

HAZARDOUS MATERIAL/WASTE MARC CENTERS

<u>CONTENTS</u>	<u>PAGE</u>	
1. GENERAL	1	B. Cold Cathode Tubes - Safety Precautions
2. INTRODUCTION	2	C. Mercury Relays - Clean-Up Procedures
3. IDENTIFICATION OF HAZARDOUS MATERIAL/WASTE	4	D. Mercury Relays - Safety Precautions
4. HAZARDOUS MATERIAL/WASTE	4	E. Mercury Vapor Tubes - Clean-Up Procedures
4.01 Cold Cathode Tubes	4	F. Mercury Vapor Tubes - Safety Precautions
Identification	4	G. Polychlorinated Biphenyls - Clean-Up Procedures
Handling	5	H. Polychlorinated Biphenyls - Safety Precautions
Storage/Packaging	5	EXHIBITS
Shipping	6	1. Southwestern Bell's Responsibilities
4.02 Units Containing Mercury	7	2. Returned Material Notice
Identification	7	TABLES
Handling	8	A. Cold Cathode Tubes
Storage/Packaging	8	B. Test Sets Containing Mercury
Shipping	8	C. Spare Packs Containing Mercury
4.03 Polychlorinated Biphenyls	9	D. Mercury Relays
Identification	9	E. Mercury Switches
Handling	10	F. Mercury Vapor Tubes
Storage/Packaging	10	G. PCB Capacitors
Shipping	11	H. PCB Capacitors Over Three (3) Pounds
4.04 Batteries	11	I. PCB General Trade Names
Wet Cells	11	J. Power Equipment Containing PCB's
Other	11	FIGURES
4.05 Beryllium Oxide	11	1. Cold Cathode Tubes
Identification	11	2. Mercury Relays
Handling	11	2A. Mercury Vapor Tubes
Storage/Packaging	11	3. PCB Capacitors
Shipping	12	<u>1.0 GENERAL</u>
5. TRAINING	12	1.01 This section provides procedures for Material Reprocessing and Consolidation (MARC) Operations supervisors to follow for the control of hazardous waste
6. CONTINGENCY PLAN	12	
7. GLOSSARY	13	
7.02 Acronyms	13	
7.03 Terms	16	
ATTACHMENTS		
A. Cold Cathode Tubes - Clean-Up Procedures		

and material resident in Telephone Company-owned equipment. All procedures outlined herein should be integrated with the Company policies as established and conveyed through the Disposition Services District of the Procurement-Logistics organization.

1.02 When this practice is reissued, the reason(s) for reissue will be indicated in this paragraph.

2.0 INTRODUCTION

2.01 The Environmental Protection Agency (EPA) has developed a system for regulating the management of hazardous wastes. In addition, the Department of Transportation (DOT) has rules prescribing certain requirements for packaging, identifying and manifesting hazardous waste and materials being transported. The purpose of DOT regulations is to regulate those items that are determined capable of posing unreasonable risks to health, safety and property during transport. Since much of the scrap received at the MARC Centers may contain hazardous wastes and/or material, these regulations may apply to scrapping procedures related to equipment designated for disposal. It is the MARC Operations supervisor's responsibility for ensuring that all hazardous wastes and/or material are properly removed and disposed of prior to the start of any dismantling, sorting, or upgrading procedures.

2.02 Hazardous materials, as defined by the DOT, are classified as:

- o Explosives
- o Flammable solids and liquids
- o Oxidizing material

- o Corrosive material
- o Compressed gases
- o Organic peroxides
- o Poisons, etiological agents and radioactive materials
- o Other regulated materials (ORM)

2.03 Hazardous materials known to exist in Telephone Company-owned equipment are:

- o Units containing mercury (gas or liquid)
- o Polychlorinated Biphenyls (PCB's)
- o Cold Cathode Tubes containing radioactive material
- o Microwave Equipment containing Beryllium Oxide
- o Wet Cell Batteries containing electrolyte (sulfuric acid)

2.04 Exhibit 1 of this outline is issued by the General Headquarters Environmental group in the Support Services organization and prescribes the overall company responsibilities concerning the federal regulations. It includes a synopsis of the regulations, the types of materials involved and general Company procedures.

2.05 As outlined in Exhibit 1, there are distinct differences between hazardous waste and hazardous materials as they relate to EPA and DOT regulations. These substances will be referred to throughout this section as hazardous material/waste.

2.06 Examples of Telephone Company-owned equipment that could be received at MARC Centers which may contain hazardous material/waste are:

- o Central Office Equipment
- o Private Branch Exchange Systems (PBX's)
- o Key Telephone Systems
- o Station Equipment
- o Coin Telephone Sets and Booths
- o Test Sets

NOTE: This is not an all inclusive listing of equipment containing hazardous material/waste. It is merely a sample of equipment known to contain hazardous material/waste.

2.07 All scrap materials received at MARC Center locations must have the hazardous material/waste identified, removed, staged and shipped in accordance with the regulations prescribed by the government. Equipment received at the MARC Center should have the hazardous material/waste removed by contractors or Telephone Company personnel prior to receipt, it is the ultimate responsibility of the MARC Operations supervisor to ensure that all hazardous material/waste is removed prior to final disposition of the scrap.

- (a) The Returned Material Notice (RMN) FA Form SW-6381, issued by the equipment engineer for processing of scrap should indicate on the RMN that Hazardous Mat'l/Waste has or has not been removed. Exhibit 2 illustrates how to mark the RMN.

HAZARDOUS MAT'L/WASTE REMOVED YES__ NO__

(b) Upon receipt of a scrap shipment at the MARC Center, the RMN should be checked for this entry. When the RMN indicates that hazardous material/waste has been removed and hazardous material/waste is found in the equipment, the SWB employee in charge of the removal should be notified to resolve these discrepancies.

2.08 It is the responsibility of the MARC Operations supervisor to ensure that all contracted personnel involved in the handling of hazardous material/waste perform these contracted duties in accordance with Southwestern Bell, EPA and DOT regulations.

2.09 Further, the MARC Operations supervisor must ensure that all persons (i.e., visitors, SWB employees) in the removal and staging work areas are aware that hazardous material/waste is being handled and that they act with integrity concerning its handling.

2.10 When handled properly and with adequate safety precautions as set out in these practices and procedures, the hazardous material/waste encountered in Telephone Company-owned equipment does not pose any danger to the persons involved. However, strict adherence to these practices and procedures on removal, storage and shipping of hazardous material/waste must be met in order to ensure the safety of the persons involved and of the environment.

2.11 Following is a list of the basic responsibilities of MARC Operations regarding hazardous material/waste:

- o To search scrap for hazardous material/waste.

- o To separate hazardous material/waste by type of material.
- o To package hazardous material/waste according to DOT and Company regulations.
- o To complete the Bill of Lading (FASW 6152A) for hazardous material shipments and/or Manifest as required for hazardous waste shipments.
- o To sign the Bill of Lading or Manifest as originator.
- o To obtain the transporter's signature on the shipping document.
- o To mail the originator copy of the shipping document to Disposition Services Control Center (DSCC) located in St. Louis, Missouri.
- o To maintain a local file of all outbound hazardous material/waste shipments.

3. IDENTIFICATION OF HAZARDOUS MATERIAL/WASTE

3.01 Under the EPA rules, the owner of waste is defined as a waste generator. With no exceptions, the generator is responsible for determining the constituents of their material/waste and, if hazardous, for assuring that it is disposed of properly.

3.02 To meet this requirement, all Company equipment that is designated for purposes other than reuse must be identified and, if necessary, searched for hazardous material/waste. This includes wet acid batteries, cold cathode tubes, beryllium

oxide components, and units containing mercury and PCB's.

4. HAZARDOUS MATERIAL/WASTE

4.01 Cold Cathode Tubes - This section provides instructions to follow when identifying, handling, storing, packaging and shipping radioactive cold cathode tubes, i.e., Radium 226 Bromide and Krypton 85 type tubes.

(a) Identification - Radioactive tubes, in general, can be identified by the dark purplish color of the glass envelope. However, the 423 type tubes will have a clear glass envelope. Radium 226 Bromide tubes are generally, but not always, marked with a magenta three bladed radioactivity symbol printed on the exterior glass envelope. Some of the older tubes will not be marked with the radioactivity symbol but must be packaged according to the instructions for Radium 226 Bromide tubes. None of the Krypton 85 tubes are labeled with the three bladed radioactivity symbol. Figure 1 illustrates the various shapes and associated dimensions of radioactive tubes. The tube code numbers are located next to the illustration. Use of Figure 1 and Table A will help to identify Radium 226 Bromide and Krypton 85 tubes.

(1) Radium 226 Bromide and Krypton 85 type cold cathode tubes are listed in Table A.

(2) Some older Radium 226 Bromide and Krypton 85 type cold cathode tubes have common tube code designations. This condition exists because when the new Krypton 85 type

tubes were first manufactured the code numbers assigned to the Radium 226 Bromide tube(s) being replaced were not changed. Table A can be used as a guide in the separation and identification of Radium 226 Bromide and Krypton 85 tubes. If the tube type cannot be determined, or if tubes are broken, they shall be considered 1.0 Microcurie Radium 226 Bromide for packaging and shipping purposes.

(b) Handling - During Central Office removals, when equipped frames are to be scrapped, all radioactive cold cathode tubes must be located and removed before the frame is dismantled or removed from its installed position. However, should radioactive tubes be encountered at the MARC Center, the following procedures shall be followed.

(1) The small amount of radiation provided by the cold cathode tube will not cause overexposure during normal handling on the job. However, to reduce personal exposure to a minimum, casual unnecessary handling is prohibited.

(2) When removing tubes from their installed positions, caution must be exercised to prevent them from falling and breaking. For hardwired tubes, two people are required for safe removal, i.e., one to support the tube on the equipment side of the frame while the second removes the wiring and mounting screws on the wiring side of the frame.

(3) The MARC Operations supervisor must be notified anytime a

radioactive tube is broken. In the event the MARC Operations supervisor cannot be reached, the Assistant Manager-Hazardous Materials Removals in the Disposition Services Control Center (DSCC) shall be contacted on tel. #314-247-9920.

(4) If a radioactive tube should break, walk out of the immediate area and wait a few minutes to prevent inhalation of expended dust and vapor before attempting to pick up broken parts.

(5) In the case of any broken Radium 226 Bromide tubes, the MARC Operations supervisor in charge of the clean up procedures shall perform Geiger counter tests to ensure that all surface contamination has been removed.

(6) Clean up procedures shall be followed as outlined in Attachment A.

(7) For safety precautions to be used when handling cold cathode tubes, see Attachment B.

(8) For hard wired tubes, all metal brackets and external leads shall be removed before packaging.

(c) Storage/Packaging - The fragile nature of cold cathode tubes and the potential danger of radioactive material/waste contained therein demands caution and care throughout the storage/packaging process.

(1) Cold cathode tubes are normally received at the MARC Center in

compartmented (egg carton type) fiberboard containers.

(2) Radium 226 and Krypton 85 tubes should be sorted by type for storage at the MARC Center. Fiberboard containers (R-4868A) should be ordered through the Local Purchasing Office (LPO) from:

Protecta-Pac Systems
705 Pennsylvania Ave. - South
Minneapolis, MN 55426
Tel: (612) 540-9500 or
(800) 328-1784

(3) Stacks of cold cathode tubes shall not be located within three (3) feet of fixed work areas.

(4) When sufficient quantities of tubes are on hand to fill a fifty-five (55) gallon drum (approximately 2000), the tubes should be transferred from the R4868A containers to a DOT approved 17H specification fifty-five (55) gallon drum.

(5) In order to reduce the surface radiation level of the drum, Radium 226 tubes should be placed in the center or core of the drum and Krypton 85 tubes shall be used to fill the drum. A ratio of 4:1 (Krypton:Radium) or greater should be utilized when packing tubes for disposal.

(6) Before placing tubes into a drum, a 2-3 inch layer of "bubble pack" or similiar packing materials should be placed into the bottom of the drum. As tubes are placed into the drum, the code

designation on each tube must be checked and recorded in microcuries to determine the radioactive material content of the drum. After the drum is filled, a 2-3 inch layer of "bubble pack" packing material should be placed on top of the tubes. The drum should then be closed and a security seal affixed.

(d) Shipping - Certain measurements of radiation levels are required to properly mark, label and ship drums of radioactive tubes. The radiation activity rate for the tubes contained in each drum must be recorded on the shipping document.

(1) There are three radiation measurements that must be taken by the shipper which will be used in completing the shipping documentation. These are defined below.

o Radiation level means the maximum radiation dose-equivalent rate at the shipping container's surface expressed in millirem per hour (mrem/h). For documentation purposes, the entire shipping container will have to be scanned using a Geiger counter to determine the maximum surface radiation level.

o Transport index means the dimensionless number (rounded up to the first decimal place) placed on the label of a package to designate the degree of control to be exercised by the carrier during transport. The Transport Index is obtained by determining the maximum radiation level in millirem per

hour (mrem/h) at one meter (3.3 feet) from the external surface of the shipping container.

- o Wipe test means a procedure for determining the nonfixed (removable) radioactive contamination on the external surface of the shipping container. In no case can the nonfixed contamination on the external surface of the package exceed 2.2 disintegrations per minute (dpm) per square centimeter (.4 x .4 square inches). The level of non-fixed radioactive contamination is determined by wiping an area of 300 square centimeters (approximately 6-4/5" x 6-4/5") of the container's surface with an absorbent material, using moderate pressure. Sufficient measurements must be taken in the most appropriate locations to yield a representative assessment of the nonfixed contamination levels. Three such measurements should be sufficient to meet this need.

(2) Instructions for labeling and final disposal of radioactive tubes may be obtained by contacting the Assistant Manager-Hazardous Materials Removal in the Disposition Services Control Center (DSCC) on tel. #314-247-9920 located in St. Louis, Missouri.

4.02 Units Containing Mercury - Mercury can be found in small amounts encapsulated in telephone equipment. Present scrap management practices require that mercury be purged from general scrap prior to disposition, and that subsequent disposition of the units containing mercury

may be sold for reclamation. Mercury can be found in Telephone Company equipment in the form of liquid mercury filled relays and mercury vapor filled tubes.

(a) Identification

(1) Mercury relays have two basic configurations, i.e., circular based and rectangular based. They are sealed with a smooth metal casing and many, but not all, have the warning "DANGER HIGH PRESSURE - DO NOT OPEN" printed on the casing. Others will have arrows indicating the direction in which it is to be installed. The relays vary in size and shape and are classified according to relay codes printed on the metal casing. Refer to Figure 2 which provides pictorial drawings with dimensions of each of the coded relays. Some relays are identical in appearance. Tables B and C list equipment which contains mercury relays. Table D lists mercury relays and the amount of mercury in each type. Table E lists mercury switches and the amount of mercury in each switch. Mercury relays are most commonly found in Central Office Equipment, PBX's, Key Systems, Coin Telephones and Test Sets.

(2) Mercury vapor tubes are usually long and narrow, e.g., some 6" to 9.5" in length and all are very fragile. These tubes are most commonly found in central office equipment. To assist in the identification of mercury vapor tubes, refer to Figure 2A which includes pictorial drawings and tube dimensions. The tubes that have been manufacture discontinued are not

illustrated in Figure 2A; however, they will be very similar in physical appearance. Table F lists mercury vapor tube codes and the amount of mercury vapor contained in each type.

(b) Handling

(1) Mercury Relays - Although mercury relays are not fragile, they shall not be treated harshly. The only dangerous condition that can arise is if a mercury relay should break causing liquid mercury leakage. Clean up procedures shall be followed as outlined in Attachment C. For safety precautions to be used when handling mercury relays, see Attachment D.

(a) Some mercury relays are plug-in type relays. These can be removed by simply pulling the relay from its socket.

(b) Other mercury relays have a soldered connection, such as those connected to circuit boards or packs. These relays should be removed from circuit boards by the use of desoldering equipment.

(c) Large quantities of securely packaged relays present no danger to personnel.

(2) Mercury Vapor Tubes - When handling mercury vapor tubes, caution must be exercised to prevent them from falling and breaking. Mercury vapor tubes, even when packaged shall not be located or stored in an unprotected area where damage could occur. If a tube should break when in a stored location or by

dropping, walk away from the immediate area for a few minutes to prevent inhalation of concentrated mercury vapor before attempting to reenter the area to pick up broken pieces. Clean-up procedures shall be followed as outlined in Attachment E. For safety precautions to be used when handling mercury vapor tubes, see Attachment F. Contained and broken tubes with their bases still engaged in sockets shall be removed by using an Electron Tube Extractor. After use, the extractor shall be washed with soap and water.

(c) Storage/Packaging

(1) Mercury relays shall be packaged loosely in fiber drums with a capacity of fifteen (15) to twenty (20) gallons. Before placing relays into the drum, a heavy duty plastic liner should be inserted into the drum. After filling the drum, the plastic liner should be sealed with heavy duty tape. Any damaged relays should be double bagged to prevent mercury leakage.

(2) Mercury vapor tubes should be individually wrapped with adequate cushioning material to prevent breakage. Wrapped tubes in a carton should be surrounded on all six sides by additional cushioning material. All cartons shall be sealed with pressure sensitive tape so as to prevent any mercury leakage.

(d) Shipping - Units containing mercury

(1) All Mercury shipments shall be shipped by overland means of

transportation. Specification outside packaging will not be required. However, shipping containers must be marked "Mercury Relays, N.O.I." or "Mercury Tubes, N.O.I. (whichever is appropriate) so that the contents can be easily identified by the recipient.

(2) Mark each shipping container with the appropriate address of the location originating the shipment.

(3) Bills of lading should include an appropriate description of the material being shipped, e.g.:

"Mercury Relays, N.O.I."

(4) Instructions for labeling and final disposal of mercury units may be obtained by contacting the Assistant Manager-Hazardous Materials Removal in the Disposition Services Control Center (DSCC) on tel. #314-247-9920 located in St. Louis, Missouri.

4.03 Polychlorinated Biphenyls (PCB's) -

(a) Identification - Presently two types of components containing PCB's have been identified, i.e., capacitors in telecommunication equipment and ballasts found in some older fluorescent, lighting fixtures. PCB's contained in electrical products are generally identified by company trade names, however, such components used in telecommunications equipment, by majority, are not so identified. Some ballasts found in fluorescent lighting could include units which contain PCB's. Dismantled fluorescent lighting ballasts

must be inspected for labels affixed to the ballast identifying one of the following PCB names:

AROCOLOR	HYVOL, J.
AROCOLOR B	INTERTEEN
ASBESTOL	KENNECHLOR
ASKAREL (generic)	NO-FLAMOL
CHLOREXTOL	PHENOCOLOR
CLORINOL	PHRALENE
CLORPHEN	PHDRAUL
DIACHLOR	PYRANOL
DK	PYROCLOR
DYKANOL, A, F, G, L, XL	SAF-T-KUHL
ELEMEX	SANTOTHERM
EUCAREL	THERMINOL
FENCLOR	

(1) To assist in the location and identification of PCB apparatus, refer to Tables G, H, I and J, and Figure 3 which gives pictorial drawings with dimensions and descriptions of PCB capacitors and condensers containing over three (3) pounds of PCB's.

Most, but not all, PCB capacitors have the following characteristics:

High voltage (over 200 VDC)
 Square or oval in shape
 Plastic or porcelain insulators on the terminals
 On oval capacitors, a rubber boot or plastic caps covering the terminals

o Table "G" provides a listing of capacitors by manufacturer's designated code numbers, their PCB weight, and associated illustration figures.

- o Table "H" provides a listing of capacitors with over three pounds of PCB's.
- o Table "I" provides a general listing of trade names which are known to be PCB types.
- o Table "J" provides location information using associated SD and J drawings of equipment which contains PCB apparatus.

(2) PCB capacitors are generally used by the Telephone Company in rectifiers and power units found in central office equipment and PBX's.

(3) Ballasts containing PCB's are most commonly found in fluorescent lighting units in coin telephone booths and central office frame mounted fixtures.

(4) As of July 1, 1979, the manufacture and export of PCB's in the United States was forbidden.

(5) Any capacitor that is labeled "ELECTROLYTIC" does not contain PCB's.

(b) Handling - When a component is suspected of containing PCB's and cannot be positively identified, it should be considered to contain PCB's and treated as such. Safety precautions as shown in Attachment H shall be used when handling items containing PCB's. Clean-up procedures shall be followed as outlined in Attachment G.

(1) Generally, a rectifier or power supply must be removed from a

piece of equipment to gain access to the capacitors. Once a PCB capacitor has been located, it can be removed by cutting the leads.

WARNING: Due to potential high voltage found in many capacitors, make sure the PCB capacitor is discharged, prior to removal from equipment. The capacitor may be discharged by grounding the bare terminals to the frame with an insulated screwdriver.

(2) Units containing PCB shall be separated from the other scrap and collected in 55 gallon steel drums meeting DOT 17H specifications.

(3) Capacitors containing three (3) pounds or more of PCB per capacitor are regulated under the EPA Toxic Substances Control Act. Contact the Disposition Services Control Center (DSCC) located in St. Louis for instruction prior to dismantling equipment containing PCB type capacitors weighing ten or more pounds.

NOTE: Capacitors containing ten (10) or more pounds of PCBs cannot be held in storage longer than thirty (30) days.

(c) Storage/Packaging

(1) All PCB components shall be packed in an openhead, steel drum which meets DOT 17H specification or equivalent container. This is a common 18 gauge steel drum which can be obtained locally. However, DOT 17H specifications must be emphasized.

(2) To prevent leakage from the drum, first insert a four (4) mill plastic liner into the drum, then place 2-3 inches of oil absorbent material into the drum. This can be ordered locally under trade names such as oil-dry, speedi-dry, sorbitol, safe-n-dry, zepposorb, absoran and oilsorb.

(3) Drums should be packed as to prevent any leakage or shifting of material during shipment.

(d) Shipping - Instruction for labeling and final disposal of PCB's may be obtained by contacting the Assistant Manager-Hazardous Materials Removal in the Disposition Services Control Center (DSCC) on tel. #314-247-9920 located in St. Louis, Missouri.

4.04 Batteries - Under present guidelines, removal and shipping of central office batteries will be performed from the central office involved and will not be received at the MARC Center locations. Therefore, no procedures for the handling of central office batteries will be issued in this practice.

(1) Wet Cell Batteries - For handling, packing, marking, and labeling of lead-acid type batteries refer to BR 010-160-201. Final disposition procedures shall be coordinated with Disposition Services Control Center (DSCC) on tel. #314-247-9920 located in St. Louis, Missouri.

(2) Other Types of Batteries - Ordinarily, small quantities of dry cell batteries may be discarded as trash. However, since most batteries contain chemicals, some of which may be

hazardous or toxic, when large numbers are discarded due to scrapping activities, end of shelf life, etc., questions related to proper disposal should be directed to the Disposition Services Control Center (DSCC) on tel. #314-274-9920 located in St. Louis.

NOTE: Other questions related to battery handling, shipping, and disposition should be directed to the Disposition Services Control Center (DSCC) located in St. Louis.

4.05 Beryllium Oxide

(a) Identification - Beryllium Oxide (BeO) a white ceramic material may be found encased in telephone company microwave equipment. Two components, a Beryllium Oxide Electron Tube (416-C) and a Traveling Wave Guide Amplifier (TWGA) contain varying amounts of BeO. The small amount of BeO contained in this equipment is protected by a metal housing. However, the glass apparatus contained within the TWGA may become separated from the main housing. Extreme care should be taken when handling this fragile item.

(b) Handling - Due to the highly toxic nature of BeO, utmost care should be exercised when handling components containing this material.

Warning: Beryllium oxide dust or fumes are highly toxic if inhaled, or if particles enter a cut or abrasion. Avoid handling the beryllium oxide ceramics; if they are touched, the hands must be washed before smoking or eating.

(c) Storage/Packaging - All beryllium components should be individually

wrapped with cushioning material. Pack all wrapped tubes in the center of a sturdy, sealable, cardboard container surrounded on all sides with cushioning material. All cartons shall be sealed with pressure sensitive tape.

(d) Shipping - Instructions for labeling and final disposition of beryllium oxide components may be obtained by contacting the Assistant Manager-Hazardous Materials Removal in the Disposition Services Control Center (DSCC) on tel. #314-274-9920 located in St. Louis, Missouri.

5.0 TRAINING

5.01 All MARC Center employees who handle hazardous materials/wastes shall be provided classroom or on-the-job training that teaches them the proper management of hazardous materials/wastes to ensure the MARC Center's compliance with all applicable rules and regulations.

5.02 The training shall be provided by the Asst. Mgr.-Hazardous Materials Removal or another individual who has knowledge of the characteristics of the hazardous materials/wastes stored at the MARC Center and the proper management of such materials.

5.03 The training shall include the following:

- (a) A description of the hazardous materials/wastes and the hazards associated with those materials.
- (b) A description of the proper management of these materials, such as proper containers and storage practices.

5.04 Employees shall take part in an annual review of their original training.

5.05 The following records shall be retained:

(a) The job title and description of each position at the location relating to hazardous material/waste management.

(b) The name of the employee filling each position and the employee's qualifications.

(c) A description of the type and amount of initial and continuing training that will be given to each position.

(d) Documentation that each employee has received the required training or experience.

(e) Training records of current personnel shall be retained until closure. Records for former employees shall be retained for 3 years from the date of the employee's departure.

6.0 CONTINGENCY PLAN

6.01 All MARC Centers that accumulate, handle or store hazardous material/waste shall develop a contingency plan for the protection of human health and the environment from fires, explosions, or releases of hazardous material/waste.

6.02 The MARC Operations supervisor and the Supv.-Removal Services should act as joint Emergency Coordinators.

6.03 At a minimum the plan must include:

- (a) A list of local emergency response teams including the telephone numbers of local Police, Fire Department, Hospitals, doctors and other emergency response teams.
- (b) Plan of action to minimize the possibility of the incident spreading or recurring, i.e., stopping operations, containing released material and posting "off limits".
- (c) An evacuation plan, including signals, main evacuation routes and alternate routes.
- 6.04 A copy of the contingency plan shall be maintained at the facility and be available for emergency response teams.
- 6.05 When there is an imminent or actual emergency situation, the Emergency Coordinator(s) should:
- (a) Evacuate the area and post "Off Limits".
- (b) In case of fire, notify local Fire Department.
- (c) Contact their immediate supervisor and be prepared to identify the character, source, amount and extent of the released materials. Also assess the hazards, both direct and indirect, to human health and the environment.
- (d) Report the incident as soon as reasonable to the Disposition Services Control Center (DSCC) located in St. Louis on tel. # 314-247-9920.
- 6.06 Following the incident, the Emergency Coordinator should contact the Disposition Services Control Center (DSCC) located in St. Louis on tel. # 314-247-9920 for assistance in clean-up, storage and disposal of the hazardous material/waste, contaminated soil, water or other debris resulting from the incident.
- 6.07 The Assistant Manager-Hazardous Material Removals is the contingency and emergency plan coordinator in the DSCC. This coordinator will assist in the preparation of these plans and will notify the company environmental specialist as required and will represent the DSCC in meeting with federal and state environmental representatives.
- 6.08 MARC Center contingency plans must be developed in concert with the local MARC Center contract. The MARC Center contract states, under the Emergency clause; "Buyer (the contractor) shall develop, prepare and be capable of implementing emergency plans in the event of a hazardous material/waste discharge". Based on this clause all MARC Center contingency plans will include references to the contractor's emergency response plan.
- 7.0 GLOSSARY
- 7.01 This glossary contains a list of environmental acronyms and other terms related to hazardous material/waste management.
- 7.02 ACRONYMS
- ACGIH American Conference of Governmental and Industrial Hygienists
- AEA Atomic Energy Act
- ANPR Advanced Notice of Proposed Rulemaking

APA	Administrative Procedures Act	DOT	Department of Transportation
ASTM	American Society of Testing & Materials	EIS	Environmental Impact Statement
BAT	Best Available Technology	EPA	Environmental Protection Agency
BLM	Bureau of Land Management	FAA	Federal Aviation Administration
BPT	Best Practicable Technology	FDA	Food and Drug Administration
CAA	Clean Air Act	FFDCA	Federal Food, Drug and Cosmetics Act
CAB	Civil Aeronautics Board	FHA	Federal Highway Administration
CAS#	Chemical Abstract Service Number	FHSA	Federal Hazardous Substances Act
CDC	Center for Disease Control	FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)	FR	Federal Register
CEQ	Council on Environmental Quality	FWPCA	Federal Water Pollution Control Act
CFC	Chlorofluorocarbons	HMT	Hazardous Materials Table
CFR	Code of Federal Regulations	HMTA	Hazardous Materials Transportation Act
CGA	Compressed Gas Association	IARC	International Agency for Research on Cancer
CPSA	Consumer Product Safety Act	IATA	International Air Transport Association
CPSC	Consumer Product Safety Commission	ICAO	International Civil Aviation Organization
CWA	Clean Water Act	ICC	Interstate Commerce Commission
DOC	Department of Commerce	IMDG	International Maritime and Dangerous Goods (Code)
DOD	Department of Defense	IMO	International Maritime Organization
DOE	Department of Energy		
DOI	Department of the Interior		

IUPAC	International Union of Pure and Applied Chemistry	NOAA	National Oceanic and Atmospheric Administration
LD ₅₀	Lethal Dose, 50%	NOI	Not Otherwise Indexed
LC ₅₀	Lethal Concentration 50%	NOIBN	Not Otherwise Indexed by Name
MARC	Material Reprocessing and Consolidation	NOS	Not Otherwise Specified
MDC	Material Distribution Center	NPDES	National Pollutant Discharge Elimination System
MRPSA	Marine Research, Protection and Sanctuaries Act	NRC	Non-reusable Container
MSC	Maritime Safety Commission	NRC	Nuclear Regulatory Commission
MSDS	Material Safety Data Sheet	NSPS	New Source Pollution Standards
MTB	Material Transportation Board	NTP	National Toxicology Program
NAAQS	National Ambient Air Quality Standards	OMB	Office of Management and Budget
NACE	National Association of Corrosion Engineers	ORM	Other Regulated Material
NAS	National Academy of Sciences	OSHA	Occupational Safety and Health Act
NBS	National Bureau of Standards	OSHA	Occupational Safety and Health Administration
NCI	National Cancer Institute	OSM	Office of Surface Management
NEPA	National Environmental Policy Act	PCB	Polychlorinated Biphenyl
NESHAPS	National Emissions Standards for Hazardous Air Pollutants	PMN	Pre-Manufacture Notification
NFPA	National Fire Protection Association	POTW	Publicly Owned Treatment Works
NIH	National Institute of Health	PPB	Parts Per Billion
NIOSH	National Institute on Occupational Safety and Health	PPM	Parts Per Million
		RCRA	Resource Conservation and Recovery Act

RPAR	Rebuttable Presumptions Against Registration	USDA	United States Department of Agriculture
RQ	Reportable Quantities	USGA	United States Geological Survey
RSPA	Research and Special Programs Administration	7.03	Terms
RTECS	Registry of Toxic Effects of Chemical Substances	<u>CAPACITOR</u>	
SDWA	Safe Drinking Water Act	A devise which stores electrical charges. Usually consists of two or more opposed conducting plates separated by thin layers of a non-conducting material.	
SEC	Securities and Exchange Commission	<u>COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (also known as "superfund")</u>	
SIC	Standard Industrial Classification	This act authorizes the EPA to administer funds allocated to cleanup hazardous substance releases from designated sites. Additionally, Congress also gave the EPA authority to recover from responsible parties, when identified, the costs incurred for cleanup activities.	
SIP's	State Implementation Plans	<u>CIRCUIT PACK</u>	
SPCC	Spill Prevention Control and Countermeasure (Plan)	A small plug-in unit in the form of a printed wiring board used for mounting components such as capacitors, inductors, diodes, resistors, transistors, etc., which are interconnected to perform one or more circuit functions such as amplification, gating, timing, etc.	
STS	Single Trip Container	<u>COMBUSTIBLE LIQUID</u>	
STCC	Standard Transportation Commodity Code	Any liquid with a flash point at or above 100°F and below 200°F and does not meet any other hazard class definition.	
STEL	Standard Term Exposure Limit		
TCS	Telephone Company Storeroom		
TLV	Threshold Limit Value		
TSA	Transportation Safety Act		
TSCA	Toxic Substances Control Act		
TSD	Treatment, Storage or Disposal		
TSDF	Treatment, Storage or Disposal Facility		
TWA	Time Weighted Average		

CORROSIVE MATERIAL

Any liquid or solid that causes visible destruction of human skin or a severe corrosion to steel.

DISPOSAL FACILITY

A facility or part of a facility at which hazardous waste is intentionally placed into or on the land or water, and at which the waste will remain after closure.

FLAMMABLE SOLID

Any solid likely to ignite easily through friction, retained manufacturing or processing heat or other means. Does not include explosives.

GENERATOR

Any person or facility, by site, that produces more than 1,000 kilograms (2,200 pounds) of hazardous wastes in a calendar month or accumulates that amount on-site at any one time.

HAZARDOUS CHEMICAL SUBSTANCES AND MIXTURES

Substances and mixtures which are regulated under TSCA in manufacturing, processing, distribution in commerce, use or disposal because it poses or will present an unreasonable risk of injury to health or the environment.

HAZARDOUS MATERIAL

Substances or materials which have been determined to be capable of posing an unreasonable risk to health, safety and property when transported in commerce.

HAZARDOUS MATERIAL SURVEY

A survey of equipment to be scrapped which provides for the identification, removal, staging and proper disposal of all material classified as hazardous by the EPA. This survey must be performed by qualified BOC personnel or contracted with an equally qualified Vendor prior to the removal of scrap.

HAZARDOUS SUBSTANCE

Includes items that are listed under the following environmental laws: (1) hazardous wastes regulated under the Resource Conservation and Recovery Act; (2) hazardous air pollutants regulated under the Clean Air Act; (3) water pollutants regulated under the Clean Water Act; and (4) hazardous chemical substances and mixtures regulated under TSCA.

HAZARDOUS SUBSTANCE RELEASE

Any spill, leaking, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of a hazardous substance into the environment.

HAZARDOUS WASTE

Wastes that have been identified as possibly causing or contributing to serious illness or death or that pose a substantial threat to human health or the environment if managed improperly. Hazardous wastes include (1) items that are listed in the federal rules, and (2) wastes that are not listed but exhibit one or more of the characteristics of a hazardous waste; i.e., ignitable, corrosive, reactive or toxic.

HAZARDOUS WASTE MANIFEST

A shipping document required for shipments of regulated quantities of hazardous wastes.

IRRITATING MATERIAL

A liquid or solid that, upon contact with fire or exposure to air, gives off dangerous or intensely irritating fumes. Does not include any Class A poison.

ORM-A

A material with anesthetic, irritating, noxious, toxic or similar property and which can cause annoyance or discomfort to passengers and crews in the event of a leak during transport.

ORM-B

Materials, including solids when wet, that can damage transport vehicles or vessels if leaked. Included are materials that corrode aluminum. (Mercury)

ORM-C

Materials with characteristics that make them unsuitable for transport unless properly managed. (Asbestos)

ORM-D

Materials, such as consumer commodities, that have properties that would classify in another hazard class but whose form, quantity and packaging presents a limited hazard.

ORM-E

RCRA hazardous wastes and CWA hazardous substances that do not meet the definition of any other hazard class. (PCB's)

RADIOACTIVE MATERIAL

Any material or combination of materials that emits ionizing radiation and has a specific activity in excess of 0.002 microcuries per gram.

RESISTOR

A device made of metal, carbon or other substance used to restrict or control the flow of electrical current.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) OF 1976

RCRA authorized the EPA to develop a system for regulating the management of hazardous wastes. These rules, known as the "Hazardous Waste Management System", became effective November 19, 1980.

SHIPPING PAPER

May be a shipping order, bill of lading, hazardous waste manifest, or other shipping document serving a similar purpose containing the information as required by the DOT.

SMALL QUANTITY GENERATOR

An individual facility that generates less than 1,000 kilograms (2,200 pounds) of hazardous waste in a calendar month or accumulates on-site less than that amount at any one time.

STORAGE FACILITY

The holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of or stored elsewhere.

TOXIC SUBSTANCES CONTROL ACT (TSCA) OF 1976

This act authorized the EPA to obtain production and test data from industry on selective chemical substances and mixtures and to regulate the substances when determined that they pose an unreasonable risk to human health or the environment. As a result of this act, the EPA developed the existing regulation on polychlorinated biphenyls (PCB's), titled "Polychlorinated Biphenyls: Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions."

TRANSISTOR

A tiny, efficient amplifying device that performs many of the functions of the vacuum tube. Consists of a small block of semiconductor, usually germanium, that has at least three electrodes. Has made possible the miniaturization of telephone and electronic apparatus.

TRANSPORTATION SAFETY ACT (TSA)

Although laws covering the transportation of hazardous materials date back from the late 1800's, this act was passed by Congress in 1974 and extends the DOT's authority to regulate hazardous materials, including regulated hazardous wastes and hazardous substances, when offered for shipment over public roadways. The Materials Transportation Bureau within the DOT is responsible for the continuing

administration of the existing rules entitled, "Hazardous Materials Regulations".

TREATMENT FACILITY

A facility utilizing any method, technique or process to change the physical, chemical or biological character or composition of the hazardous waste so as to neutralize the waste, recover energy or material resources from the waste, render it non-hazardous, or less hazardous for purposes of transporting, storing or disposal; or amenable for recovery or storage, or reduced in volume.

ATTACHMENT A

Attachment A
Page 1 of 1

CLEAN-UP PROCEDURES - COLD CATHODE TUBES

1. Employees who have cuts, abrasions or open sores on exposed parts of the body, particularly the hands, shall not handle broken parts from radioactive tubes.
2. Prior to picking up broken parts of radioactive tubes, employees shall wear a pair of Cotton Gloves.
3. Safety glasses shall be worn during clean-up procedures.
4. Employees who cut themselves in the process of handling broken parts of radioactive tubes shall immediately wash the cuts in warm water with mild soap. Rinse thoroughly. Repeat the above procedure three times. Report the injury to the job supervisor.
5. Using rigid pieces of paper, pick up the broken tube pieces and place them in the center of a suitably-sized rag. Fold and place the rigid pieces of paper on top of the broken parts, then tie each pair of diagonal ends securely to form a compact bundle.
6. Clean the affected floor area with a second, larger damp cloth. When finished, spread the cloth out on the floor so that the contaminated side is facing upward. Place bundle of broken tube pieces in the center, place gloves on top of bundle, tie each pair of diagonal ends of the cloth securely to form a compact bundle.
7. Place the bundle in a suitably-sized plastic bag obtained locally and seal closed with pressure sensitive tape. Place the bundle in an appropriately-sized shipping carton and seal securely with pressure sensitive tape or 3" wide tape. Final disposition of these materials will be the same as cold cathode tubes.
8. Do not use vacuum cleaners or brooms to pick up broken parts of radioactive tubes.
9. Do not dispose of broken parts of radioactive tubes through common rubbish removal service.
10. If there is an accidental breakage of ten (10) or more radioactive tubes at one location, the immediate area shall be covered with sheet material such as plastic or canvas to prevent radioactive dust and glass particles from spreading. The area shall be posted "OFF LIMITS" to alert all personnel and to ensure that the hazardous materials do not spread. For assistance in proper clean-up procedures, contact the Asst. Mgr.-Hazardous Material Removals in the Disposition Services Control Center (DSCC) located in St. Louis, Missouri on 314-247-9920.
11. After clean-up procedures have been performed, the supervisor in charge shall perform Geiger counter tests to ensure that all surface contamination has been removed.
12. Wash hands thoroughly with soap and water upon completion of any radioactive material clean-up procedure.

ATTACHMENT B

Attachment B

SAFETY PRECAUTIONS - COLD CATHODE TUBES

1. No food, drink, or smoking should be permitted when radioactive cold cathode tubes are being handled. Wash hands thoroughly with water and mild soap before eating, drinking, or smoking.
2. The slight amount of radiation produced by the cold cathode tubes will not cause overexposure during normal handling on the job. However, to contain the level of personal exposure to a minimum, the practice of carrying spare tubes in clothing and casual unnecessary handling is prohibited.
3. It is recommended that cold cathode tubes be handled and packaged by a small number of trained individuals.
4. Stack(s) of radioactive cold cathode tubes shall not be located within three feet of fixed work location.
5. Photographic film shall not be stored within fifteen feet of any concentrated source of radioactivity.
6. Cartons of radioactive type cold cathode tubes stacked on the floor for temporary storage shall be protected from accidental damage by placing an appropriately sized sheet of plywood, masonite, or other similar structural material on top of the stack to prevent tube breakage.
7. Because floor materials can become contaminated if Radium Bromide tubes are dropped and broken, it is recommended that a temporary floor covering (paper or other material) be spread in work areas prior to removal.
8. If a radioactive tube(s) should break, walk out of the immediate area and wait a few minutes to prevent inhalation of expended dust or vapors before attempting to pick up broken parts. DO NOT WALK ON PIECES OF BROKEN GLASS. Follow instructions as indicated under Attachment "A".

ATTACHMENT C

Attachment C

CLEAN-UP PROCEDURES - MERCURY RELAYS

1. Any skin area, particularly open cuts, sores, or abrasions exposed to liquid mercury shall be rinsed and washed in warm water and mild soap several times. The job supervisor shall be notified and, for those situations where the liquid mercury had contacted open cuts, sores, or abrasions.
2. Loose mercury should be cleaned up immediately.
3. Safety eyeglasses or chemical safety goggles will be worn.
4. Acid resistant gloves shall be worn to prevent mercury contact with the hands. Under no circumstances shall loose mercury be touched with bare hands.
5. Loose liquid mercury shall only be picked up by scooping it up with rigid pieces of paper and then placed in a sealable container such as a plastic bottle. Containers must be sealed tightly and resist damage causing leakage. These containers may be packed and shipped with mercury relays.
6. Do not attempt to use vacuum cleaners, brooms, or rags to pick up spilled mercury.
7. Mercury relays and containers of mercury shall never be disposed of through common rubbish removal service.
8. Clothing contaminated with mercury shall be packaged in sufficiently sized double plastic bags marked "Mercury Contamination" and discarded locally.
9. Note: Mercury is highly corrosive with respect to aluminum. Do not put tubes or broken pieces in aluminum containers.
10. Wash hands thoroughly with warm water and mild soap upon completion of clean-up.

ATTACHMENT D

Attachment D

SAFETY PRECAUTIONS - MERCURY RELAYS

1. The liquid mercury in the relay becomes a safety handling problem should the casing break and leak.
2. Liquid mercury is poisonous and under no circumstances shall it come in contact with the skin, eyes or internal parts of the body.
3. No food, drinking, or smoking shall be permitted in areas where mercury relays are being handled.
4. Employees shall wear safety eyeglasses for minimum eye protection. If necessary the Chemical Safety Goggles shall be worn when a Mercury Relays(s) are leaking from above eye level. Employees shall wear the Acid Resistant Gloves to prevent mercury contact with the hands.
5. Although Mercury Relays are air-tight and are highly resistant to damage to cause leakage, caution shall be exercised to prevent physical damage.
6. Large quantities of securely packaged Mercury Relays present no danger to personnel.
7. The only condition that can arise is if a Mercury Relay(s) should break in a manner which causes liquid mercury leakage. All loose mercury shall be cleaned up immediately. See clean-up procedures as shown in Attachment "C".

ATTACHMENT E

Attachment E

CLEAN-UP PROCEDURES - MERCURY VAPOR TUBES

1. Employees who have cuts, abrasions, or open sores on exposed parts of the body, particularly the hands, shall not handle broken mercury vapor tubes.
2. Safety eyeglasses or chemical safety goggles must be worn.
3. Mercury Vapor Tubes shall never be disposed of through a common rubbish removal service.
4. Do not use vacuum cleaners or brooms to pick up broken parts of Mercury Vapor Tubes.
5. Mercury residue may be present on broken tube parts. Mercury, being poisonous, should not come in contact with the skin. Under no circumstances shall a broken tube be touched with bare hands. Prior to picking up broken parts of Mercury Vapor Tubes put on a pair of Acid Resistant Gloves.
6. With a rigid piece of paper, place the broken pieces on a suitably sized rag. Fold and place the piece of rigid paper on the rag, wrap and tie the rag's diagonal ends securely.
7. Clean the affected floor area with a second larger damp cloth. When finished, spread it out so that the contaminated side is facing upward.
8. Place the bundle of broken pieces in the center and tie each pair of the diagonal ends of the cloth securely.
9. Place this larger bundle in an adequately large plastic bag and seal with Tape. This bag will then be packed and shipped with mercury vapor tubes.
10. Wash hands thoroughly with soap and water upon completion of clean-up procedures.
11. Employees who cut themselves in the process of handling broken parts of mercury vapor tubes shall immediately rinse the cut(s) in cold water for a minimum of five (5) minutes. The wound and hands shall be washed thoroughly with soap and lukewarm water and rinsed. Report the injury to the Job Supervisor.

ATTACHMENT F

Attachment F

SAFETY PRECAUTIONS - MERCURY VAPOR TUBES

1. Employees who have cuts, abrasions, or open sores on exposed parts of the body, particularly the hands, shall not handle mercury vapor tubes.
2. When handling, installing, or removing Mercury Vapor Tubes, caution must be exercised to prevent them from falling and breaking.
3. No food, drinking, or smoking shall be permitted in areas where mercury vapor tubes are being handled.
4. Employees shall wear safety eyeglasses for minimum eye protection. Chemical Safety Goggles should be worn when Mercury Vapor Tubes are handled, installed, or removed at or above eye level.
5. Mercury Vapor Tubes, even when packaged, shall not be located or stored in an unprotected area where damage could occur.
6. If Mercury Vapor Tubes break when in a stored location or by dropping, walk away from the immediate area for a few minutes to reduce the possibility of any concentrated mercury vapor before attempting to reenter the area to pick-up broken pieces. Follow clean-up procedures as outlined in Attachment "E".
7. Note: Mercury is highly corrosive with respect to aluminum. Do not put tubes or broken pieces in aluminum containers.

ATTACHMENT G

Attachment G

CLEAN-UP PROCEDURES - POLYCHLORINATED BIPHENYLS (PCB'S)

1. Employees who have cuts, abrasions, or open sores on exposed parts of the body, particularly the hands, shall not handle PCB parts suspected of leakage.
2. Safety glasses or chemical safety goggles shall be worn during clean-up procedures.
3. Small spills from capacitors or ballasts seldom cause any respiratory problems; however, when leaking PCB's come in contact with a heat source, the PCB material may vaporize. Inhalation of these vapors may cause possible respiratory problems, therefore, confined spaces must be ventilated.
4. Acid resistant gloves shall be worn. Under no circumstances will leaking components be touched with bare hands.
5. Liquid PCB spills should be cleaned up by using rags and/or other absorbent materials. The residual PCB's should be removed by using a petroleum solvent, such as Amway's Industrial Cleaner or other non-flammable type petroleum solvents. Use the solvent sparingly on a cloth.
6. CAUTION: Solvents are highly flammable and shall be kept away from heat and sparks. Also, avoid prolonged breathing or repeated contact with skin.
7. Contaminated rags, gloves, and absorbent materials shall be placed into a plastic bag and stored in a 55 gallon steel drum. Final disposition of these materials will be the same as PCB type capacitors.
8. If PCB's should get into the eyes, they should be irrigated with water for at least fifteen minutes. Further, if PCB's enter an open wound or abrasion, the area shall be cleaned with soap and water at least three times. Report the injury to the Job Supervisor.
9. Wash hands thoroughly with warm water and soap upon completion of clean-up procedures.

ATTACHMENT H

Attachment H

SAFETY PRECAUTIONS - POLYCHLORINATED BIPHENYLS (PCB'S)

1. No food, drinking, or smoking shall be permitted in areas where PCB items are being handled or stored.
2. Exposure to low concentrations of PCB's may cause long term toxic effects in many living organisms.
3. Safety glasses shall be worn when a PCB type capacitor or ballast is to be removed from equipment.
4. Acid resistant gloves shall be worn when handling PCB components or when cleaning-up any PCB spillage.
5. WARNING: Due to high voltage found in many capacitors, make sure the capacitor is discharged prior to removal from equipment. The capacitor may be discharged by grounding the terminals to the frame with an insulated screwdriver.
6. Small spills from capacitors or ballasts seldom cause any respiratory problems; however, when leaking PCB's come in contact with a heat source, the PCB material may vaporize. Inhalation of these vapors may cause possible respiratory problems, therefore, confined spaces must be ventilated.
7. If PCB's should get into the eyes, they should be irrigated with water for at least fifteen minutes. Further, if PCB's enter an open wound or abrasion, the area shall be cleaned with soap and water at least three times. Contact the Job Supervisor immediately.
8. Follow clean-up procedures as outlined in Attachment "G".
9. Wash hands thoroughly with warm water and soap after handling any PCB item.

EXHIBIT 1

EXHIBIT 1
Page 1 of 5

SOUTHWESTERN BELL'S RESPONSIBILITIES UNDER
THE FEDERAL HAZARDOUS WASTE MANAGEMENT RULES

I. BACKGROUND

- 1.01 The Resource Conservation and Recovery Act (RCRA) of 1976 authorized the federal Environmental Protection Agency (EPA) to develop a system for regulating the management of hazardous wastes. These rules, known as the "Hazardous Waste Management System," became effective November 19, 1980. The purpose of the rules is to provide the federal government with administrative control for assuring that hazardous wastes are handled, stored, transported, and disposed of in an environmentally-sound manner.
- 1.1 Consistent with these rules, all the states within Southwestern Bell's territory have promulgated regulations. At the present time, the federal and state governments are administering their respective programs. Consequently, those parties that are regulated by the rules must notify both levels of government of activities and complete dual reporting. In the future, however, the states will administer their own programs in lieu of the federally-run program.
- 1.2 In addition, Title 49 of the Code of Federal Regulations prescribes the requirements for packaging, identifying and preparing shipping papers on hazardous materials and wastes being readied for transport. These rules are administered by the Federal Department of Transportation (DOT).
- 1.3 Except where noted, the following substances are generated by the Company as a result of equipment removals in sufficient quantities to be regulated by the above rules.

<u>Substance</u>	<u>Source</u>	<u>Hazard Class</u>
Sulfuric acid and sludge	Scrap (CO batteries)	Corrosive Toxic
Mercury	Scrap (Relays, plug-ins)	Toxic
#Radioactive tubes	Scrap (Central Office)	Toxic

#Not subject to EPA rules; however, material must be packaged and transported in accordance with DOT rules.

EXHIBIT 1
(Continued)EXHIBIT 1
Page 2 of 5

- 1.4 Another substance, polychlorinated biphenyls (PCB's), is covered by separate rules promulgated by the EPA on July 2, 1979 under the Toxic Substances Control Act (TSCA). This chemical is also subject to the DOT rules relating to transportation. PCB's can be found in some telephone equipment capacitors used by the Company.
- 1.5 Under the EPA's rules on Hazardous Waste Management, hazardous waste is defined as an item which is removed from service for which it was initially intended and is by nature either toxic, ignitable, reactive, or corrosive.
- 1.6 Hazardous wastes generated in a product or raw storage tank, a product or raw material transport vehicle, a product or raw material pipeline or in a manufacturing process unit are exempt from certain regulations. According to the rules, hazardous wastes generated in this manner do not become regulated until it exits the unit in which it was generated.
- 1.7 Hazardous wastes (e.g., mercury, electrolyte and sludge) are regulated by the EPA when an aggregate weight of 2,200 pounds is generated during a calendar month at a location and will not be reused, reclaimed or recycled. Before a generator of regulated hazardous wastes can ship the wastes off-site, they are required to obtain an EPA Generator Identification Number for the location, utilize transporters and treatment/storage/disposal facilities that have EPA Identification Numbers applicable to their respective operations, and prepare a special shipping document, known as a hazardous waste manifest.
- 1.8 In addition to the EPA's rules, Congress has specifically addressed the responsibilities of generators in two pieces of legislation. Under the framework contained in Subtitle C of RCRA, generators are given "cradle to grave" responsibility for ensuring that hazardous wastes are handled, transported and disposed of in an environmentally-sound manner. Also, the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980 authorized the government to apportion the cost of cleaning up hazardous waste pollutants released from disposal or reclamation sites to the generators. Consequently, the Company must do everything possible to minimize the risk relative to the handling of hazardous materials/wastes generated from the Company-owned equipment.

II. DISPOSITION OF EQUIPMENT

- 2.0 The following information outlines the present procedures used for removing telephone company equipment from service for purposes other than reuse that contains hazardous materials/wastes as outlined in paragraphs 1.3 and 1.4.

EXHIBIT 1
(Continued)

EXHIBIT 1
Page 3 of 5

NOTE: The distinction between hazardous material and hazardous waste must be understood. The former (hazardous material) denotes substances which are by nature hazardous and are regulated by DOT rules for the purpose of transporting. The latter (hazardous waste) are substances which are listed in the EPA's Hazardous Waste Management rules or have the characteristics of a hazardous waste as defined by the rules and will not be revised, reclaimed or recycled. When generated in sufficient quantities, these wastes are regulated under the EPA and DOT rules.

A. BATTERIES

- 2.1 As presently viewed and substantiated by laboratory analysis performed, the electrolyte contained in telephone company batteries is a hazardous waste because it meets the EPA definition of corrosiveness; additionally, the sludge (i.e., residual material at the bottom of a battery is both corrosive and toxic because of the lead solids. The Company becomes a generator of hazardous waste when the electrolyte and/or sludge is removed from the battery prior to shipment and will not be reused, reclaimed, recycled, or rendered harmless.
- 2.2 When not designated for reuse, the Company sells wet acid batteries generated from equipment removals to scrap dealers that reclaim the lead. In most instances, the batteries are shipped intact with the electrolyte and sludge containerized on the batteries. In some cases, however, the electrolyte is drained because the fragility or bulk of the battery poses a potential risk of an accident occurring when the battery is moved. Because the sludge is heavier in weight than the liquid electrolyte and is segregated at the bottom of the battery, the acid can readily be siphoned without removing the sludge. Furthermore, the sludge should not purposely be removed as the lead can be reclaimed during the smelting process.
- 2.03 In conclusion, the Company is not regulated as a hazardous waste generator when batteries are removed and shipped intact. However, the Company becomes a regulated generator of hazardous waste when the electrolyte is removed on premises from the batteries prior to shipment and will be disposed of without treatment.

B. UNITS CONTAINING MERCURY

- 2.4 Mercury is a listed hazardous waste under EPA rules and can be found in small amounts encapsulated in telephone equipment. Present scrap management practices require that units containing mercury be purged from the general scrap prior to disposition and that subsequent disposition of the units be handled in an environmentally sound manner.
- 2.5 Under present arrangements these units are sold for mercury reclamation.

EXHIBIT 1
(Continued)EXHIBIT 1
Page 4 of 5

C. POLYCHLORINATED BIPHENYLS (PCB'S)

- 2.6 As mentioned in paragraph 1.4, PCB's can be found in telephone equipment capacitors, the preponderance of which contain less than 1.36 kilograms (kg.) of dielectric. Small PCB capacitors, defined by the EPA as those containing less than 1.36 kg. (three pounds) of dielectric, can be disposed of as municipal solid waste.
- 2.7 According to existing Company practices, PCB capacitors are segregated from the general scrap prior to removal. These capacitors should be collected and disposed of by EPA approved incinerator.
- 2.08 Also, by EPA definition, a fluorescent light ballast is a small capacitor. Therefore, fluorescent light ballasts containing PCB's, which are taken out of service as part of a central office removal, should be collected and placed with the other PCB capacitors in preparation for incineration.
- 2.09 Company guidelines on PCB's contained in transformers and other equipment related to Support Services' operations (i.e., buildings, automotive) are covered in Environmental Planning Guideline Number 1, a copy of which is on file in the State Environmental Coordinator's office.

D. COLD CATHODE TUBES

- 2.10 There are two types of radioactive cold cathode tubes: (1) radium bromide tubes contain radioactive materials, and (2) krypton tubes are filled with radioactive gas. These tubes are not subject to the EPA rules; however, they must be packaged and transported in accordance with federal DOT rules. At present, these units are being accumulated at MARC (Material Reprocessing and Consolidation) Center locations, for later transportation and disposal at storage sites licensed by the Nuclear Regulatory Commission.

III. COMPANY POLICIES AND PROCEDURES UNDER FEDERAL-STATE RULES

- 3.0 The Company will obtain Generator Identification Numbers and manifest electrolyte generated from equipment removals where the hazardous waste is removed for purposes other than reuse or is not rendered harmless by elementary neutralization prior to shipment and is generated in a sufficient quantity as defined by the federal and state laws on this matter.
- 3.1 Although PCB's are covered by TSCA, most states regulate the disposal of PCB's within their borders under their hazardous waste management laws. Consequently, the Company must comply with the same requirements as outlined in paragraph 3.0 for obtaining Generator Identification Numbers and manifesting PCB capacitors being shipped for incineration.

EXHIBIT 1
(Continued)

EXHIBIT 1
Page 5 of 5

3.2 As the MARC Center are the Company accumulation points for PCB capacitors prior to disposal, EPA Generator Identification Numbers have been obtained for these locations. Furthermore, each MARC Center location has a supervisor that has been designated with the responsibility for hazardous waste management. Based on information supplied by the Environment organization in the Support Services organization, the hazardous waste supervisor will review each removal and evaluate the need for obtaining EPA Identification Numbers file and obtain the numbers, where appropriate and retain copies of the hazardous waste manifest for three years as required under the rules.

B. TRANSPORTATION REQUIREMENTS

3.3 A universal manifest document will be used on shipments of regulated hazardous wastes where no requirements exist for using a state form. On shipments of unregulated hazardous materials and wastes, the standard bill of lading form will be used for record-keeping purposes. In both cases, copies of this documentation will be retained by the MARC Center hazardous waste supervisor for a minimum of three years.

TABLE A

TABLE A
Page 1 of 2COLD CATHODE TUBE
CONVERSION CHART

TUBE CODE	<u>RADIUM BROMIDE TUBES</u>		DATE CONVERTED TO KR-85	<u>KRYPTON TUBES</u>		CODE M.D. REPLACED BY
	RADIUM 226 CONTENTS			KRYPTON 85 CONTENT		
	MICROCURIES	MILLICURIES		MICROCURIES	MILLICURIES	
313A	0.10	0.0001	-	-	-	313C
313B	0.10	0.0001	-	-	-	313CA
313C	0.01	0.00001	6026	0.50	0.0005	-
313AA	0.10	0.0001	-	-	-	313CA
313CA	0.01	0.00001	6026	0.50	0.0005	-
313CB	0.01	0.00001	6026	0.50	0.0005	-
313CC	0.01	0.00001	6026	0.50	0.0005	-
313CD	0.01	0.00001	6026	0.50	0.0005	-
333A	0.01	0.00001	-	-	-	426A
346A	0.10	0.0001	-	-	-	346B
*346B	1.00	0.001	-	-	-	346C
346C	-	-	5952	4.50	0.0045	-
353A	0.01	0.00001	6026	0.50	0.0005	-
358A	-	-	6026	0.05	0.00005	-
359A	0.01	0.00001	6013	1.20	0.0012	-
372A	0.01	0.00001	-	-	-	426A
376A	0.10	0.0001	-	-	-	376B
*376B	1.00	0.001	-	-	-	376C
376C	-	-	5952	4.00	0.004	-
395A	0.01	0.00001	6039	1.60	0.0016	-
411A	0.01	0.00001	-	-	-	425A
*413A	1.00	0.001	-	-	-	413B
413B	-	-	5952	4.40	0.0044	-
423A	0.01	0.00001	-	-	-	423C
*423B	0.50	0.0005	-	-	-	423C
423C	-	-	6052	4.50	0.0045	-
425A	0.01	0.00001	6026	2.10	0.0021	-
426A	0.01	0.00001	6013	2.00	0.002	-
427A	0.10	0.0001	6039	4.00	0.004	-
*430A	0.50	0.0005	-	-	-	430B
430B	-	-	5952	4.50	0.0045	430C
430C	-	-	7226	15.00	0.015	-
432A	0.01	0.00001	-	-	-	432B
432B	0.01	0.00001	6052	4.50	0.0045	-
439A	0.01	0.00001	6139	3.00	0.003	-
443A	0.01	0.00001	6013	2.00	0.002	-
446A	0.10	0.0001	6026	0.10	0.0001	-
447A	0.01	0.00001	6026	0.10	0.0001	-
451A	0.01	0.00001	6026	2.10	0.0021	-
453A	0.01	0.00001	6026	0.30	0.0003	-
*5589	1.00	0.001	-	-	-	None
6140	0.01	0.00001	6052	4.50	0.0045	-
6141	0.10	0.0001	6039	4.00	0.004	-
6167	0.01	0.00001	6139	3.00	0.003	-
6388	0.01	0.00001	6013	2.00	0.002	-

TABLE A
(Continued)TABLE A
Page 2 of 2

*RAD-226 tubes may be marked with 3 bladed magenta radiation symbol. No KR-85 tubes are marked with this symbol.

- NOTES: 1. The date that a specific code was converted to Krypton-85 from Radium Bromide can be determined as follows:
- The year and quarter of manufacture are indicated by a four digit code. The first two digits indicate the year of manufacture and the last two digits indicate the quarter of manufacture. Example: The number 5952 marked on a tube indicates that the tube was manufactured in the last quarter (October thru December) of 1959. If the last two digits were 13, 26 or 39, this would indicate manufacture in the first, second or third quarter of any given year.
2. Prior to the "Date Converted to KR-85", tubes contained Radium Bromide. From this "date" and later, tubes contained Krypton-85. No other criteria, including the presence or absence of the magenta three-bladed radiation symbol, shall be used to determine if a tube is a Radium Bromide or Krypton-85 tube.
3. Cold Cathode tubes that have a three digit manufacturing code contain Radium Bromide.
4. Cold Cathode tubes normally can be identified by the dark purplish color of the glass envelope. However, the 423 type tubes will have a clear glass envelope.

TABLE B

TABLE B
Page 1 of 1

ITE CODED (INSTALLATION) TEST SETS
CONTAINING HAZARDOUS MATERIALS

<u>SET NO.</u>	<u>HAZARDOUS MATERIALS</u>	<u>CONTROLLING PECC ORG.</u>
ITE-4702	Mercury Relay/s	LE-13
ITE-4643	Mercury Relay/s	LE-13
ITE-5155	Mercury Relay/s	LE-13
ITE-5284	Mercury Relay/s	LE-13
ITE-5670	Mercury Relay/s	LE-13
ITE-5675	Mercury Relay/s	LE-13
ITE-5955	Mercury Relay/s	LE-13
ITE-5963	Mercury Relay/s	LE-13
ITE-5964	Mercury Relay/s	LE-13
ITE-5462	Mercury Relay/s	KY-1
ITE-5502	Mercury Relay/s	KY-1
ITE-5735	Mercury Relay/s	DR-4
ITE-5018	Mercury Relay/s	CB-3
ITE-5248	Mercury Relay/s	CB-3
<u>ACCESSORY SETS</u>		
ITE-5945	Mercury Relay/s CP-ED-35127-30	CB-6

TABLE C

TABLE C
Page 1 of 1SPARE PACKS PACKAGES (SPP'S)
CONTAINING HAZARDOUS MATERIALS

<u>SPP NO.</u>	<u>CP'S CONTAINING MERCURY RELAY/S</u>	<u>CONTROLLING ORG.</u>
SPP-831 (SxS CDA)	JW-95	CB-6
SPP-831 (SxS CDA)	JW-96	CB-6
SPP-831 (SxS CDA)	JW-97	CB-6
SPP-831 (SxS CDA)	JW-98	CB-6
SPP-831 (SxS CDA)	JW-104	CB-6
SPP-831 (SxS CDA)	JW-126	CB-6
SPP-831 (SxS CDA)	JW-132	CB-6
SPP-831 (SxS CDA)	JW-133	CB-6
SPP-831 (SxS CDA)	JW-149	CB-6
SPP-831 (SxS CDA)	JW-150	CB-6
SPP-831 (SxS CDA)	ED-35032-30	CB-6
SPP-831 (SxS CDA)	ED-35033-30	CB-6
SPP-831 (SxS CDA)	ED-35084-30	CB-6
SPP-838 (Mini-ROTL)	CP-3 ED-35115-30	CB-6
L-1 (SxS) (Mini-ROTL)	CP-4 ED-35116-30	CB-6
L-1 (SxS) (Mini-ROTL)	CP-6 ED-35118-30	CB-6
L-1 (SxS) (Mini-ROTL)	CP-8 ED-35120-30	CB-6
L-1 (SxS) (Mini-ROTL)	CP-9 ED-35131-30	CB-6
L-1 (SxS) (Mini-ROTL)	CP-11 ED-35130-30	CB-6
L-2 (#3 ESS) (Mini-ROTL)	CP-6 ED-35118-30	CB-6
L-2 (#3 ESS) (Mini-ROTL)	CP-15 ED-2C551-30	CB-6
L-2 (#3 ESS) (Mini-ROTL)	CP-16 ED-2C552-30	CB-6
L-2 (#3 ESS) (Mini-ROTL)	CP-21 ED-2C554-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-4 ED-35116-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-6 ED-35118-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-8 ED-35120-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-23 ED-27932-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-24 ED-27933-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-25 ED-27934-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-26 ED-27935-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-27 ED-27936-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-28 ED-27937-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-29 ED-27938-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-30 ED-27939-30	CB-6
L-3 (#5 Crossbar) (Mini-ROTL)	CP-31 ED-27940-30	CB-6

TABLE D

TABLE D
Page 1 of 5MERCURY RELAYS

RELAY CODE	DESIGN PLUG IN	WIRE IN	UNITS PER CARTON	GRAMS OF MERCURY/ UNIT	GRAMS OF MERCURY/ CARTON	CARTON WEIGHT #
275A	X		100	2.98	298.	28
B	X		100	2.98	298.	28
C	X		100	2.98	298.	28
D	X		100	2.98	298.	28
E	X		100	2.98	298.	28
F	X		100	2.98	298.	30
276A	X		100	2.96	296.	35
AA	X		100	2.96	296.	36
AC	X		100	2.96	296.	30
B	X		100	2.96	296.	31
C	X		100	2.96	296.	31
D	X		100	2.96	296.	30
E	X		100	2.96	296.	31
F	X		100	2.96	296.	31
G	X		100	2.96	296.	31
H	X		100	2.96	296.	35
J	X		100	2.96	296.	31
K	X		100	2.96	296.	30
L	X		100	2.96	296.	35
M	X		100	2.96	296.	30
N	X		100	2.96	296.	31
R	X		100	2.96	296.	30
S	X		100	2.96	296.	34
T	X		100	2.96	296.	30
U	X		100	2.96	296.	30
W	X		100	2.96	296.	30
Y	X		100	2.96	296.	36
292A	X		100	2.98	298.	40
B	X		100	2.98	298.	41
C	X		100	2.98	298.	41
294A		X	100	1.15	115.	21
B		X	100	1.15	115.	21
C	X		100	1.15	115.	21
301B	X		100	1.15	115.	31
303A	X		100	1.15	115.	27
B	X		100	1.15	115.	27
C	X		100	1.15	115.	27
D	X		100	1.15	115.	27
E	X		100	1.15	115.	25
F	X		100	1.15	115.	25
G	X		100	1.15	115.	20
H	X		100	1.15	115.	25
J	X		100	1.15	115.	27
K	X		100	1.15	115.	29
L	X		100	1.15	115.	24

TABLE D
(Continued)

TABLE D
Page 2 of 5

MERCURY RELAYS

RELAY CODE	DESIGN PLUG IN	WIRE IN	UNITS PER CARTON	GRAMS OF MERCURY/ UNIT	GRAMS OF MERCURY/ CARTON	CARTON WEIGHT #
313A		X	36	2.30	82.8	16
B		X	36	1.15	41.4	16
C		X	36	1.15	41.4	15
314A	X		12	1.15	13.8	18
B	X		12	2.30	13.8	16
315A		X	36	1.15	41.4	25
316A	X		16	2.30	36.8	9
AA	X		16	2.30	36.8	12
AB	X		16	2.30	36.8	12
AC	X		16	2.30	36.8	9
AD	X		16	2.30	36.8	9
AE	X		16	2.30	36.8	13
AF	X		16	2.30	36.8	12
AG	X		16	2.30	36.8	12
AH	X		16	2.30	36.8	9
B	X		16	2.30	36.8	11
C	X		16	2.30	36.8	11
D	X		16	2.30	36.8	11
E	X		16	2.30	36.8	15
F	X		16	2.30	36.8	12
G	X		16	2.30	36.8	11
H	X		16	2.30	36.8	9
J	X		16	2.30	36.8	10
K	X		16	2.30	36.8	11
L	X		16	2.30	36.8	11
M	X		16	2.30	36.8	10
N	X		16	2.30	36.8	11
P	X		16	2.30	36.8	15
R	X		16	2.30	36.8	15
S	X		16	2.30	36.8	12
T	X		16	2.30	36.8	11
U	X		16	2.30	36.8	11
W	X		16	2.30	36.8	10
Y	X		16	2.30	36.8	10
320A	X		100	2.30	230.	22
B	X		100	2.30	230.	23
321A	X		100	2.30	230.	23
B	X		100	2.30	230.	23
322A		X	20	2.98	59.6	11
B		X	20	5.96	119.2	25
C		X	20	8.94	178.8	25
323A		X	100	2.98	298.	23
326A		X	100	1.15	115.	14
B		X	100	1.15	115.	10
C		X	100	1.15	115.	14
D		X	100	1.15	115.	14
E		X	100	1.15	115.	14

TABLE D
(Continued)TABLE D
Page 3 of 5MERCURY RELAYS

RELAY CODE	DESIGN PLUG IN	WIRE IN	UNITS PER CARTON	GRAMS OF MERCURY/ UNIT	GRAMS OF MERCURY/ CARTON	CARTON WEIGHT #
328A		X	100	1.15	115.	23
B		X	100	1.15	115.	21
C		X	100	1.15	115.	20
D		X	100	1.15	115.	22
E		X	100	1.15	115.	19
F		X	100	1.15	115.	21
G		X	100	1.15	115.	24
H		X	100	1.15	115.	21
J		X	100	1.15	115.	21
330A		X	100	2.30	230.	26
B		X	100	2.30	230.	25
C		X	100	2.30	230.	26
D		X	100	2.30	230.	25
E		X	100	2.30	230.	21
334A	X		12	1.15	13.8	15
B	X		12	1.15	13.8	16
C	X		12	2.30	27.6	16
D	X		12	2.30	26.6	16
337A		X	100	0.90	90.	10
338A		X	36	1.15	41.4	16
341A		X	64	1.80	115.2	9
334A		X	100	1.80	180.	10
B		X	100	1.80	180.	10
345A		X	100	0.05	5.	3
B		X	100	0.05	5.	3
346A		X	100	0.90	90.	5
352A		X	100	0.05	5.	5
353A		X	100	0.10	10.	5
354A		X	100	0.02	2.	5
D-171584	X		100	2.98	298.	25
D-177431	X		100	5.80	580.	25
GA-50143	X		100	2.98	298.	28
GA-50879	X		100	2.98	298.	35
GA-51221	X		100	2.98	298.	31
GA-52689	X		100	2.98	298.	31
GA-52909	X		100	2.98	298.	31
GA-53496	X		100	2.98	298.	35
GA-53591	X		100	1.15	115.	32
GA-53604	X		100	2.98	298.	35
GA-53642	X		100	1.15	115.	29
GA-53646	X		100	1.15	115.	29
GA-53871	X		100	2.98	298.	29
GA-53998	X		100	1.15	115.	29

TABLE D
(Continued)

TABLE D
Page 4 of 5

MERCURY RELAYS

RELAY CODE	DESIGN MOUNT	UNITS PER CARTON	GRAMS OF MERCURY/ UNIT	GRAMS OF MERCURY/ CARTON	CARTON WEIGHT #
KS-2145PWB	X	1	5.80	5.80	6.0
KS-5721					
997275375	X	30	178.0	5340	17.0
KS-5721L-1					
997485040	X	30	178.0	5340	17.0
KS5721L2					
997731237	X	30	178.0	5340	17.0
KS5721L3					
997485768	X	30	178.0	5340	17.0
KS5721L4	X	30	178.0	5340	17.0
KS5721L21					
997485990	X	30	178.0	5340	17.0
KS5721L22					
997245360	X	30	178.0	5340	17.0
KS5721L54					
997466875	X	30	178.0	5340	17.0
KS5721L55					
997466883	X	30	178.0	5340	17.0
KS7800					
99731997	X	15	370.0	5550	60.0
KS7800					
997320106	X	15	370.0	5550	60.0
KS7801					
997876420	X	15	370.0	5550	60.0
KS7801					
997732011	X	15	370.0	5550	60.0
KS7801					
997732003	X	15	370.0	5550	60.0
KS7802					
997876438	X	15	370.0	5550	60.0
KS7802					
997833702	X	15	370.0	5550	60.0
KS7803					
997876487	X	15	370.0	5550	60.0
KS7804					
997876495	X	15	370.0	5550	60.0
KS7805					
997876636	X	15	370.0	5550	60.0
KS7808					
997731989	X	15	370.0	5550	60.0
KS7809					
997868146	X	15	370.0	5550	60.0
KS7811					
997868112	X	15	370.0	5550	60.0
KS7812					
997868120	X	15	370.0	5550	60.0
KS7813					
997868138	X	15	370.0	5550	60.0

TABLE D
(Continued)TABLE D
Page 5 of 5MERCURY RELAYS

RELAY CODE	DESIGN MOUNT	UNITS PER CARTON	GRAMS OF MERCURY/ UNIT	GRAMS OF MERCURY/ CARTON	CARTON WEIGHT #
KS7816 997862446	X	15	370.0	5550	60.0
KS7817 997320338	X	15	370.0	5550	60.0
KS7818 997862404	X	15	370.0	5550	60.0
KS7819 997861224	X	15	370.0	5550	60.0
KS7821 997861265	X	15	370.0	5550	60.0
KS7822 997833777	X	15	370.0	5550	60.0
KS7823 997861455	X	15	370.0	5550	60.0
KS7824 997861331	X	15	370.0	5550	60.0
KS7826 997861273	X	15	370.0	5550	60.0
KS7827 997861281	X	15	370.0	5550	60.0
KS7827 997731963	X	15	370.0	5550	60.0
KS7828 997861349	X	15	370.0	5550	60.0
KS7829 997861356	X	15	370.0	5550	60.0
KS7830 997833710	X	15	370.0	5550	60.0
KS7831 997833579	X	15	370.0	5550	60.0
KS7832 997833603	X	15	370.0	5550	60.0
KS7833 997833785	X	15	370.0	5550	60.0
KS7834 997804562	X	15	370.0	5550	60.0
KS7835 997731971	X	15	370.0	5550	60.0

TABLE E

TABLE E
Page 1 of 1MERCURY SWITCHES

SWITCH CODE	DESIGN PLUG IN	WIRE IN	MOUNTED	GRAMS OF MERCURY/ UNIT	MAX. UNITS/ CARTON	GRAMS/ MERCURY CARTON	CARTON WEIGHT #
218A		X		2.98	80	239	3
218D		X		2.98	80	239	3
222B		X		2.98	36	108	3
223A			X	10.84	1	11	5
223B			X	10.84	1	11	5
223C			X	10.84	1	11	5
226B		X		1.15	80	92	2
226C		X		1.15	80	92	2
226D		X		1.15	80	92	2
GA52688		X		2.98	80	239	3
GA53645		X		1.15	80	92	2

TABLE F

TABLE F
Page 1 of 1MERCURY VAPOR TUBES

<u>Product/Type</u>	<u>Products per Shipping Container</u>	<u>Grams of Mercury/Product</u>	<u>Grams of Mercury per Shipping Carton</u>
TUBES - 249A	18	0.7	13
249B	18	0.7	13
249C	18	0.7	13
253A	18	0.7	13
255A	18	2.8	50
255B	18	2.8	50
258A	18	0.7	13
258B	18	0.7	13
266A	18	2.8	50
266B	18	2.8	50
266C	18	2.8	50
267A	18	0.7	13
267B	18	0.7	13
287A	32	0.7	23
301A	32	0.7	23
314A	18	0.7	13
315A	18	0.7	13
319A	18	0.7	13
321A	18	0.7	13
323A	18	0.7	13
323B	32	0.7	23
354A	18	0.7	13
355A	18	0.7	13
393A	32	0.7	23
394A	50	0.7	35
410A	18	1.4	25

TABLE G

TABLE G
Page 1 of 5PCB CAPACITORS

CODE #	PCB WEIGHT PER UNIT		WEIGHT OF TOTAL UNIT		SPECIAL INSTRUCTIONS
	POUNDS	KILOGRAMS	POUNDS	KILOGRAMS	
287A	.25	.1125	5/8	.28	See Figure 3H and Table J
287B	.25	.1125	5/8	.28	See Figure 3H and Table J
287C	.25	.1125	5/8	.28	See Figure 3H and Table J
288A	.25	.1125	5/8	.28	See Figure 3H and Table J
288B	.25	.1125	5/8	.28	See Figure 3H and Table J
289A	.45	.2025	1-1/2	.675	See Figure 3I and Table J
289B	.45	.2025	1-1/2	.675	See Figure 3K
289C	.45	.2025	1-1/2	.675	See Figure 3I
289D	.45	.2025	1-1/2	.675	See Figure 3K
290A	.45	.2025	1-3/8	.6188	See Figure 3I and Table J
291A	.45	.2025	1-3/8	.6188	See Figure 3I
292A	.45	.2025	1-3/8	.6188	See Figure 3I
293A	.9	.405	3-1/4	1.4625	See Figure 3J and Table J
293B	.9	.405	3-1/4	1.4625	See Figure 3J
293C	.9	.405	3-1/4	1.4625	See Figure 3L
294A	.9	.405	3-1/4	1.4625	See Figure 3J and Table J
295A	.9	.405	3-1/4	1.4625	See Figure 3J
296A	.9	.405	3-1/4	1.4625	See Figure 3J
297A	2.6	1.17	7-1/4	3.26	See Figure 3F
298A	2.6	1.17	7-1/4	3.26	See Figure 3F
299A	55	24.75			See Figure 3M and Table H
300A	55	24.75			See Figure 3M and Table H
301A	55	24.75			See Figure 3M and Table H
302A	2.6	1.17	7-1/4	3.26	See Figure 3F
303A	9.5	4.275	26	11.7	See Figure 3G and Table H
304A	.9	.405			See Figure 3Q
304B	.9	.405			See Figure 3Q and Table J
305A	.1	.045			See Figure 3R
306A	.25	.1125			See Figure 3C and Table J
307A	.05	.0225			See Figure 3S
307B	.05	.0225			See Figure 3U and Table J
307C	.05	.0225			See Figure 3U and Table J
308A	2.6	1.17			

TABLE G
(Continued)

TABLE G
Page 2 of 5

PCB CAPACITORS

CODE #	PCB WEIGHT PER UNIT		WEIGHT OF TOTAL UNIT		SPECIAL INSTRUCTIONS
	POUNDS	KILOGRAMS	POUNDS	KILOGRAMS	
310A	.01	.0045			See Figure 3A and Table J See Figure 3B and Table J See Fig. 3T Total 2 Cans
310B	.02	.0045			
524A	.9	.405			
D-91281					
D-91282					
D-96859	2	.09	5/8	.28	See Figure 3C See Figure 3M and Table H
D-96860	55	24.75			
D-96887	2.6	1.17	6-3/4	3.0375	See Figure 3E See Figure 3D See Figure 3G and Table H See Figure 3F
D-96963	.75	.3375	2-3/8	1.0688	
D-96966	.4	.18	1		
D-97412	9.5	4.275			
D-97413	2.6	1.17			
D-155002	.95	.4275			Total Two Cans
D-157631	.9	.405			
D-157934	.1	.045			See Figure 3R See Figure 3C
D-157990	.25	.1125			
D-159047	.9	.405			Total Two Cans
D-160797	.25	.1125			
D-161659	.25	.1125			See Figure 3H
D-161832	.25	.1125			See Figure 3H
D-161834	.45	.2025			See Figure 3I
D-162003	.25	.1125			See Figure 3H
D-162400	.25	.1125			See Figure 3C
D-162860	.25	.1125			See Figure 3I
D-162861	.9	.405			See Figure 3J
D-163716	.9	.405			See Figure 3J
D-165577	.9	.405			See Figure 3I See Figure 3I See Figure 3J See Figure 3H
D-166602	.9	.405			
D-169004	1.2	.54			
D-170379	.45	.2025			
D-170380	.45	.2025			
D-170381	.9	.405			
D-172225	.25	.1125			

TABLE G
(Continued)

TABLE G
Page 3 of 5

PCB CAPACITORS

CODE #	PCB WEIGHT PER UNIT		WEIGHT OF TOTAL UNIT		SPECIAL INSTRUCTIONS
	POUNDS	KILOGRAMS	POUNDS	KILOGRAMS	
A-151939	58	26.1			See Figure 3N and Table H See Figure 3O and Table H See Figure 3P and Table H
A-151997	7	3.15			
A-152469	55	24.75			
GA-50451	.45	.2025			
KS-5560					
KS-5560L2					
KS-13456					
KS-13458 L1,2	.046				
KS-13460					
KS-13461					
KS-13462					
KS-13463					
KS-13464					
KS-13465	.106				
KS-13466					
KS-13467					
KS-13468					
KS-13469					
KS-13470					
KS-13471					
KS-13472					
KS-13473					
KS-13474					
KS-13475					
KS-13476					
KS-13499					See Table J
KS-13550					
KS-13547 L10	.096				
KS-13548 L2	.162				
KS-13549 L2	.228				
KS-13550 L2,L3	.462				
KS-13551 L2	.637				
KS-13552					

TABLE G
(Continued)TABLE G
Page 4 of 5PCB CAPACITORS

CODE #	PCB WEIGHT PER UNIT		WEIGHT OF TOTAL UNIT		SPECIAL INSTRUCTIONS
	POUNDS	KILOGRAMS	POUNDS	KILOGRAMS	
KS-13553 KS-13554 KS-13555 KS-13555 L1 KS-13558	.769				
KS-13559 KS-13950 KS-13967 L1 KS-13982 L1 KS-14179 L1 KS-14258 L1 KS-14395 L1	1.36 .584 1.05 .637				See Table J
KS-14433 L1 KS-14536 L1 KS-16488 L1 KS-16704 L1 KS-16704 L2 KS-16704 L3 KS-16704 L4	2.53 .672 .232 1.6 .18 .36 .50				See Table J See Table J See Table J See Table J See Table J See Table J See Table J
KS-16704 L5 KS-16704 L6 KS-16704 L7 KS-16704 L8 KS-16782 L1 KS-16782 L2 KS-16782 L3	1.8 1.5 .12 .32 .05 .05 .05	.72 .081 .162 .225			See Table J See Table J See Table J See Table J See Table J See Table J See Table J
KS-16782 L4 KS-16782 L5 KS-16801 L1 KS-16801 L2 KS-16840 L1 KS-16840 L2 KS-16840 L3	.04 .05 .40 .80 .28 .25 .12	.018 .0225 .18 .36 .126 .1125 .054			See Table J See Table J See Table J See Table J See Table J See Table J See Table J

TABLE G
(Continued)

TABLE G
Page 5 of 5

PCB CAPACITORS

CODE #	PCB WEIGHT PER UNIT		WEIGHT OF TOTAL UNIT		SPECIAL INSTRUCTIONS
	POUNDS	KILOGRAMS	POUNDS	KILOGRAMS	
KS-16840 L4	.41	.1845			See Table J
KS-16840 L5	.22	.099			See Table J
KS-16840 L6	.21	.0945			See Table J
KS-16840 L7	.30	.135			See Table J
KS-16840 L8	.14	.063			See Table J
KS-16840 L9	1.1	.495			
KS-16840 L10	.23	.1035			See Table J
KS-16840 L11	.14	.063			
KS-16840 L12					
KS-16840 L13					
KS-16840 L14	.32	.144			See Table J
KS-16840 L15					
KS-16840 L16	.53				See Table J
KS-16840 L17	.12				See Table J
KS-16840 L18	.48	.216			See Table J
KS-16840 L19	.25	.1125			See Table J
KS-19388 L1	1.7	.765			See Table J
KS-19388 L2	.77	.3465			See Table J
KS-19388 L3	.09	.0405			See Table J
KS-19388 L4	1.7	.765			
KS-19388 L5	2.2	.99			
KS-20588 L1	.40	.207			See Table J
KS-20588 L2	.25	.1125			See Table J
KS-20588 L3	.34	.153			See Table J
KS-20588 L4	1.56				
KS-20588 L5	.78	.351			
KS-20588 L6	1.8	.81			
KS-20588 L7	.60	.27			
KS-20588 L8	.16	.072			
KS-20588 L9					
KS-20588 L10					
KS-20588 L11	.68	.306			See Table J
KS-20588 L12	.15	.0675			
KS-20934 L1	.38	.171			

TABLE H

TABLE H
Page 1 of 1CAPACITORS AND CONDENSERS
OVER THREE POUNDS (1.35 KILOGRAMS)

CODE #	PCB WEIGHT	
	POUNDS	KILOGRAMS
299A	55	24.75
300A	55	24.75
301A	55	24.75
303A	9.5	4.275
D-96860	55	24.75
D-97412	9.5	4.275
A-151939	58	26.1
A-151997	7	3.51
A-152469	55	24.75

TABLE I

TABLE I
Page 1 of 1GENERAL TRADE NAMES

AEROVOX Letters J & F-PCB (P09J, P138F, P142F, P150F, P162F, P164F, P166F, P0I, P0950F)					
CORNELL DOBILIER	CM	KA	KS	TJ	WAB
	CYR	KB	OT	TK	WAT
	DYR	KK	T	TL	YAB
	KG	KN	TA	TN	YAT
GENERAL ELECTRIC	23F 45F 49F 72F	28F 47F	Not All PCB Types		
GUDEMAN	9800 Series		95000 Series		
MALLORY	23 29	27 28	31 32	37 38	
SANGAMO	Type 75		Type 80		
SPRAGUE	38P 200P	201P 234P	235P 264P	355P 356P	
MILITARY SPEC				CP40 CP41 CP53 CP54	
MIL - C-25		Characteristic "F" Style Characteristic "F" Style		CP55 CP61 CP62 CP63 CP64 CP65 CP67	
		Characteristic "F" Style		CP69 CP70 CP72 CP80 CP81 CP82 CP91	

TABLE J

TABLE J
Page 1 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR
80446-02	None	806A Plants - AC and battery driven 1/2 amp ringing machines with automatic transfer	287A
80606-01	86207E	Rectifier units - Regulated tube type or semiconductor type	310A, 310B
80606-02	86207J		310A, 310B
80606-08	86207J		310B
80620-01	86207C		310A, 310B
80620-02	86207C		310A, 310B
80620-03	86207C	310A	
80621-01	86578	420A Plant, 152-volt, 0 to 30 ampere loads with miscellaneous supplies - auxiliary repeater stations with ac power service	287A
80622-01	86578		287A
80653-01	86578	420A Plant - Charge and discharge circuit - Pos. 152V plate and filament battery	287A
80709-01	None	10 and 20 party code ringing - 380A dial office	287A
80714-01	86207S	Regulated tube or semiconductor rectifier	287C
80727-01	86212P	Small ringing equipments - 355A dial office	307B
80764-01	86207M	Regulated tube rectifier	310A, 310B
80764-02	86207L		310A, 310B
80779-01	None	Generator and interrupting equipment code ringing machine - step-by-step system	307B
80823-01	86207T	Regulated tube rectifier	294A
80855-01	86578	420A Plant - J and K carrier telephone - auxiliary station	287A
80863-01	86578G	420A Plant - K2 carrier amplifier - regular and emergency filament supply	287A
80863-02	86578G	420A Plant - K2 carrier amplifier - regular and emergency filament supply	287A, 287B
80871-01	86207U	Regulated tube rectifier	306A, 310
80912-01	None	420B Plant - K2 carrier telephone - auxiliary stations	287A
80921-01	86578K	420A Plant - J, K and V1 auxiliary stations	287A

TABLE J
(Continued)

TABLE J
Page 2 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR	
80930-01	86216A	Regulated tube rectifier phase shift control	287A	
80937-01	86207W	Regulated tube rectifier	287A, 306A 310A	
80940-01	None	Rectifier inverter rectifier	287A, 310A	
80949-01	86425A		287A, 310A	
80959-01	None	420A Plant - Charge and discharge circuit	287A	
80960-01	86426A	505C Plant - "L" carrier telephone	288A	
80961-01	None	505C Plant - "L" carrier telephone	287A	
80962-01	86217A	Regulated tube rectifier	287A, 306A	
80963-01	86218A		287A	
80970-01	86219A		287A	
80976-01	86221A		287A	
80981-01	86431F,G	Teletypewriter switching unit No. 81C1	KS-5560, L02	
81010-01	86227A,B	Regulated tube rectifier	287A	
81010-02	86227C		287A	
81010-03	86227A		287A	
81011-01	86225		287A	
81012-01	86226A,B		287A	
81013-01	86228A,B		287A	
81046-01	86232A		287A	
81058-01	86219B		287A	
81075-01	86238A		AC control unit	287A, 289A
81076-01	86240A		Rectifier - Regulated tube or semiconductory type	287A, 310A, KS-14258
81077-01	86240B	Regulated semiconductor or tube type rectifier	KS-14258, 287A, 310A	

TABLE J
(Continued)

TABLE J
Page 3 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR
81088-01	86244A	Semiconductor type rectifier	287A
81092-01	86621	Engine driven alternator	KS-13463, L1
81098-01	None	Regulated DC supply	306A, 294A
81110-01	86225D	Regulated tube rectifier	287A
81117-01	86226D		287A
81129-01	86249ABC	Metallic type rectifier	KS-16782, L1
81208-01	86624A	Diesel engine driven alternator set - main control cabinet	KS-13463, L1
81217-01	86225E	Regulated tube rectifier	287A
81248-01	86269A	AC control unit	287A, 289A
81251-01	86460A,B D, E, F	Submarine cable power supply	287A
81252-01	86460A,B D, E, F	Submarine cable terminal plant power supply	287A
81253-01	86462B	Submarine cable power supply	290A
81254-01	86462B		290A
81256-01	86462B	Repeatered submarine cable high voltage turndown relay	287B
81257-01	86462B	Repeatered submarine cable alarm circuit	287A
81136-01	86621A	Engine driven alternator - automatic control	KS-13463, L1
81138-01	86251A	Electron tube rectifier	310B
81147-01	86250A	Voltage regulator and exciter - Electronic control for 24 and 40-volt motor-generator sets	KS-14536
81152-01	86447A	Power control bay - L3 carrier telephone - 505D and 521A plant	228A, 289A
81161-01	86450A,B	12-, 130- and 250-volt power supplies with and without battery reserve - 425B plant - TD-2 radio system	287A

TABLE J
(Continued)

TABLE J
Page 4 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR
81164-01	86262A	Electronic type current regulator	287A, 288A 294A
81185-01	None	Power factor correction equipment	KS-5560
81196-01	JB645A,B	Reserve power supply equipment - 0 carrier repeaters	287A
81200-01	JB6622	Engine driven alternator - automatic control	KS-13463, L1
81274-01	None	Charge and discharge circuit - 100 type plants	310B
81305-01	86275A	Regulated current rectifier servo AC control	287A, 289A
81308-01	86469A	Repeatered submarine cable power supply (positive)	290A
81309-01	86469A	Repeatered submarine cable power supply (negative)	290A
81310-01	JB6469	Repeatered submarine cable high current protection relay	288A
81312-01	None	Alarm unit - repeatered submarine cable	287A, 288A
81339-02	86473A	Power supply (TJ radio)	310A, 310B
81350-01	86476G,H	508A plant - continuous 230-volt AC power	287A, 287B
81369-01	86283B	Metallic type rectifier	KS-16704, L1
81369-02	86283B		KS-16704, L1
81369-03	86283B		KS-16704, L1
ES-81389	86291F -01	Metallic type rectifier Electronic Switching System Morris, Illinois	293B
81393-01	86260, 86261, 86284	Motor starters - 302A and 702C plants	KS-5560
81405-01	86225F	Regulated tube rectifier	287A
81410-01	86295C	Semiconductor type rectifier	287B
81425-01	86486B	Metallic type rectifier	287A

TABLE J
(Continued)

TABLE J
Page 5 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR
81442-01	86487A	Power supply (TH radio)	287A
81443-01	86488A		288A
ES-81450-01	None	230V AC power supply - Morris Electronic Switching System	287A
81507-01	86499	Power supply (TL-1 radio)	306A, KS-16840, L2 KS-13550, L3
81509-01	87208A	Semiconductor type rectifier	KS-16782, L2
81510-01	87207A		KS-16840, L3
81510-02	87207B		KS-16840, L3
81517-01	86805C	Constant current rectifiers (SD submarine cable)	304B
81519-01	86805G		304B
81521-01	86805A	Ground supply bay (SD submarine cable)	290A
81525-01	86806A		290A
81536-01	87215A	Semiconductor type rectifier	KS-16782, L1
81538-01	87212A		KS-16782, L2
81551-01	87221A		KS-16840, L6
81561-01	87238A		KS-16782, L1
81564-01	87205B		KS-16840, L4
81574-01	87226A		Rectifier (ferroresonant regulation)
81607-01	87234A	Semiconductor type rectifier	KS-16840, L5
81617-01	87239A		KS-16782, L2
81617-02	87239B		KS-16782, L2
81622-01	87243A		KS-16840, L4
81623-01	87242A		KS-16840, L4
81624-01	87241A		KS-16782, L1
81625-01	87240A		KS-16782, L1
81640-01	87240B		KS-16782, L1

TABLE J
(Continued)

TABLE J
Page 6 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR
81646-01	86819A	DC power cable supply - SD submarine cable	290A
81650-01	87235A	Semiconductor type rectifier	KS-16782, L3
81657-01	87254A	Semiconductor type rectifier	KS-19388, L1
81660-01	86835A,B C, D	Converter power supply (TD-3 radio system)	KS-16704, L2 L3
81675-01	87255A	Semiconductor type rectifier	KS-16840, L5
81698-01	87258A		KS-16782, L1
81710-01	86831A	Power plant for small PBX system	KS-16840, L7
81717-01	87266A	Inverter - 20 cycle DC-AC	KS-19388, L1
81721-01	87220A	Semiconductor type rectifier	KS-19388, L1 L2
81722-01	87267A		KS-16840, L6
81727-01	87270A		KS-16840, L3
81736-01	87272A		KS-16782, L2
81741-01	86843A		Power supply for traveling wave tube (TM radio)
81743-01	86635A,C	Power supply for 801A and 850A PBX	KS-16840, L1 L4
81744-01	87274A	Semiconductor type inverter for TH radio	KS-16840, L9
81766-01	87276A	Semiconductor type rectifier	KS-16840, L5
81779-01	None	21A power supply power unit	KS-19388, L3
81780-01	None	17A and 17B power unit	KS-16782, L3
81781-01	87241B	Semiconductor type rectifier	KS-16782, L1
81789-01	87281A		KS-16782, L3
81790-01	87282A		KS-16782, L3
81804-01	86353A	DC power supply for TH radio traveling wave tube	KS-16704, L1 L4, L5, L6
81806-01	None	B996097 power unit	KS-16782, L3
81823-01	87295A	20Hz DC to AC inverter unit	KS-16801, L1 KS-16840, L12, L18

TABLE J
(Continued)

TABLE J
Page 7 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR
81829-01	87292A	Semiconductor type power supply	KS-16840, L4
81836-01	87296A	Power supply - TD3 radio repeater test set	KS-16840, L2
81850-01	87303A,H	Converter power supply for L4 coaxial system	KS-16704, L8
81854-01	None	18A power unit	KS-16782, L3
81856-01	86858B,E	Power supply for L4 coaxial system	288A
81864-01	None	26A power unit	KS-16782, L2
81867-01	87272B	Semiconductor type rectifier	KS-19388, L3
81873-01	86878A	Power supply for 761B PBX system	KS-16840, L7
81878-01	None	31A power unit	KS-16840, L5
81900-01	None	18B1 power unit	KS-16782, L3
81903-01	None	24A power unit	KS-16782, L1
81908-01	87326A	20Hz DC to AC inverter	KS-16840, L14, L16
81915-01	87234B	Semiconductor type rectifier	KS-16840, L5
81947-01	None	F57529 power unit	KS-16840, L17
81975-01	87337A	20Hz DC and AC inverter	KS-16840, L19 KS-20588, L2
81981-01	87342A	Semiconductor type rectifier	KS-20588, L1
82004-01	86890C	Converter for traveling wave tube (TD3 radio)	KS-167043, L2, L3
82009-01	87329A	Semiconductor type rectifier	KS-20588, L3
82018-01	86891B	680A power plant	KS-16704, L4, L8
82054-01	87358A	805A PBX power supply	KS-16840, L6
82091-01	87381A	Regulated ferroresonant rectifier	KS-20588, L1
82101-01	None	68A power unit	KS-19388, L3
82116-01	86635D	Regulated ferroresonant rectifier	KS-20588, L11
82128-01	86899A	680B power plant	KS-16704, L8
82129-01	86899B	680B plant (L5 coaxial repeatered line)	KS-16704, L4, L8

TABLE J
(Continued)

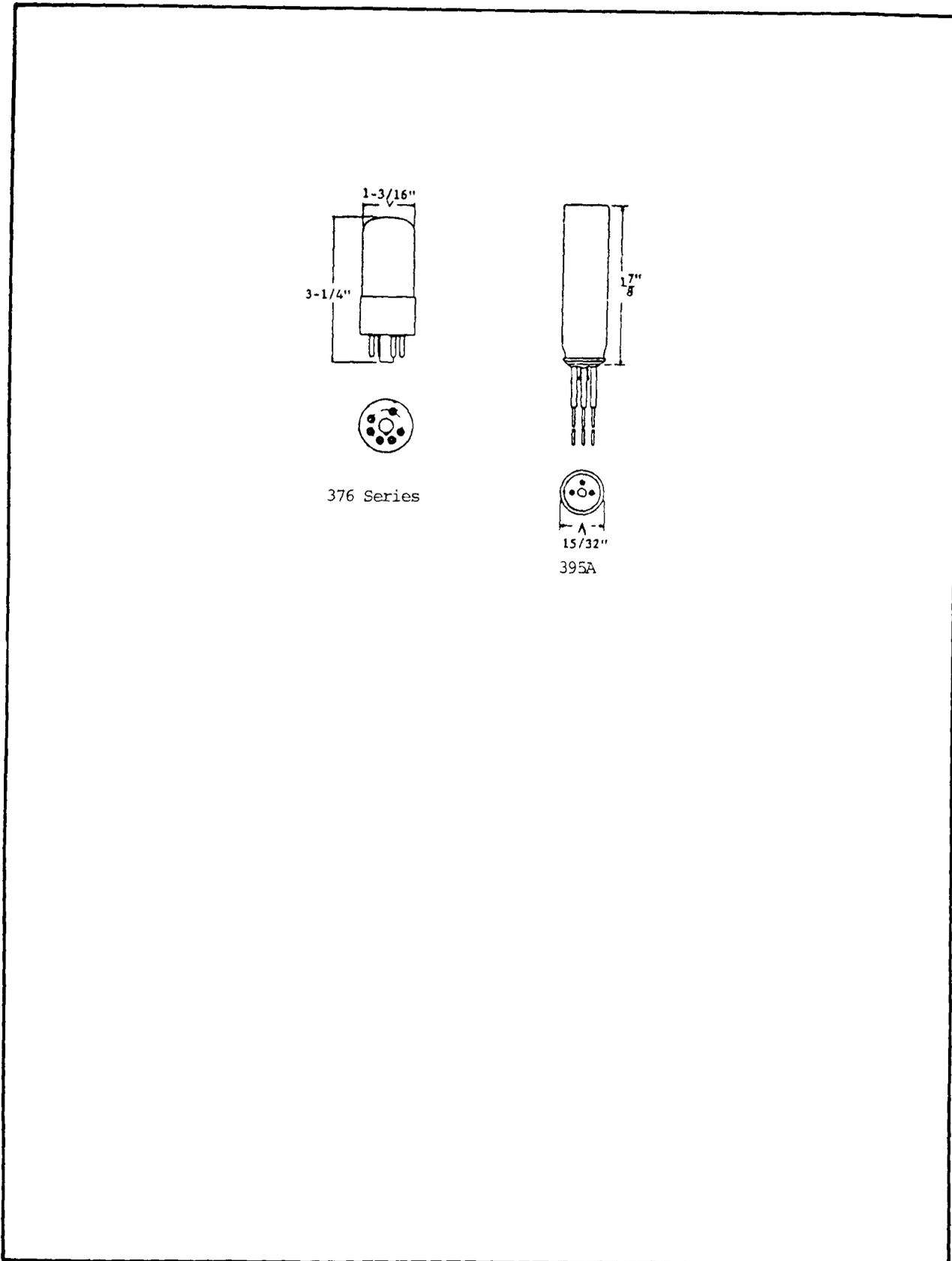
TABLE J
Page 8 of 8

LIST OF WE MANUFACTURED POWER EQUIPMENTS CONTAINING PCB CAPACITORS

SD	J	DESCRIPTION	WE AND KS TYPE PCB CAPACITOR
82139-01	None	91A power unit	KS-16840, L11
82228-01	None	108A power unit	KS-16840, L8
		112A Frequency Generator Mounted in the 800 or 801 PBX Cabinet or CSS 201 PBX	KS-16840, L8
82229-01	87412A	Line feed converter for T4M line	KS-16704, L8
82258-01	J87415A, B	20Hz DC to AC inverter	KS-16840, L16
82391-01	None	207B power unit	KS-20588, L3
82414-01	None	229A power unit	KS-20588, L3

FIGURE 1 - (Cont'd.)

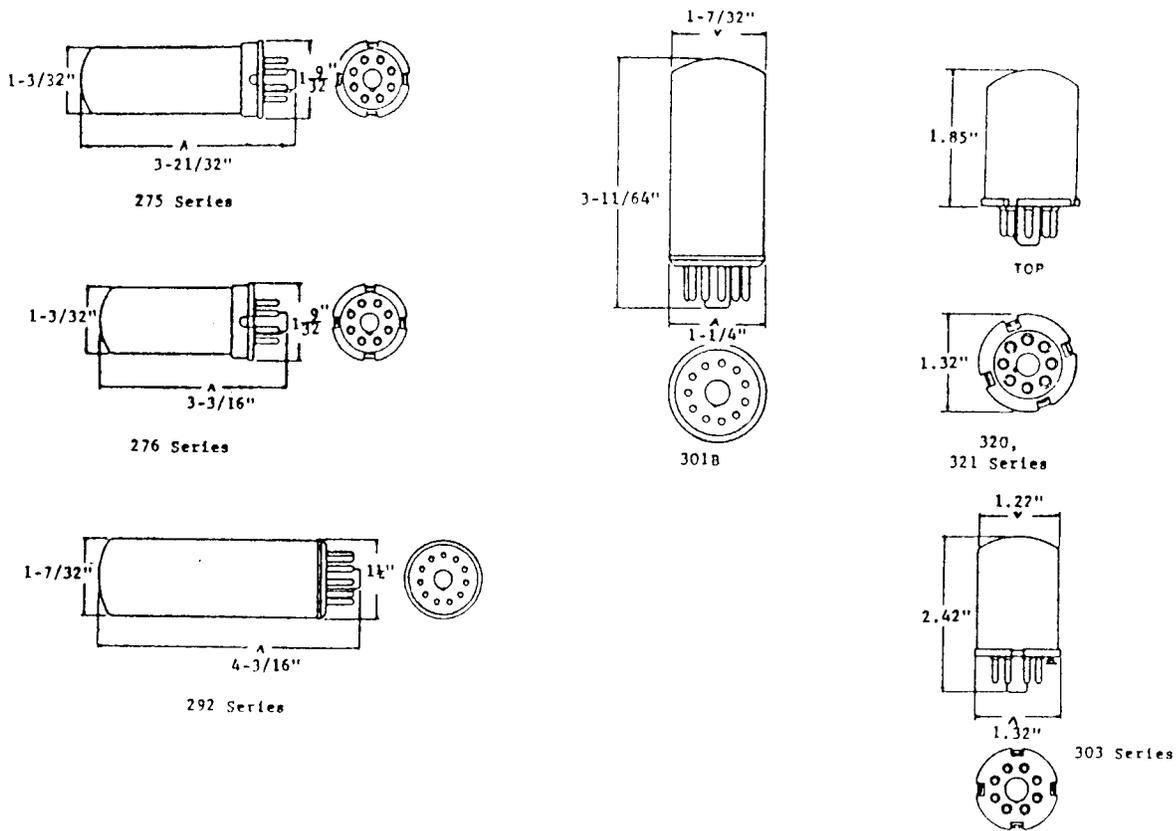
COLD CATHODE TUBES



376 Series

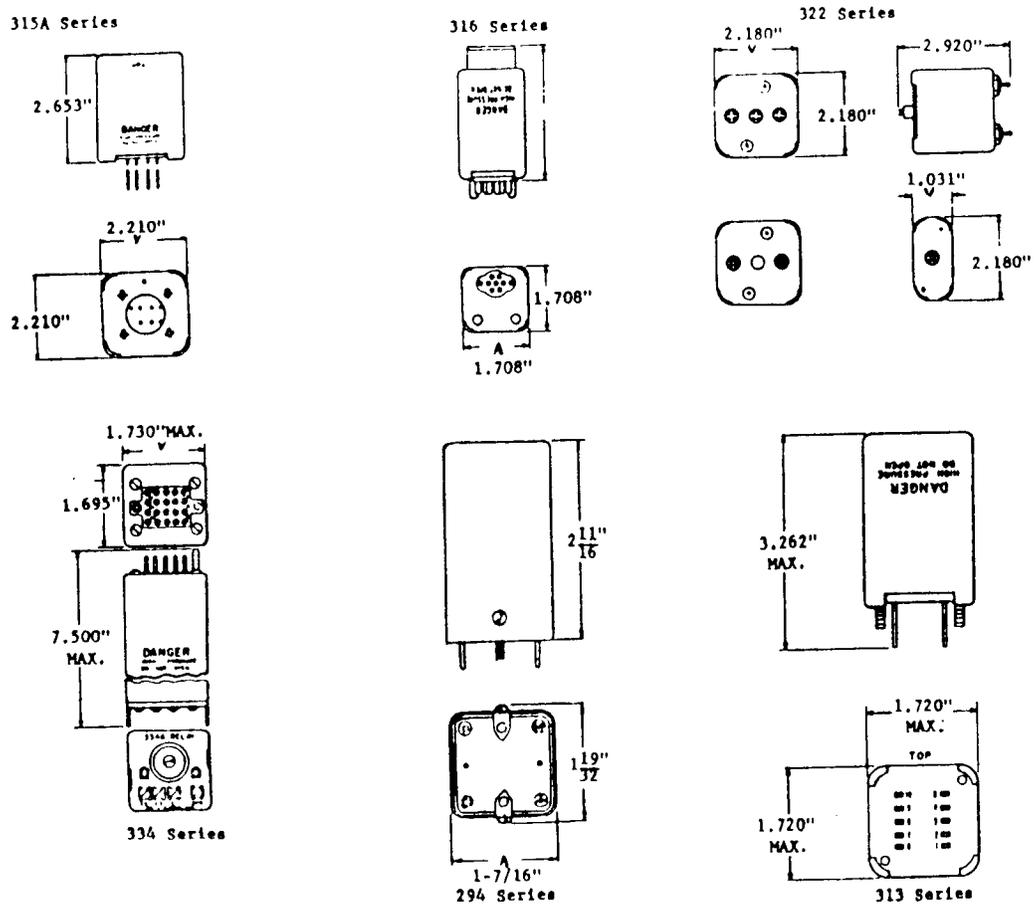
395A

FIGURE 2
MERCURY RELAYS



(Circular Base)

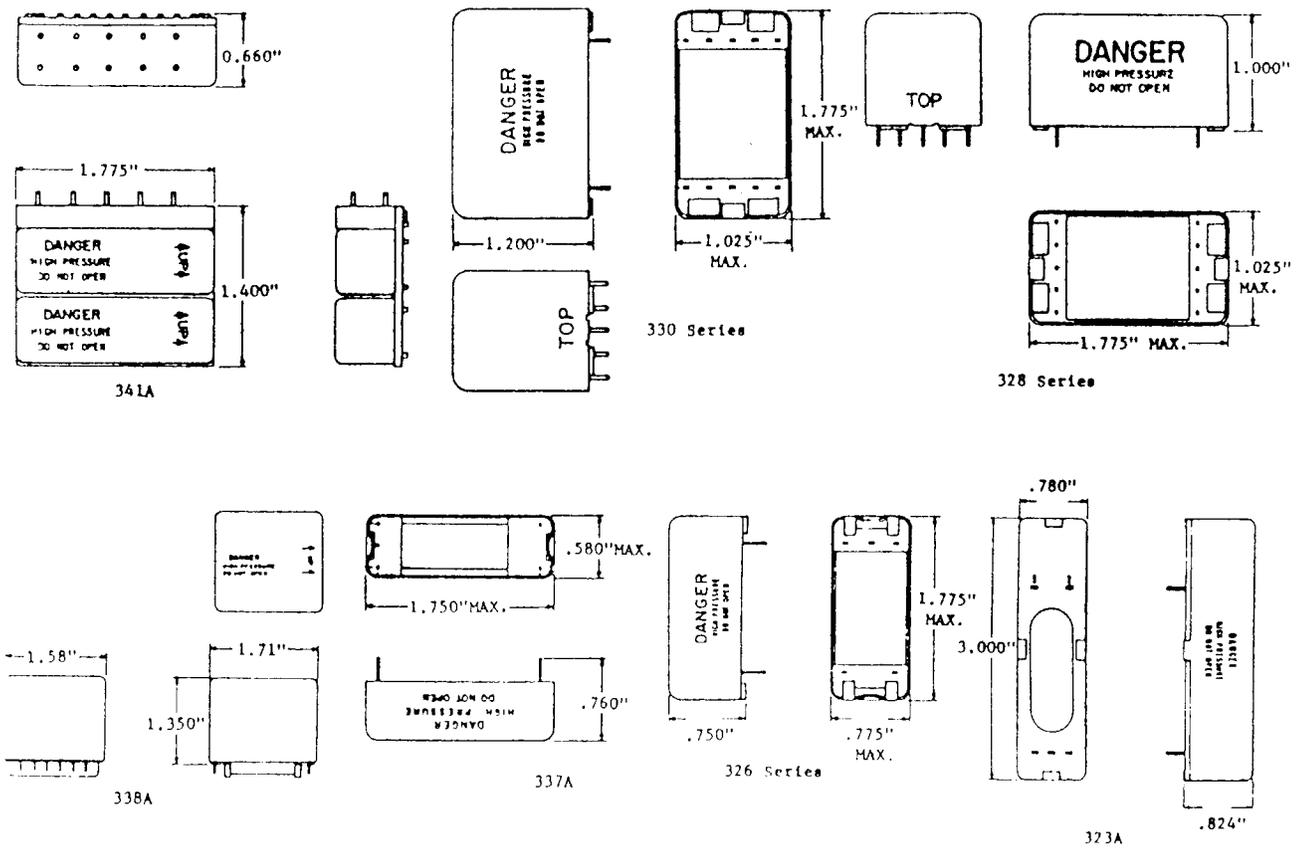
FIGURE 2 - (Cont'd.)
MERCURY RELAYS



(Rectangular Base, Bottom Prong)

FIGURE 2 - (Cont'd.)

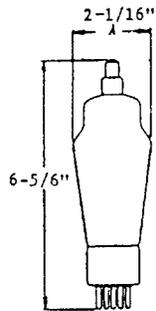
MERCURY RELAYS



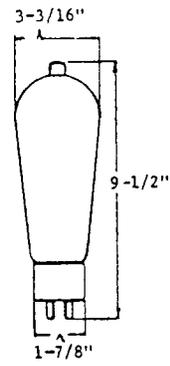
(Rectangular Base, Side Prong)

FIGURE 2A

MERCURY VAPOR TUBES



287, 393, 323



354, 355

Paper capacitor in a liquid filled hermetically sealed can.

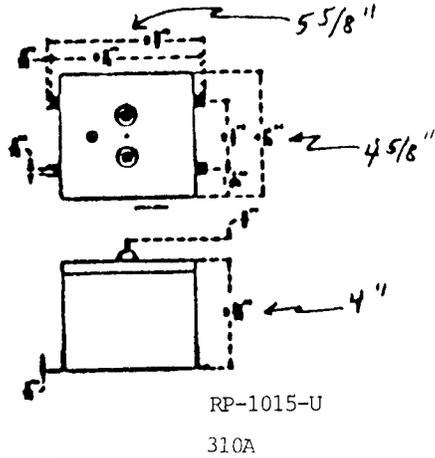


FIG. 3A

Liquid filled paper capacitor sealed in a glass tube.

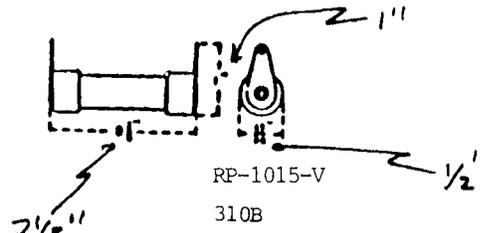


FIG. 3B

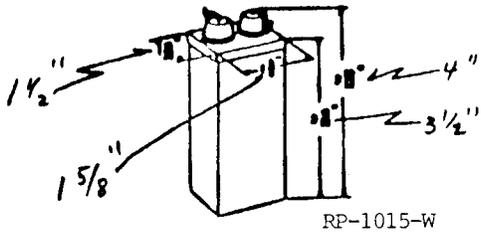


FIG. 3C 306A, D-96859, D-157990 and D-162400

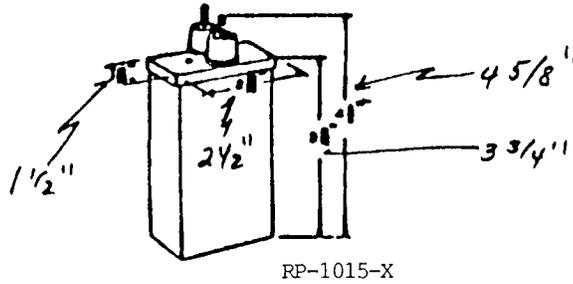


FIG. 3D D-96966

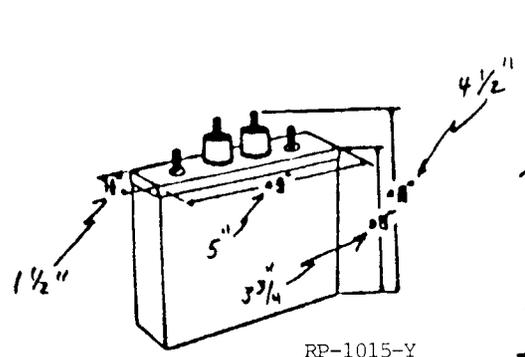
NOTE: DIMENSIONS ARE APPROXIMATE

PCB CAPACITORS

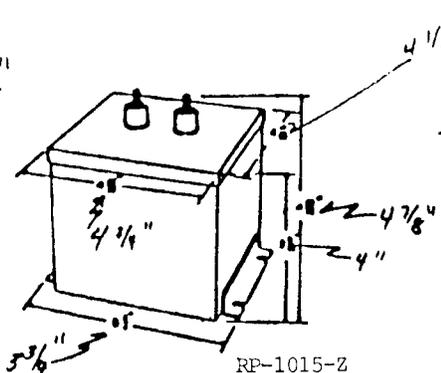
FIGURE 3

FIGURE 3 - (Cont'd.)

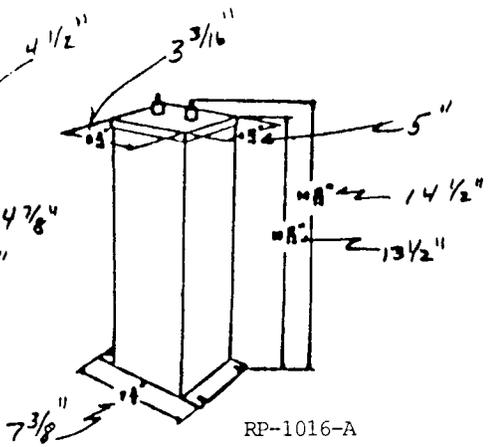
PCB CAPACITORS



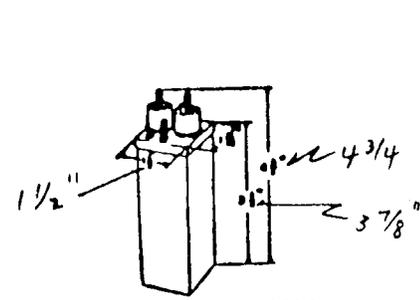
RP-1015-Y
FIG. 3E D-96963



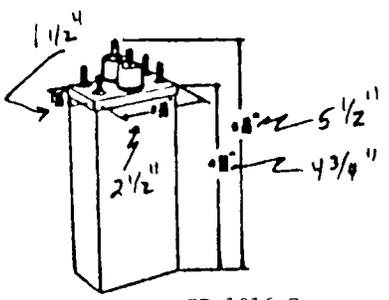
RP-1015-Z
FIG. 3F 297A, 298A, 302A,
and D-97413



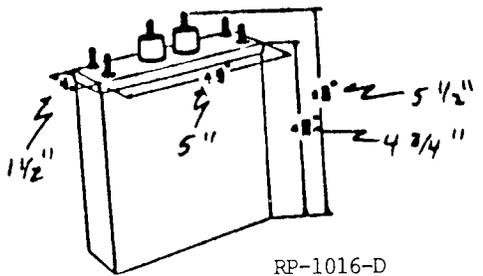
RP-1016-A
FIG. 3G 303A and D-97412



RP-1016-B
FIG. 3H 287 Series, 288 Series
D-161659, D-161832,
D-162003 and D-172225



RP-1016-C
FIG. 3I 289A,C, 290A, 291A,
292A, D-161834,
D-162860, D-170379
and D-170380

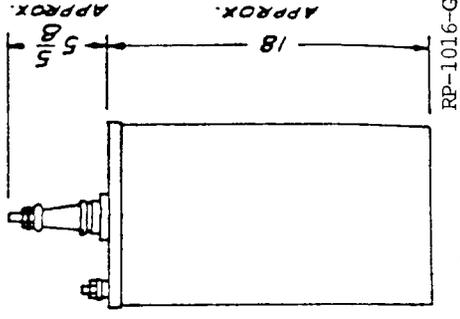
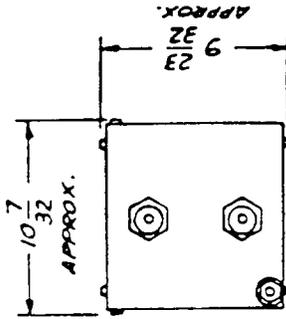


RP-1016-D
FIG. 3J 293A,B, 294A, 295A
296A, D-162861
D-163716 and D-170381

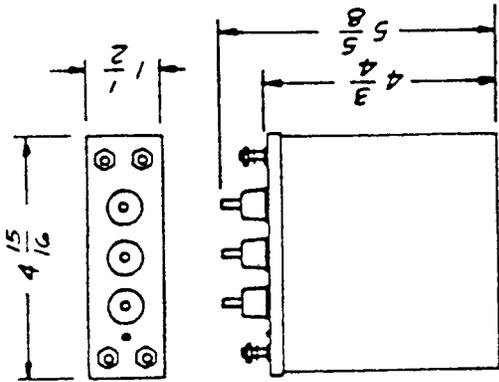
NOTE: DIMENSIONS ARE APPROXIMATE

FIGURE 3 - (Cont'd.)

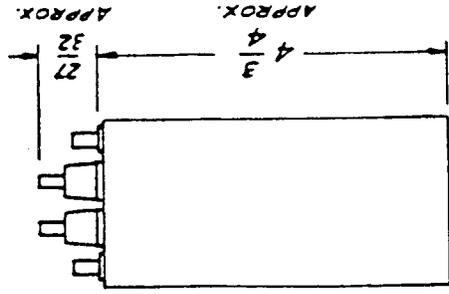
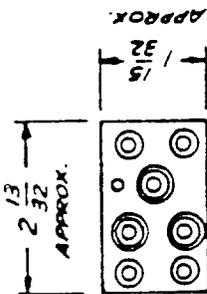
PCB CAPACITORS



RP-1016-G
299A, 300A, 301A,
and D-96860
FIG. 3M



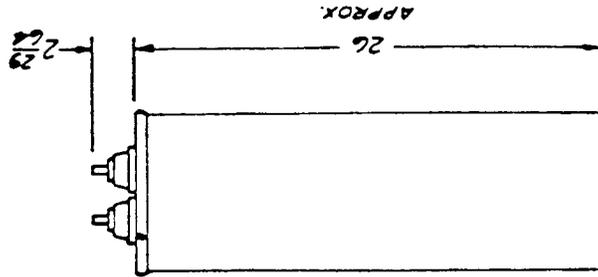
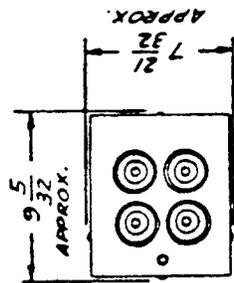
RP-1016-F
293C
FIG. 3L



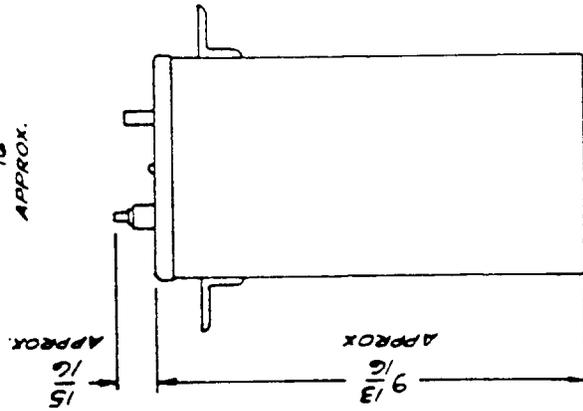
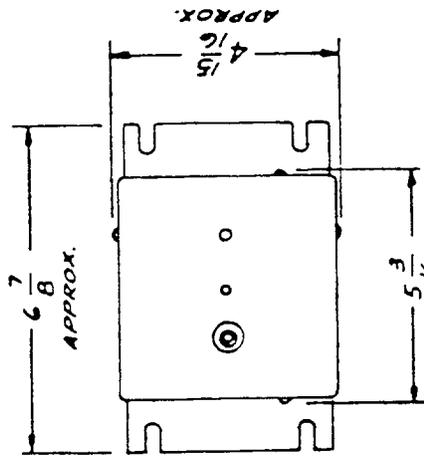
RP-1016-E
289B and 289D
FIG. 3K

FIGURE 3 - (Cont'd.)

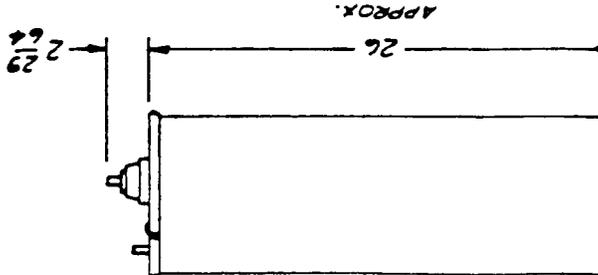
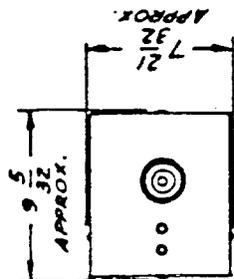
PCB CAPACITORS



RP-1016-J
A-152469
FIG. 3P



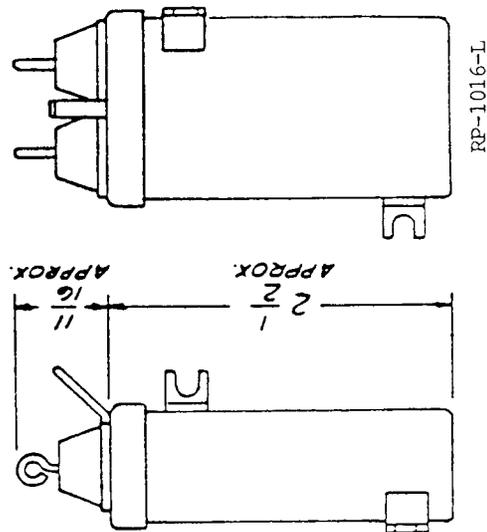
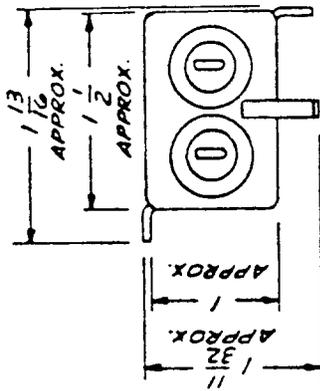
RP-1016-I
A-151997
FIG. 3O



RP-1016-H
A-151939
FIG. 3N

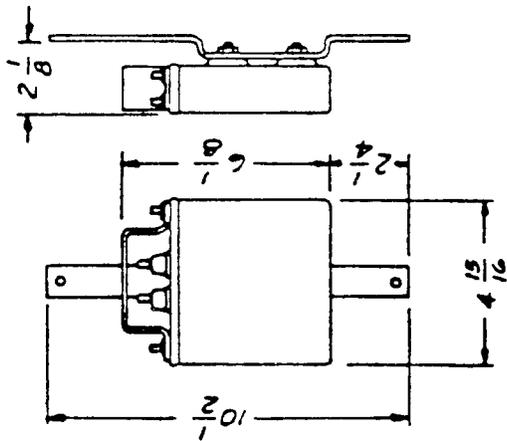
FIGURE 3 - (Cont'd.)

PCB CAPACITORS



RP-1016-L

FIG. 3R 305A and D-157934

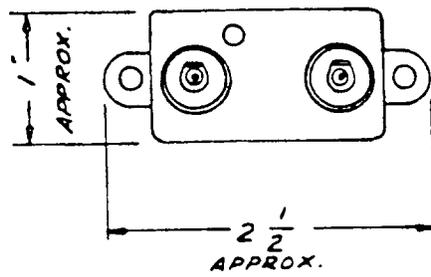


RP-1016-K

FIG. 3Q 304A, (304B No Brackets)

FIGURE 3 - (Cont'd.)

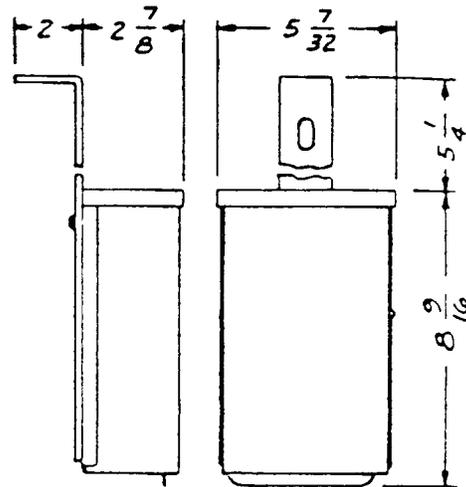
PCB CAPACITORS



RP-1016-M

FIG. 3S

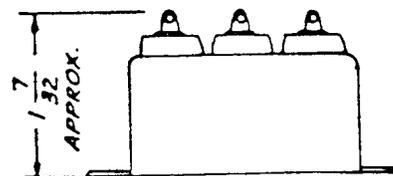
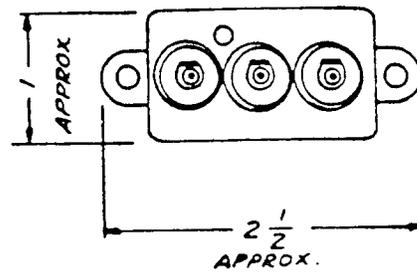
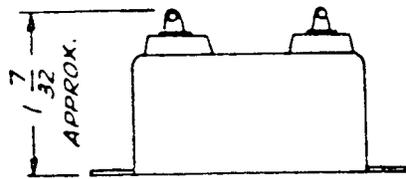
307A



RP-1016-N

FIG. 3T

524A



RP-1016-O

FIG. 3U

307B and 307C