NI-CAD BATTERY - SERVICING

1. General

A. Airplanes may incorporate a nickel-cadmium (Ni-Cad) battery. This 25.2 VDC battery is rechargeable and is rated at 40 ampere-hours.

2. Description

A. The electrolyte used in a ni-cad battery is a solution of distilled water and potassium hydroxide. The electrolyte is used only as a conductor and does not react with plates. The negative plates in the battery are cadmium-oxide and the positive plates are nickel-oxide. During charging, all oxygen is driven out of negative plates and only metallic cadmium remains. The oxygen dispelled from negative plates is picked up by positive plates to form nickel dioxide. Toward the end of charging process, electrolyte will gas due to electrolysis taking place in electrolyte. A slight amount of gassing is necessary to completely charge the battery.

B. During discharge, reverse chemical action takes place. The negative plates gradually gain back oxygen, as positive plates lose oxygen. Due to this interchange of oxygen, chemical energy of plates is converted into electrical energy and electrolyte is absorbed by plates. For this reason, the level of electrolyte should be check only when battery is fully charged.

3. Servicing

A. Servicing of the ni-cad battery is limited to adding distilled, deionized or demineralized water to the individual cells. For battery and cell removal/installation, refer to Chapter 24, Ni-Cad Battery - Removal/Installation.

WARNING: The electrolyte used in nickel-cadmium batteries is a caustic solution of potassium hydroxide. Serious burns will result if it comes in contact with any part of the body. Use rubber gloves, rubber apron and protective goggles when handling this solution. If electrolyte gets on skin, wash affected areas thoroughly with water, and neutralize with three-percent acetic acid, vinegar or lemon juice. If electrolyte gets into eyes, flush with water and get immediate medical attention.

WARNING: Rings, metal watchbands and other metallic jewelry should be removed before working around the battery. Should such metallic objects contact intercell connectors of opposing polarity, they may fuse themselves to the connectors and cause severe skin burns.

CAUTION: Tools or equipment used for servicing lead-acid batteries shall not be used for servicing Ni-Cad batteries. Ni-Cad batteries should be completely removed from lead-acid battery service area. The slightest acid contamination will deteriorate Ni-Cad batteries.

(1) Adding Fluid To Individual Cells.

(a) Remove battery. Refer to Chapter 24, Ni-Cad Battery - Removal/Installation.

(b) Remove battery caps.

(c) Check electrolyte level in cells and adjust as required.

1 Electrolyte level of fully charged ni-cad battery should be 0.250 inch above top of plates immediately after charging, and approximately 0.125 inch above plates two hours after charging.

NOTE: Electrolyte level in ni- cad batteries can be accurately checked only when battery is fully charged. Ensure battery is fully-charged before checking electrolyte level.

NOTE: Use only distilled, deionized or demineralized water. Batteries are easily contaminated through the use of tap water, which contains minerals, chlorines, softening agents and other foreign material.

(d) Replace battery caps.

(e) Reinstall battery to airplane. Refer to Chapter 24, Ni-Cad Battery - Removal/Installation.