HANDLING, SHIPPING AND DISPOSITION OF BATTERIES

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APPENDIXES

1.0 GENERAL

1.01 This section details procedures to be followed by Southwestern Bell Telephone Company Employees for the safe handling of batteries and battery fluids.

1.02 This section is reissued for the following reason:

- To provide users with specific procedures for handling batteries in accordance with the applicable federal regulations with which the Company must comply.

1.03 Battery vendors (smelters/recyclers and storage facilities) utilized by Southwestern Bell to remove, store and dispose of batteries must be in compliance with regulations established by the Environmental Protection Agency (EPA) and the state.

1.04 Questions or clarification concerning this section should be directed to the Environmental Regulations staff, within the Real Estate Management and Training Section, as this organization has responsibility for maintenance of these procedures.

2.0 DEFINITIONS

2.01 The following terms appear in this section and are defined by the U. S. Department of Transportation (DOT) in their rules.

- "Corrosive material" is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact, or in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel.

- "Carboy" is a large glass bottle encased in a protective crate and is used to hold corrosive liquids.

3.0 INTRODUCTION

3.01 Southwestern Bell commonly uses large wet acid batteries to provide reserve power in network facilities. The batteries vary in size and shape. The largest weighs about 1750 pounds and may contain several gallons of electrolyte, usually sulfuric acid, although some batteries may contain alkaline solutions. These batteries are generally used in groups of 8, 12, 24 or more.

3.02 Shipments of batteries and battery fluids, both new and used, are subject to regulations by the Department of Transportation. The DOT's regulations, Title 49 CFR Part 171 et seq., prescribe these requirements for packing, marking, labeling and preparing shipping papers for hazardous materials, including batteries and battery fluids, being readied for transport. Battery disposal activities are also impacted by regulations of the U.S. Environmental Protection Agency (EPA) and associated state regulatory agencies.

3.03 Wet acid batteries are classified as a hazardous material due to the corrosive nature of contained electrolyte or alkaline solutions. Certain management controls are required to assure personnel safety when working with them.

3.04 While in use, the batteries may develop a sludge as a result of the breakdown of plates and internal components. The sludge contains small amounts of heavy metals, such as lead and cadmium, which should not be removed from the battery unnecessarily as these materials can be reclaimed during the smelting process.

3.05 Batteries which have been disconnected from service and have no further use within the Company will be removed and disposed by the Logistics Services District. Refer to SW 747-200-902, Central Office Wet Cell Battery Removal-Logistics Services, for guidelines to be followed when batteries are ready to be removed from a central office.

4.0 HANDLING AND PREPARING LARGE BATTERIES FOR SHIPMENT

4.01 When working with batteries or battery acid, a rubber apron, acid resistant gloves and safety goggles should be worn for protection against possible contact with electrolyte or alkaline solutions. Contact lenses should not be worn when working with any corrosive material. (See 14.0 First Aid and Emergency Care, Joint Practice 28, Review Packages No. 12 and 20, and related Personal Protective Clothing and Equipment Job Aids.)

4.02 It is common practice to use a strap around battery casings in order to lift the battery with a crane or hoist. A careful inspection of each casing should be made prior to strapping and lifting a battery to determine whether it is cracked or leaking. If a casing is damaged, acids should be removed prior to moving the unit. Unless specially trained craft people and special corrosion resistant pumps and tools are available, a qualified vendor should be contracted to remove the acids from the damaged cell or package the unit properly for safe transport. DOT rules prohibit transporters from accepting regulated hazardous materials, such as wet acid batteries, that are leaking.

4.03 Fifteen to twenty year old batteries with apparently sound casings may sometimes develop cracks or leaks if left standing on a truck bed or in temporary storage after removal. This condition may occur from stress and strain caused by lifting the battery and underscores the need for safety precautions. In cases where it is known that the batteries will be stored prior to resale, it is recommended that the batteries be wrapped in six mil plastic prior to packaging them in shipping containers. This will adequately containerize the leakage in the event the batteries are damaged during shipment or storage.

4.04 Batteries that have been removed from service and are waiting to be transported should have one vent plug left in place. This vent should allow hydrogen gases to exit from the entire battery preventing accumulation of an explosive mixture of gases. If a battery has cells that are isolated from each other by internal partitions, each cell should be vented while stored for shipment. Prior to the

physical movement of a vented battery, the vent should be plugged to avoid an acid spill. Orange colored shipping vent plugs should be used. The vent plugs can be obtained from previous incoming shipments of batteries after they have been installed or by purchasing them directly from the battery manufacturers.

4.05 In addition, if the batteries are to be handled within 24 hours after a boost charge, it is required that the shipping plugs and vent funnels equipped with black carbon containing rubber gaskets be replaced. These black gaskets have been shown to provide a conducting path for a spark to enter the battery. The black gaskets should be replaced with the new brown non-conducting rubber gaskets. Prior to installing the new gasket, any residue from the existing black gasket must be completely removed from the battery cover surface with a cloth lightly dampened with methyl-alcohol, taking care that no alcohol enters the battery.

5.0 PACKAGING

5.01 Batteries that become electrically defective during the installation process should be packaged in cartons used for the shipment of the replacement battery.

5.02 Batteries that are being removed from a facility for reuse should be palletized or individually packaged as discussed below and as outlined in Appendices 1 and 4 attached.

5.0201 When many batteries are being shipped, each battery should be protected against short circuits. Groups of batteries should be firmly secured to each other and then to pallets with steel bands to withstand shocks normally incident to transportation. Plastic or fiber bands are not recommended for this purpose due to insufficient material strength and resistance to acids. The height of the completed unit must not exceed 1-1/2 times the width of the pallet. The unit must weigh not less than 300 pounds gross and must not fail under a superimposed weight equal to two times the weight of the unit or a superimposed weight of 4000 pounds if the weight of the unit exceeds 2000 pounds.

5.0202 Batteries packed in individual containers (usually the carton used for shipment of the replacement cell) should be completely surrounded with material such as corrugated fiberboard. Terminal posts should NOT come in contact with the top of the container. Each container shall be securely closed and a minimum of one strap, plastic or steel, shall be used across the top, sides and bottom of the container.

5.03 All fiberboard must be at least 200 pound test (Mullen) and completed package (battery and slipcover or fiberboard box) must be capable of withstanding top-to-bottom compression test of at least 500 pounds without damage to battery terminals, battery cell covers, and filler caps.

5.04 Scrap batteries being shipped via highway are to be palletized or individually packaged as referenced in 5.02. In addition they can be shipped in another fashion only if the following conditions are met.

- No other hazardous materials are transported in the same vehicle and
- The batteries are loaded or braced so as or prevent damage and short circuits in transit and
- Any other material loaded in the same vehicle is blocked, braced or otherwise secured to prevent contact with or damage to the batteries and
- The transport vehicle is not carrying materials shipped by any person other than the shipper of the batteries.

6.0 MARKING

DOT regulations require that specification markings be displayed on containers. All labels or tags must be durable, in English and printed on or affixed to the surface of the container. Markings must also be displayed on a background of sharply contrasting color and cannot be obscured by other markings that could detract from it.

Each battery shipped in less than truckload quantities MUST be marked with the proper shipping description as follows:

"BATTERY, WET, FILLED WITH ACID,
CORROSIVE MATERIAL, UN2794"

OR

"BATTERY, WET, FILLED WITH ALKALI,
CORROSIVE MATERIAL, UN2795"

For identification purposes, each package should be marked with the name and address of the consignee or consignor. It is recommended that the name and address of BOTH the SWBT shipping location and consignee be marked on the package. If the ENTIRE truckload lot is tendered from one consignor to one consignee, the truck is termed an exclusive use vehicle and individual packages do NOT have to be marked with names and addresses.

Additionally, as liquids are contained in the batteries, the DOT requires that the vent hole be filled or closed and that external packaging be marked as follows with an arrow symbol indicating the proper package orientation (reference Appendix 2). Arrows that indicate anything other than package direction must not be displayed:

"THIS END UP" OR "THIS SIDE UP"

7.0 LABELING

Hazardous Materials Warning Labels are affixed to packages containing hazardous materials and have been designed and color coded to afford easy and quick recognition of the existing hazards. The hazardous materials regulations are specific on warning labels in areas such as placement, specifications, prohibitions, exemptions and multiple labeling.

A black and white Corrosive Label must be applied to each container or unit near the marked proper shipping description (reference Appendix 1 and 2), and cannot be obscured by other markings or attachments. Only one label is required on packages that are less than 64 cubic feet. If the package is 64 cubic feet or more, labels must be displayed on at least two sides or ends, excluding the bottom. One such label must be displayed on or near the closure.

8.0 PLACARDING

Hazardous Materials Placards correspond very closely with the shape, color and design of the hazardous materials warning labels. They are mostly enlargements of the warning labels and may be constructed of plastic or metal provided color and visibility requirements are maintained. Placards alert persons to the potential dangers associated with the particular hazardous material contained in a motor vehicle and serve to guide emergency personnel in their actions to minimize the potential of accidents involving hazardous materials.

The Company is responsible for providing Corrosive Placards to the carrier when the gross weight (total weight of material plus packaging) of a shipment of batteries exceeds 1,000 pounds. A placard must be displayed on both sides and each end of the freight container so that each placard is readily visible from the direction it faces. Corrosive placards are not required for shipment that contain less than 1,000 pounds gross weight.

9.0 SHIPPING PAPERS

9.01 In accordance with DOT regulations, shipments of batteries must be accompanied by a properly filled out shipping document (i.e., bill of lading). Joint Practice 122, Transportation Policies and Procedures, provides detailed instructions for preparation of the bill of lading. A sample bill of lading is attached as Appendix 3.

The DOT Regulations require that certain information be provided in very specific order and format on shipping documents. All personnel engaged in shipping batteries or any other hazardous material should ensure compliance to the most recent regulatory instructions. Federal law classifies as a misdemeanor and provides severe penalties for any person who willfully or for criminal purposes, falsely makes or alters any bill of lading.

- Descriptions of hazardous material must be entered before description of any non-hazardous materials in the same shipment. For large wet acid electric storage batteries used by the Company, the following are proper shipping descriptions:

"Battery, wet, filled with acid,
corrosive material, UN2794"
OR
"Battery, wet, filled with alkali,
corrosive material, UN2795"

The proper shipping description must be used exactly as stated above, printed or typed, no abbreviations allowed.

Present Company policy dictates that batteries will be shipped exclusively. The Straight Bill of Lading (Form FASW6152) has the proper shipping description preprinted on the document for batteries filled with acid. Entries for batteries filled with alkali will need to be entered on the Bill of Lading using the format outline above.

- An "X" indicating a hazardous material must be placed in a column captioned "HM". (Batteries currently in use by Southwestern Bell do not exceed reportable quantity values. However, should the weight of battery fluid exceed 1,000 pounds, the "X" should be replaced by the letters "RQ", indicating a reportable quantity of hazardous substance, as outlined in 49 CFR 172.101.)

10.0 SHIPMENTS OF ELECTROLYTE AND ALKALINE SOLUTION

10.01 Battery acid containing electrolyte or alkaline solutions is identified by EPA as a hazardous material. The proper shipping description for electrolyte is:

"BATTERY FLUID, ACID, CORROSIVE MATERIAL, UN2796."

The proper shipping description for alkaline solution is:

"BATTERY FLUID, ALKALI, CORROSIVE MATERIAL, UN2797"

10.02 In most instances, batteries are shipped with the electrolyte and alkaline solutions containerized in the batteries. In some cases, however, the acid is drained (primarily when the fragility or bulk of the battery poses a potential risk of an accident occurring when the battery is moved).

When the acid is drained, it must be packaged for shipment in accordance with DOT regulations (Reference Appendix 5). Normally, this activity is handled by the recycler or reclaimer dealer. The Manager-Hazardous Materials Removals should be contacted for specific instructions.

NOTE: Containers referenced above are NOT authorized for transport by air.

11.0 CLEAN UP OF LEAKS AND SPILLS

11.01 Should a leak or spill occur, stop the flow of material if possible. Unless the area is very well ventilated, do NOT permit anyone in the area without respiratory protection. For large spills, wear acid-resistant clothing covering all skin surfaces.

11.02 Absorb small spills using vermiculite, dry sand, earth or similar materials. Dike or dam-up large spills. NEVER use rags, sawdust or other combustible materials.

11.03 If possible, neutralize with lime, soda ash, sodium bicarbonate, etc. Otherwise dilute cautiously with large quantities of water. Do NOT permit excess to run into sewer system.

11.04 Shovel neutralized slurry into sealed container lined with a plastic bag. Contact the Manager-Hazardous Materials Removals immediately for specific instructions. Notification of local authorities may be required.

12.0 SHIPMENT OF CLEAN UP MATERIALS

12.01 As part of the business community Southwestern Bell recognizes that environmental protection can only be achieved if all segments of society assume responsibility for this concern. Accordingly, it is the Company's policy to facilitate the movement of hazardous materials, substances, and wastes through the transportation system in a responsible, timely, and safe manner, while taking into account existing acceptable technology, cost effectiveness, and the effect of the Company's actions on the environment.

As a general rule, a "Hazardous Waste" is any material or hazardous substance being discarded or accumulated, stored or treated prior to being discarded. Clean up materials contaminated with electrolyte are considered hazardous waste. The general requirements for disposal of these materials are as follows:

12.0101 The container can be any non-leaking metal drum with a removable lid. The Company prefers using the DOT specification 17H drum.

12.0102 All clean up materials should be placed in plastic bags (standard trash bags) before placing in the drum.

12.0103 The container must be marked "Waste Corrosive Solid, N.O.S. UN1759 (battery fluid in absorbent media and/or related debris.)" With the exception of the shipping name, other marking and labeling requirements are the same as those listed for large wet cell lead-acid batteries.

12.0104 Contact the Manager-Hazardous Materials Removals for specific instructions.

13.0 OTHER TYPES OF BATTERIES

13.01 Except as indicated below, disposition of the following types of batteries should be handled by the Manager-Hazardous Materials Removals. For removal and disposition procedures, refer to paragraph 3.05 of this practice.

13.02 Many other types of batteries are also used by the Company. These batteries range from small "button" cells used in test instruments to ordinary flashlight and larger batteries. Ordinarily, small numbers of these 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, it is in the best interest of the Company to assure that disposal is done in a manner which eliminates the potential for environmental pollution.

13.03 CARBON-ZINC AND ALKALINE CELLS (dry cells) are ordinary flashlight or transistor batteries, such as the AA, C, D or 9 volt. Used cells may be disposed of as trash. However, larger cells should first be placed in individual plastic bags to prevent short circuits and potential fires. The number of batteries disposed of in a single dumpster or compactor should not exceed 100.

13.04 SEALED LEAD ACID CELLS (SLC-96) batteries are rechargeable lead-acid storage batteries used in customer premise and outdoor pole-mounted equipment. The intercell connection of the SLC-96 battery is constructed of iron, lead, nickel or copper straps enclosed in a metal or fire-retardant plastic case. These batteries can be identified by the KS number (KS21906, List 1-8).

13.05 NICKEL-CADMIUM CELLS (Rechargeable dry cells) are generally identified by labels indicating "Nickel Cadmium" or "NI-CAD" and are used for such items as pagers and emergency lighting. Nickel and cadmium are considered an EP-toxic hazardous waste under the Environmental Protection Agency's (EPA) regulations. Therefore, these batteries should be purged from scrap and disposed of separately in an approved facility. Cells or assemblies of cells should be individually wrapped to prevent short circuits.

13.06 MERCURY AND SILVER OXIDE CELLS (Non-rechargeable) are generally small button cells with a stainless steel case. These cells are considered an EP-toxic hazardous waste under the EPA regulations if discarded. Therefore, they should be purged from scrap and disposed of separately in an approved facility.

13.07 LITHIUM CELLS AND BATTERIES have a 5-10 year shelf life and are used in emergency equipment and certain computer circuitry. Metallic lithium can represent a severe fire hazard if the cells are broken open. The cells qualify as "reactive" hazardous waste under EPA regulations. They should be purged from scrap and disposed of separately in an approved facility. DOT regulations cover disposal as follows:

13.0701 Lithium batteries for disposal, comprised of one or more cells, may be offered for transportation to a permitted storage facility and disposal site by motor vehicle only if the batteries meet the following requirements:

- when new, contained not more than 12 grams of lithium per cell
- is equipped with an effective means of preventing external short circuits
- is classified and offered for transportation as an ORM-C (hazard class meaning "other regulated materials")
- is overpacked in a strong fiberboard box, or metal or fiber drum which complies with paragraph 173.24 (standard requirements for all packages) of Title 49 CFR.

13.0702 Each packaging having a rated capacity of 110 gallons or less must be plainly, durably, and legibly marked on at least one side or end "Lithium batteries, for disposal - ORM-C." This description must be placed within a rectangle that is approximately 1/4 inch larger on each side than the description.

13.08 The above sections do NOT apply to lithium batteries of one or more cells which, when new, were exempted from regulations under the following requirements:

13.0801 Each cell may contain no more than 0.5 gram of lithium or lithium alloy.

13.0802 Each battery may contain an aggregate quantity of no more than 1 gram of lithium or lithium alloy.

13.0803 Each cell must be hermetically sealed

13.0804 Cells must be separated so as to prevent short circuits

13.0805 Batteries must be packed in strong outside packaging except when installed in electric devices.

13.0806 If a battery contains more than 0.5 gram of lithium or lithium alloy, it may not contain a liquid or gas that is a hazardous material unless the liquid or gas, if free, would be completely absorbed or neutralized by other materials in the battery.

13.09 AUTOMOTIVE BATTERIES are commonly replaced on a one-for-one basis as required. Used batteries are turned in for credit toward purchase of new units, and this appears to be the most practical means of disposal. Whenever possible, cartons or packaging from new batteries should be used for returning the old units. Normal safety precautions should be taken when handling batteries to prevent short circuits and spillage of electrolyte during transit. The disposal of automotive batteries as trash is NOT permitted. These batteries will be given the same disposal considerations as large central office batteries.

14.0 FIRST AID AND EMERGENCY CARE

In the event of an accident, follow normal first aid and emergency procedures including but not limited to the following precautions:

14.01 EYES - Should sulfuric acid get into the eyes, flush the victim's eyes immediately with large amount of cool water. Hold upper and lower eyelids open while flushing. Continue this process for at least 15 minutes until all traces of acid are removed. Contact lenses should not be worn when working with any corrosive material. If you suspect a victim is wearing contact lenses, have the victim remove them before flushing the eyes. Transport the victim to the appropriate emergency facility for additional treatment.

14.02 SKIN - Should sulfuric acid contact the skin, flush with large amounts of cool water. Remove contaminated clothing completely, including shoes. Continue flushing for at least 15 minutes until all traces of acid are removed. Transport the victim to the appropriate emergency facility for additional evaluation. Contaminated clothing must not be worn again, but placed in closed containers for storage until proper disposal or until acid can be removed. The person laundering such clothing should be warned of hazards.

14.03 INHALATION - Move the victim from the hazardous exposure to fresh air immediately. If breathing has stopped, begin artificial respiration. Keep the victim warm and at rest. If breathing is difficult, give oxygen. Seek additional medical attention.

14.04 INGESTION - If the victim is conscious, do NOT induce vomiting. Have the victim rinse mouth with water, then drink large quantities of water or milk, if available. Follow up by contacting the local poison control center immediately for additional instructions and transport the victim to the appropriate emergency facility for additional treatment.