRE	BICE	2423
BUILDING INDUSTRY CONSULTANTS-MADISON	BICM	2426
BUILDING INDUSTRY CONSULTANTS-MILWAUKEE	BICS	2427

Wisconsin 1-393 Special Services Numbers

BUILDINGS OPNS- CONTROL CENTER BOCC		2622
BUSINESS COLLECTION CENTER-MILWAUKEE		2500
BUSINESS OFFICE COLLECTIONS AGNC		2462
BUSINESS SERVICE CENTERS		2000
CARD RECORDS-EAU CLAIRE	CAD2	2232
CARD RECORDS-ELY	CADE	2233
CARD RECORDS-HOPKINS	CADH	2234
CARD RECORDS-JNVL/MDSN	CAD0	2230
CARD RECORDS-MITCHELL	CADM	2236
CARD RECORDS-RACINE	CADR	2237
CARD RECORDS-WAUKESHA	CADW	2239
CHATLOS #1		2481
CHATLOS #2		2482
CHATLOS #3		2483
CHATLOS #4		2485
CHATLOS #5		2486
CHATLOS #6		2724
COIN COLLECTORS - WAUKESHA		2655
COIN I&M CALL-IN - WAUKESHA		2639
COIN PUBLIC ALERT - WAUKESHA		2600
COIN PUBLIC SERVICES CENTER - WAUKESHA		2772
CONSTRUCTION - EUCL SPLICER/CUTOVER CALL-IN	#2	2901
CONSTRUCTION - EUCL SPLICER/CUTOVER CALL-IN	#3	2902
CONSTRUCTION - EUCL SPLICER/CUTOVER CALL-IN	#4	2903
CONSTRUCTOIN - EUCL SPLICER/CUTOVER CALL-IN	#1	2900
CONTROL FRMN-EAU CLAIRE	CTL2	2852
CONTROL FRMN-ELY	CTLE	2853
CONTROL FRMN-HOPKINS	CTLH	2854
CONTROL FRMN-JANESVILLE	CTLJ	2855
CONTROL FRMN-MADISON	CTL0	2850
CONTROL FRMN-MITCHELL	CTLM	2856
CONTROL FRMN-RACINE	CTLR	2857
CONTROL FRMN-WAUKESHA	CTLW	2859
CRSAB - CABLE LOCATOR	CRCL	2725
CRSAB N. E. LATA		3000
CUSTOMER CALLING CARD REQUESTS TRIAL		1111
CUSTOMER NETWORKS MANAGEMENT SERVICES		2580
CUSTOMER VERIFICATION CALL-IN CHEK		2435
CUTOVER/TEST - EAUC,MDSN,JNVL		2872
DIAL "1 PLUS" EQUAL ACCESS		2456
DIGITAL DATA SVC CUST RPT CEN - MILW		3282
DIRECT MARKETING RES/BUS #1		1050
DIRECT MARKETING RES/BUS #2		2345
DIRECT MARKETING RES/BUS #3		2355
DIRECT MARKETING RES/BUS #4		3456
DIRECTORY ASSISTANCE EMERGENCY LINE		3236
DISABLED SERVICES - MILWAUKEE		1700
DISPATCH I&M - EAU CLAIRE	DSPE	3772
DISPATCH I&M - MADISON	DSPO	3770
DISPATCH I&M-ELY	DSPE	3773
DISPATCH I&M-HOPKINS	DSPH	3774
DISPATCH I&M-JANESVILLE	DSPJ	3775
DISPATCH I&M-MITCHELL	DSPM	3776
DISPATCH I&M-RACINE	DSPR	3777
DISPATCH I&M-WAUKESHA	DSPW	3779
EMPLOYEE LOCATION INFORMATION CENTER	ELIC	3542

Wisconsin 1-393 Special Services Numbers

EMPLOYMENT OFFICE		3675
FOX VALLEY DSOC-C-TAP TESTING	CTAP	2827
FOX VALLEY DSOC-CABLE LOCATION & PRESSURE	CABL	2225
FOX VALLEY DSOC-CUTOVER -FOX VALLEY	CUTF	2883
FOX VALLEY DSOC-DISPATCH TESTING-APPL	FIXI	3491
FOX VALLEY DSOC-DISPATCH TESTING-FUDL	FIXF	3493
FOX VALLEY DSOC-DISPATCH TESTING-GBAY	FIXG	3494
FOX VALLEY DSOC-LONG TERM TESTING	ASST	2778
FOX VALLEY DSOC-MAC/LAC	FMAC	3622
FOX VALLEY DSOC-NO FACILITIES	FAAX	3299
FOX VALLEY MKTG/SALES APPLETON		3022
FOX VALLEY MKTG/SALES GREEN BAY		3939
FXCB & RESIDENCE MILEAGE - MADISON		2403
ISDN DIAL-IN PORT		3636
MAC/LAC-ELY	ACTE	2283
MAC/LAC-EUCL/JNVL/MDSN	ACTO	2280
MAC/LAC-HOPKINS	ACTH	2284
MAC/LAC-MITCH/RACN/WKSH	ACTM	2286
MADISON - DSOC CABLE LOCATE	CABC	2222
MADISON DSOC- C-TAP TESTING	CTPC	2873
MADISON DSOC-CUT-OVER TEST		2822
MADISON DSOC-DISPATCH TESTING		3477
MADISON DSOC-LONG TERM TESTING	ASTC	2782
MADISON DSOC-MAC/LAC		3622
MADISON DSOC-NO FACILITIES		3299
MADISON MKTG/SALES		3400
MAJOR ACCOUNTS UNIT-BUSINESS		2020
MARKETING NETWORK BUSINESS SALES-EAU CLAIRE		3700
MARKETING NETWORK BUSINESS SALES-MILWAUKEE		3333
METRO NORTH DSOC-CABLE LOCATION & PRESSURE	CABN	2226
METRO NORTH DSOC-CUTOVER TESTING C-TAP	CTPN	2877
METRO NORTH DSOC-LONG TERM TESTING	ASTN	2786
METRO SOUTH DSOC-CABLE LOCATION & PRESSURE	CABS	2227
METRO SOUTH DSOC-CUTOVER TESTING C-TAP	CTPS	2877
METRO SOUTH DSOC-LONG TERM TESTING	ASTS	2787
NETWORK PLANNING & ENGINEERING ASC	ENGR	3647
NETWORK TERMINAL EQUIPMENT CENTER-NTEC		3300
NEWS LINE - MILWAUKEE		3511
NO ACCESS-EAU CLAIRE	CUS2	1112
NO ACCESS-ELY	CUSE	1113
NO ACCESS-HOPKINS	CUSH	1114
NO ACCESS-JANESVILLE	CUSJ	1115
NO ACCESS-MADISON	CUSO	1110
NO ACCESS-MITCHELL	CUSM	1116
NO ACCESS-RACINE	CUSR	1117
NO ACCESS-WAUKESHA	CUSW	1119
NO FACILITIES - EAU CLAIRE	FACE	3222
NO FACILITIES - JANESVILLE	FACJ	3225
NO FACILITIES-ELY	FACE	3223
NO FACILITIES-HOPKINS	FACH	3224
NO FACILITIES-MDSN	FACD	3220
NO FACILITIES-MITCHELL	FACH	3226
NO FACILITIES-RACINE	FACR	3227
NO FACILITIES-WAUKESHA	FACW	3229
NO WEST LATA RCC/ #3 ESS TRIGGER		3373
NTWK SW SVCS - T-CARRIER	CXRT	2978

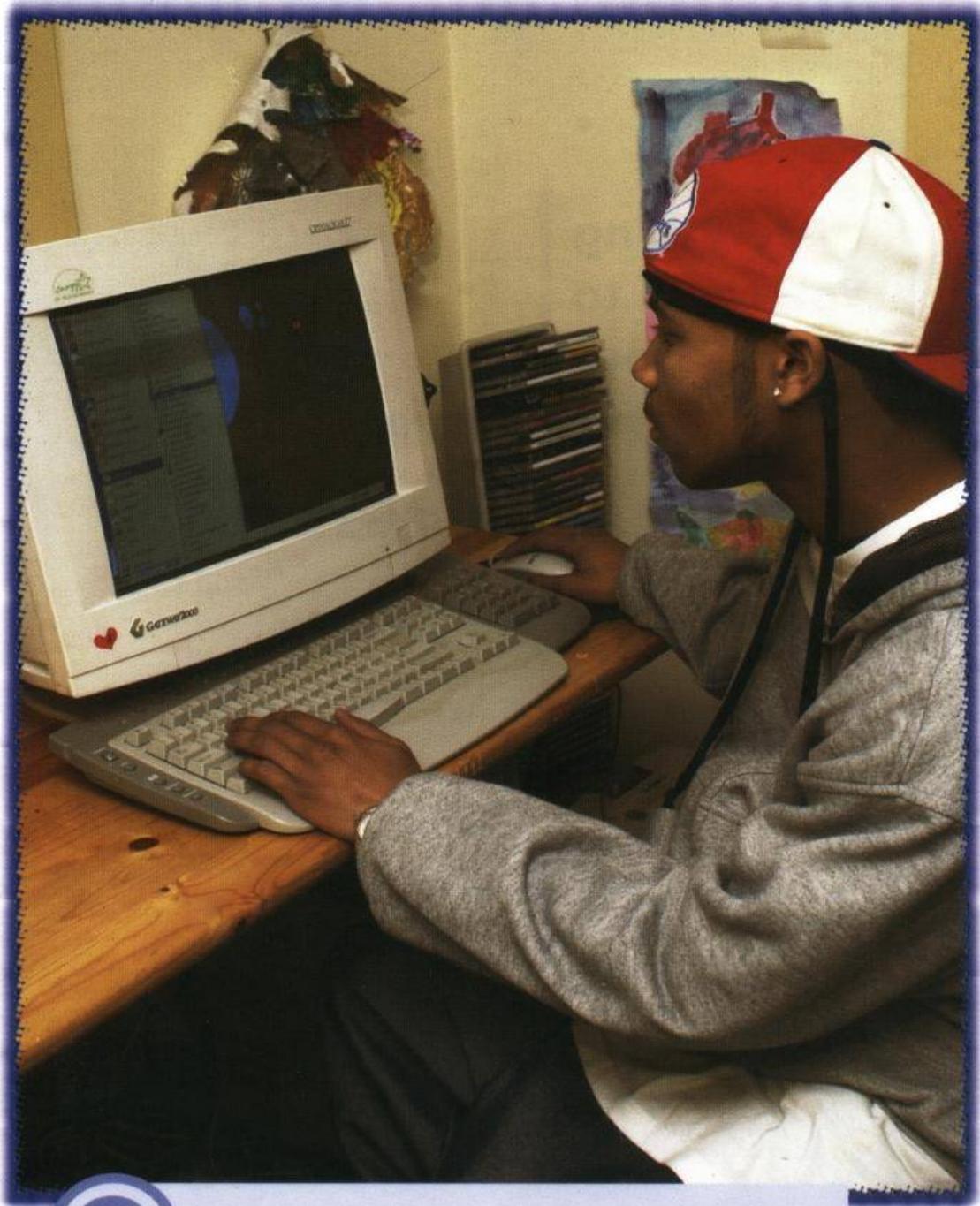
Wisconsin 1-393 Special Services Numbers

OCS SERVICE CENTER - COMM	2666
OPERATOR HANDLED REPAIR CALLS - EAU CLAIRE	3020
OPERATOR HANDLED REPAIR CALLS - MADISON	3010
PACKET SWITCH HELP DESK	1234
PACKET SWITCHING - UNIVERSAL ACCESS	3900
PAYMENT AGENCIES HELP CENTER AGNT	2468
PICS ADMIN-TECHNICIAN CALL-IN BONA	2662
PICS ADMIN-TECHNICIAN CALL-IN BUCK	2825
PICS ADMIN-TECHNICIAN CALL-IN FARM	3276
PICS ADMIN-TECHNICIAN CALL-IN FRED	3733
PIONEER OFFICE	3665
PUBLIC RELATIONS	1122
RECENT CHANGE CENTER - MADISON	2114
RECENT CHANGE CENTER - MADISON	2115
RECENT CHANGE CENTER - MADISON	2116
RECENT CHANGE CENTER - MADISON	2117
RECENT CHANGE CENTER - MADISON	2118
RECENT CHANGE CENTER - MADISON	2119
RECENT CHANGE CENTER-APPLETON CHGE	2448
RECENT CHANGE CENTER-EL/HO/MI/RA/WK CHGE	2443
RECENT CHANGE CENTER-EUCL/JNVL/MDSN CHGO	2440
RESIDENCE CUSTOMER SALES & SERVICE CENTERS	1000
RESIDENCE COLLECTION CENTER - HOPKINS	1500
RESIDENCE MISC. & M BILLS -MADISON	2401
RESIDENCE SERVICE - SATURDAYS/ELY	2255
SAFETY & ENVIORNMENTAL HEALTH	2368
SECURITY	2369
SPECIAL SERVICES CHRONIC ESCALATE	3341
SPECIAL SERVICES CONTROL CENTER	2528
SPECIAL SERVICES I&M DISPATCH-METRO NORTH	2525
SPECIAL SERVICES I&M DISPATCH-METRO SOUTH	2526
SPECIAL SERVICES OMBUDSMAN - S. SHERMAN	3500
SPL SVCS FOX VALLEY - 1ST LEVEL CONTROL	3317
SPL SVCS FOX VALLEY - 1ST LEVEL FRMN-APPL PLB	3410
SPL SVCS FOX VALLEY - 1ST LEVEL PROVISIONING	3313
SPL SVCS FOX VALLEY - 1ST LEVEL RPR ESCALATE	3311
SPL SVCS FOX VALLEY - 1ST LEVEL TRANSMIS/TRNG	3430
SPL SVCS FOX VALLEY - 2ND LEVEL RPR ESCALATE	3312
SPL SVCS FOX VALLEY - FRMN/SPL SVCS GNBY GARAGE	3425
SPL SVCS FOX VALLEY - MTCE/PROVIS FIELD CONT DEPR PLB	3421
SPL SVCS FOX VALLEY - MTCE/PROVIS FIELD CONT GNBY 12PLB	3420
SPL SVCS FOX VALLEY - MTCE/PROVIS FIELD CONT MNTW PLB	3422
SPL SVCS FOX VALLEY - MTCE/PROVIS FIELD CONT SHBY PLB	3423
SPL SVCS FOX VALLEY - MTCE/PROVIS FIELD CONT SHFL PLB	3424
SPL SVCS FOX VALLEY - PROVIS SYS TECH CALL-IN	3315
SPL SVCS FOX VALLEY - PROVIS/RPR CALL-IN APPL PLB	3411
SPL SVCS FOX VALLEY - PROVIS/RPR CALL-IN BVDM PLB	3415
SPL SVCS FOX VALLEY - PROVIS/RPR CALL-IN FDLC PLB	3413
SPL SVCS FOX VALLEY - PROVIS/RPR CALL-IN GNBY 01PLB	3418
SPL SVCS FOX VALLEY - PROVIS/RPR CALL-IN GNBY 11PLB	3419
SPL SVCS FOX VALLEY - PROVIS/RPR CALL-IN OSHK PLB	3412
SPL SVCS FOX VALLEY - RPR SYS TECH CALL-IN	3314
SPL SVCS FOX VALLEY - SERVICE ORDER COMPLETION	3316
SPL SVCS FOX VALLEY - SYS TECH CALL-IN APPL GARAGE	3416
SPL SVCS FOX VALLEY - SYS TECH CALL-IN GNBY PLB	3417
SPL SVCS MADISON - 1ST LEVEL ESCALATE	3321

Wisconsin 1-393 Special Services Numbers

SPL SVCS MADISON - 2ND LEVEL ESCALATE	3322
SPL SVCS MADISON - CHRONIC ESCALATE	3323
SPL SVCS MADISON - EMPL PROVIS CALL -BACK	3325
SPL SVCS MADISON - EMPL RPR CALL-BACK	3324
SPL SVCS MADISON - I & M DISPATCH	3326
SPL SVCS MILW - 1ST LEVEL ESCALATE	3331
SPL SVCS MILW - 2ND LEVEL ESCALATE	3332
SPL SVCS MILW - CRC TROUBLE REPORT NUMBER	3340
SPL SVCS MILW - EMPL RPR CALL-BACK ACCESS	3334
SPL SVCS MILW - EMPL RPR CALL-BACK NON ACCESS	3336
SPL SVCS MILW - EMPL/PROVIS CALL-BACK ACCESS	3335
SPL SVCS MILW - EMPL/PROVIS CALL-BACK NON ACCESS	3337
STUDENT TOLL - MADISON	2400
SYSTEM 5 SALES UNIT-MADISON	2025
TELEMARKETING - SUNRISE	1060
TEST BOARD-EAU CLAIRE BRD2	2732
TEST BOARD-ELY BRDE	2733
TEST BOARD-HOPKINS BRDH	2734
TEST BOARD-MDSN/JNVL BRD0	2730
TEST BOARD-MITCHELL BRDM	2736
TEST BOARD-RACINE BRDR	2737
TEST BOARD-WAUKESHA BRDW	2739
UW-MADISON CUSTOMER/CRAFT CALL-IN - K. LEIS	3279
UW-MADISON CUSTOMER/CRAFT CALL-IN - N. BURKHALTER	3280
WISCONSIN BELL HEADQUARTERS	3131

Bonus



Computer hackers are often teenagers just like you.

End of Issue #46



Any Questions?

Editorial and Rants

Science. Censored.

Controversial Nobel Winner Resigns

October 25, 2007 – From: www.cnn.com

(CNN) -- The Nobel prize-winning biologist who caused a furor with comments about the intelligence of black people resigned Thursday from his longtime post at a renowned research lab.

In a statement announcing his departure from the Cold Spring Harbor Laboratory on New York's Long Island, Dr James Watson did not mention the comments but instead cited "events" which led to his decision.

"The circumstances in which the transfer is occurring," he wrote, "are not those which I could ever have anticipated or desired."

The lab's board had already suspended him pending a review of his remarks, for which Watson apologized last week.

The controversy began with an interview with Watson published October 14 in Britain's Sunday Times.

Watson was quoted as saying he was "inherently gloomy about the prospect of Africa" because "all our social policies are based on the fact that their intelligence is the same as ours, whereas all the testing says not really."

He also asserted there was no reason to believe different races separated by geography should have evolved identically, and that while he hoped everyone was equal, "people who have to deal with black employees find this is not true."

Watson had been on a tour of the United Kingdom to promote his new book, and the comments led several venues to cancel his planned appearances.

The 79-year-old biologist apologized "unreservedly" last week and said he did not understand how he could have made the quoted remarks. The paper stood by its interview.

Watson won the 1962 Nobel prize for his role in discovering the double-helix structure of DNA. He had been chancellor of the lab and served on its board for 43 years, but he said it was now time to retire.

"Closer now to 80 than 79, the passing on of my remaining vestiges of leadership is more than overdue," he wrote.

Watson said he was proud of the laboratory's legacy and reputation as one of the world's leading sites for biological research and education. Specifically, Watson mentioned cancer research as one of the lab's achievements.

Eduardo Mestre, chairman of the lab's board, said Watson had made "immeasurable contributions" to the lab's research and that the board respected his decision to retire.

The lab's director, Bruce Stillman, credited Watson with raising the lab's profile.

"Jim's legacy will not only include CSHL and the double helix, but his pioneering efforts that led to the sequencing of the human genome and his innovations in science writing and education."

Watson had made controversial remarks in the past. In 1997, Britain's Sunday Telegraph quoted Watson as saying that if a gene for homosexuality were isolated, women who find that their unborn child has the gene should be allowed to have an abortion.

During a lecture tour in 2000, he suggested there might be links between skin color and sexual prowess, and between a person's weight and their level of ambition.

And in a British TV documentary that aired in 2003, Watson suggested that stupidity was a genetic disease that should be treated.

The U.N.'s oil-for-food program was the largest humanitarian aid scandal in history. Why don't you hear anything about it?

Russian Spy Says Government Stole \$500 Million From U.N.'s Oil-For-Food Program in Iraq

January 26, 2008 – From: www.foxnews.com

A former Russian top spy says his agents helped the Russian government steal nearly \$500 million from the U.N.'s oil-for-food program in Iraq before the fall of Saddam Hussein in 2003.

Sergei Tretyakov, who defected to the United States in 2000 as a double agent, says he oversaw an operation that helped Saddam's regime manipulate the price of Iraqi oil sold under the program -- and allow Russia to skim profits.

Tretyakov, former deputy head of intelligence at Russia's U.N. mission from 1995 to 2000, names some names, but sticks mainly to code names. Among the spies he says he recruited for Russia were a Canadian nuclear weapons expert who became a U.N. nuclear verification expert in Vienna, a senior Russian official in the oil-for-food program and a former Soviet bloc ambassador. He describes a Russian businessman who got hold of a nuclear bomb, and kept it stored in a shed at his dacha outside Moscow.

The 51-year-old Tretyakov had never spoken out about his spying before this week, when he granted his first news media interviews to publicize a book published Thursday. Written by former Washington Post journalist Pete Earley, the book is titled "Comrade J.: The Untold Secrets of Russia's Master Spy in America after the End of the Cold War."

"It's an international spy nest," Tretyakov said of the U.N., during an interview this week with The Associated Press. "Inside the U.N., we were fishing for knowledgeable diplomats who could give us first of all anti-American information."

His defection was first reported by the AP in 2001. Shortly after, the New York Times broke the news that he was not a diplomat, but a top Russian spy who was extensively debriefed by the CIA and the FBI.

Some of the people named or referenced by a code name in the book have denied Tretyakov's claims. The Russian mission to the U.N. said Friday it would have no immediate comment.

Stephane Dujarric, a spokesman for U.N. Secretary-General Ban Ki-moon, described Tretyakov's allegations as potentially serious violations of law and U.N. rules.

But Dujarric said it would be up to others to prosecute if the allegations are substantiated: "Since the U.N. can't prosecute, it is now up to national governments to prosecute."

An 18-month investigation into the oil-for-food corruption, led by former Federal Reserve chairman Paul Volcker, culminated in an October 2005 report accusing more than 2,200 companies from some 40 countries of colluding with Saddam's regime to bilk the humanitarian program in Iraq of \$1.8 billion.

The program was aimed at easing Iraqi suffering under U.N. sanctions imposed after Saddam's 1990 invasion of Kuwait. It allowed Iraq to sell oil provided the bulk of the proceeds were used to buy food, medicine and other humanitarian goods and to pay war reparations. Volcker's reports blamed shoddy U.N. management and the world's most powerful nations for allowing corruption in the \$64 billion program to go on for years.

Tretyakov defected to the United States with his wife and daughter in 2000, after serving as a double agent passing along secrets to the U.S. government. He calls his defection "the major failure of Russian intelligence in the United States" and warns that Russia, despite the end of the Cold War, harbors bad intentions toward the United States.

The decision to defect, he said, was made only after his mother died in 1997, and he had no other close relatives alive in Russia who could be used to blackmail him. The Tretyakovs now live in retirement in an undisclosed location.

"I got extremely disgusted with the Russian government, and I don't see any light at the end of the tunnel. I'm not very emotional. I'm not a Boy Scout," said Tretyakov, who was accompanied during the interview by his wife, Helen, and Earley. "Knowing people who are running Russia, I started feeling that it's immoral to help them. And finally in my life, when I defected, I did something good in my life. Because I want to help United States."

Help protect scientific facts. It takes a mother and a father to make and raise a child.

Don't Say Mum and Dad... Teachers Told Not to Assume Pupils Have Heterosexual Parents

January 30, 2008 – From: www.dailymail.co.uk

By Laura Clark

Teachers should not assume that their pupils have a "mum and dad" under guidance aimed at tackling anti-gay bullying in schools.

It says primary pupils as young as four should be familiarised with the idea of same-sex couples to help combat homophobic attitudes.

Teachers should attempt to avoid assumptions that pupils will have a conventional family background, it urges.

It goes on to suggest the word "parents" may be more appropriate than "mum and dad", particularly in letters and emails to the child's home.

When discussing marriage with secondary pupils, teachers should also educate pupils about civil partnerships and gay adoption rights.

The guidance – produced for the Government by gay rights group Stonewall – will be formally launched today by Schools Secretary Ed Balls.

It states that children who call classmates "gay" should be treated the same as racists as part of a "zero tolerance" crackdown on the use of the word as an insult.

Teachers should avoid telling boys to "be a man" or accuse them of behaving like a "bunch of women."

This sort of rebuke "leads to bullying of those who do not conform to fixed ideas about gender", the guidance states.

At the same time, schools should encourage gay role models among staff, parents and governors. Homosexual staff should be able to discuss their private lives after the consultation with the head teacher.

In advice to gay staff, it states: "School culture and ethos determines how open staff are about their private lives, and you should therefore seek advice and guidance from your head."

The Department for Children, Schools and Families commissioned Stonewall to write the guidance jointly with lobby group Education Action Challenging Homophobia.

It says that pupils aged four to seven should "understand that not all pupils have a mum and a dad" and learn about different family structures.

Advice to teachers of 11 to 14-year-olds states: "Schools should make efforts to talk inclusively about same-sex parents, for example, avoid assuming all pupils will have a "mum and dad."

"When schools discuss marriage, they may also discuss civil partnership and adoption rights for gay people."

In a section on engaging with parents, it asks schools: "Do you talk about 'parents' instead of assuming all pupils have 'mum or a dad'?"

The advice goes on to urge teachers to challenge every derogatory use of the word gay to avert homophobic attitudes.

Examples include "those trainers are so gay", "that pencil case is so gay" or "you're such a gay boy".

One primary teacher quoted in the guidance said: "We hear 'gay' as a term of abuse every single day. The children may not know exactly what it means, but they know they are using it as an insult. That's why we need to tackle it at this stage."

Controversy over the semantics of the word erupted two years ago when the BBC ruled that Radio One DJ Chris Moyles was not being offensive to homosexuals by using the word "gay" to mean "rubbish."

The advice says: "It is important for all staff to challenge pupils explaining the consequences of using 'gay' in a derogatory way.

"It might be time-consuming at first, but a consistent 'zero-tolerance' approach to such language is central to achieving progress and an environment in which being gay is not thought of as being inferior."

It adds: "Schools need to make it clear to pupils that homophobic comments are as serious as racist comments, and homophobic incidents are as serious as other forms of bullying."

Teachers should use every curriculum subject to nip discriminatory attitudes in the bud.

English lessons for teenagers, for example, could focus on the emotions of the gay Italian soldier Carlo in Captain Corelli's Mandolin.

The guidance is being published five years after the repeal of Section 28 – the law which banned the promotion of homosexuality in schools.

Ministers promised the move would make no difference to the teaching of homosexual matters but some critics have claimed the gay lobby is having a growing influence on pupils.

Next month is Lesbian, Gay, Bisexual and Transgender History Month, where pupils learn about apparently gay figures from history including Leonardo da Vinci, Oscar Wilde and James Dean.

Mr Balls, who will launch the anti-bullying guidance at a Stonewall conference today, said: "I am proud the Government and the department are being robust about this.

"It is our view that every school should have a clear policy on tackling all forms of bullying, including homophobic bullying."

Eric Corley is a gay faggot child molesting moron!

Mexishits are flooding the country with their shit. Mexico is a rich oil-producing country, yet they need US to pay for everything! Murder ALL Mexicans!

Strategy Decision Still Months Away

January 23, 2008 – From: www.signonsandiego.com

By Mike Lee

A lawyer for federal wastewater officials said yesterday that they are pressing ahead on two options to improve the treatment of sewage flowing from Tijuana into San Diego County.

However, a final decision on which strategy they will use remains at least three months away, according to the International Boundary and Water Commission.

Commission officials joined state regulators, environmentalists and representatives from the company Bajagua LLC in U.S. District Court to review progress on the two main upgrade proposals: enhancing the commission's existing sewage facility in San Ysidro or building a new plant in Tijuana with the help of Bajagua.

"After years of uncertainty, we can now see a light at the end of the tunnel," said Stephen Samuels, the Justice Department lawyer who represented the U.S. section of the boundary commission.

California and the environmental group Surfrider sued the commission to stop ongoing pollution at the San Ysidro plant. That facility handles about 25 million gallons of wastewater a day from Tijuana, but it hasn't met U.S. Clean Water Act standards since it started in the late 1990s.

In December, Congress agreed to spend up to \$66 million on the problem, though it didn't settle the decade-old question of how best to do that. At yesterday's hearing, the parties could not agree on who is supposed to make that call – the boundary commission or Congress.

Expanding the current facility has been pegged at roughly \$100 million. About a third of that money may come from Mexico, though no one in court yesterday expressed confidence that Mexico will contribute tens of millions of dollars.

If a major wastewater plant was built in Tijuana, it would further treat sewage handled by the current facility and sewage from other sources. That strategy is promoted by Bajagua, a San Marcos company that has spent years lobbying for the project.

Bajagua officials have said their plant would treat some 59 million gallons of wastewater a day. The company would finance the construction costs upfront, but U.S. taxpayers ultimately would pay for the facility and its operation over two decades. The bill is estimated at \$600 million.

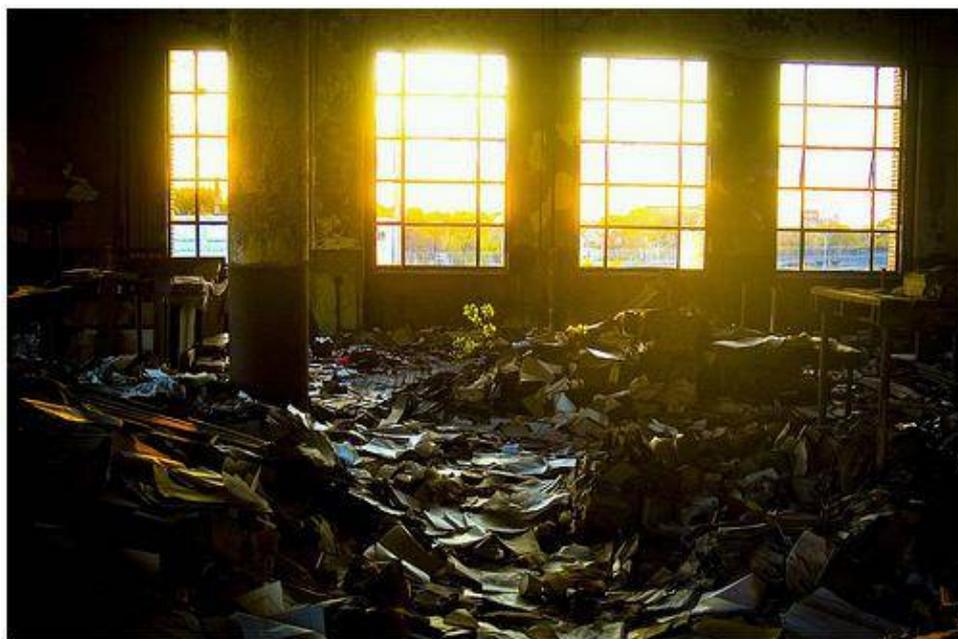
The Government Accountability Office, the investigative arm of Congress, is comparing the projects and is expected to report its findings by late April.

In the meantime, boundary commission leaders said in court papers that they have hired an engineering firm to update old designs for the San Ysidro upgrades and refine cost estimates. They also are looking at how to increase the treatment capacity of the existing plant to 100 million gallons a day.

At the same time, the commission has resumed negotiations with Bajagua, beginning with a three-hour meeting earlier this month.

Judge Barry Ted Moskowitz ordered the parties to keep working and report back in late March, although no final decision on the winning project is expected by then.

"Everybody has to go along in good faith with both options so that when one is chosen . . . it will be successful," he said.



Trees Growing in Rotting Paper (Detroit Public Schools Book Depository)

Celebrate black leadership! More photos and blog notes here:
<http://www.sweet-juniper.com/2007/11/it-will-rise-from-ashes.html>



A Wall in Gaza Comes Down

2 of 15 ◀ Previous



Blackout

The Israeli embargo has left the Gaza Strip without electricity. The Palestinian Parliament was forced to meet by candlelight on Tuesday night.

MOHAMMED SALEM / REUTERS | [EMAIL THIS TO A FRIEND](#)

◀ Gaza Diary

LATEST HEADLINES

- [Scientist Creates Life — Almost](#)
- [Michelle Obama Finds Her Voice](#)
- [The Danger of Not Eating Tuna](#)

 [RSS: Add Time.com's Best Photos RSS Feed](#)

From http://www.time.com/time/photogallery/0,29307,1706384_1522984,00.html

Note the sunlight coming in through the curtains and the cracks by the door.

Remember: There is NO liberal bias in the media!!!

12th District Warrant Information by: (Residence or Incident Location)

Wanted for Homicide

Defendant: Joe East B/M, PP#695528, DC#94 01-013194



(Homicide by handgun)
Date of Warrant 6-3-94
Last Known Address 5957 Chester Avenue
Contact: Homicide Unit

Defendant: Terrance Heyward 32/B/M, PP# 796466, DC#06-12-014262



(Homicide by Handgun)
Date of Warrant 5-11-06
Last Known Address 5157 Oxford Avenue
Contact: Homicide Unit

Wanted for Rape

Defendant: Kenneth BeAvenuer 51/B/M, PP# 557259, DC# 07-22-061219



(Rape-Known Acquaintance)
Date of Warrant 12-4-07
Last Known Address 5403 Willows Street
Contact: SVU

Defendant: Ismail Myrick 25/B/M, PP# 836720, DC# 07-12-105218



(Attempted Rape)
Date of Warrant 12-10-07
Last Known Address 2016 S. 66th Street
Contact: SVU

Defendant: Basil Jefferson 22/B/M, PP#933437, DC# 06-12-007099



(Rape-Known Acquaintance)
Date of Warrant 2-27-06
Last Known Address 2536 Holbrook Street
Contact: SVU

3

*All Warrants in this booklet are valid at the time of publication.
Contact the Criminal Intelligence Unit (215) 685-1146 prior to release or publication of
this information.*

12th District Warrants Continued:

Wanted for Robbery by Gun



Sedale Blackwell
PP#905656
2011 S. Redfield Street



Jamaul Brewer
PP#1026404
1401 S. Allison Street



Anthony Campbell
PP#905559
5633 Litchfield Street



Shawn Clarke
PP#975714
1324 Divinity Street



James Dou
PP#934815
2617 South 66th Street



Clifton Hall
PP#867635
1233 South 50th Street



Kahlil Miller
PP#931612
5740 Warrington Avenue



Maurice Stokes
PP#983108
1719 South 56 Street



Malik Nealy
PP#787087
1239 East Chelton Avenue



Anthony Waters
PP#1007763
3821 Brown Street



Evy Williams
PP#986092
4640 Tolbut Street

4

*All Warrants in this booklet are valid at the time of publication.
Contact the Criminal Intelligence Unit (215) 685-1146 prior to release or publication of
this information.*

18th District Warrants Continued:

Wanted for Robbery by Gun



Patrick Carter
PP#821031
4030 Spruce Street



Darryl Thomas
PP#918134
5815 Sansom Street



Glen Walker
PP#936622
4400 Market Street



Shawn Clarke
PP#975714
1324 Divinity Street



Lamont Cooke
PP#1007046
1708 North Peach Street



James Dou
PP#934815
2617 South 66th Street



Khalil Miller
PP#931612
5740 Warrington Avenue

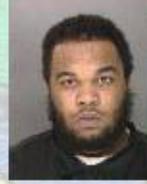
Wanted for Aggravated Assault by Handgun



Maurice Askew
PP#947130
5139 Walton Street



Eric Charlton
PP#721184
914 Pratt Street



Lamont Ellison
PP#945055
5416 Norfolk Street



Gerald Greene
PP#796443
5426 Spruce Street



Matthew Williams
PP#985778
628 South 59th Street



Gregory Williams
PP#996808
5033 Parrish Street



Uriel Williams
PP#878809
1407 Locust Street

7

***All Warrants in this booklet are valid at the time of publication.
Contact the Criminal Intelligence Unit (215) 685-1146 prior to release or publication of
this information.***