From the desk of Jim Kaness

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DESIGN PLAN

PARROT PEAK

Rev. 12/21/99

INTRODUCTION
This design plan is a "living document" intended as a record of system design requirements, and proposed approaches to implementation of those requirements. It will be updated as appropriate.

ABOUT THIS WEEK'S ISSUE
- This is the first issue of this plan.
- **Issues for discussion are presented in boldface type, for emphasis.**

Upgrading the Parrot Peak site is being done to provide for a 3-DS3 microwave repeater capability in order to link Edwards Air Force Base (EAFB) building 5780 with Nellis Air Force Base (AFB), Nevada The Parrot Peak site is the single repeater site in a two-hop system between EAFB and Nellis AFB.

This effort includes the following major items:

1. Installation of a new ____foot high ___leg tower and foundation close to the existing building.
2. Installation of four 8 GHz microwave dishes and associated waveguide.
3. Installation of a new DC battery plant and chargers.
4. Installation of a new dry-air supply for pressurizing the waveguide.
5. Installation of two racks of Alcatel microwave radio equipment.
6. Installation of a 1000-watt inverter to power the tower lights from the batteries.
7. Miscellaneous ancillary items.

SITE INFORMATION
Parrot Peazk is located on NAWC China Lake, about 42 miles north-east of the main gate of NAWC, China Lake, CA. It is served by a paved road for the first 30 miles (to Junction Ranch) and thence by one-lane graded dirt road to the site. The dirt road is steep

and rocky and requires 4-wheel drive with low-range, or heavy trucks with granny gears. Primary power is provided by an existing 100KW diesel generator which provides 120/208 VAC 3-Phase power to the building.. The site is at 36-04-59.9 N latitude and 117-28-49.9 W longitude and is 8366 feet above mean sea level.

TOWER AND FOUNDATION

A 70-foot high 3-leg Andrew tower was installed adjacent to the existing building at Parrot Peak. A waveguide bridge was installed from the tower to the waveguide penetration plate just below the ceiling level of the building. A Lyncole chemical ground rod system was provided at the base of the tower for tower grounding and lightening protection.

ANTENNAS AND WAVEGUIDE

A dual-polarized 12-foot Andrews HPX12-71W-P1M antenna was installed at the ____-foot level of the tower aimed at Edwards Air Force Base building 5780 at 198.93 degrees true (213.78 degrees magnetic). The path length for this dish is 87.7 miles.

A dual-polarized 10-foot Andrews HPX10-71W-P1M antenna was installed at the____-foot level of the tower aimed at Edwards Air Force Base building 5780 at 198.93 degrees true (213.78 degrees magnetic). The path length for this dish is 87.7 miles.

A dual-polarized 12-foot Andrews HPX12-71W-P1M antenna was installed at the ____-foot level of the tower aimed at the Beatty Site at ____ degrees true (____ degrees magnetic). The path length for this dish is 97 miles.

A dual-polarized 10-foot Andrews HPX10-71W-P1M antenna was installed at the____-foot level of the tower aimed the Beatty Site at ____ degrees true (____ degrees magnetic). The path length for this dish is 97 miles.

All antennas are fed with Andrew EWP-77-71W elliptical waveguide.

DC BATTERY PLANT

The DC battery plant consists of an HC Power, Inc. model PB980500 power board, which provides 48 VDC to power equipment and charge the batteries. The batteries are three parallel stacks of GNB 100A33 cells. Each stack consists of 24 cells rated at 1600 ampere-hours at 48 VDC. The three stacks are rated at 4800 ampere-hours which will provide the design load of 70 amperes for 72 hours (three days). This is to allow time for reaching this remote site in bad weather before the power is lost completely.

The power board takes 208 volts, 3-phase power into three chargers, each rated at 50 amperes output at 48 VDC. Any single charger may fail while maintaining the 70 ampere load rating with the remaining two chargers. A metering panel, low voltage disconnect, and breaker panel are provided in the rack.

DRY AIR SUPPLY
TBD

MICROWAVE RADIOS
Air Force radios consist of two racks of Alcatel MDR-4308s providing 3 optical OS-3 data streams between the racks, back-to-back. The radios were provided by the Air Force through NTMI.

MISCELLANEOUS ITEMS
A Willmore model 1654-48-120-60-U 1000-watt inverter is provided to operate the tower lights from the battery plant (primary power) or the generator AC (secondary power if the inverter fails). This inverter is mounted in the recifier rack.

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INSTALLING STRAPS ON GNB 100A33 BATTERIES

CAUTION – EXTREMELY HIGH CURRENT

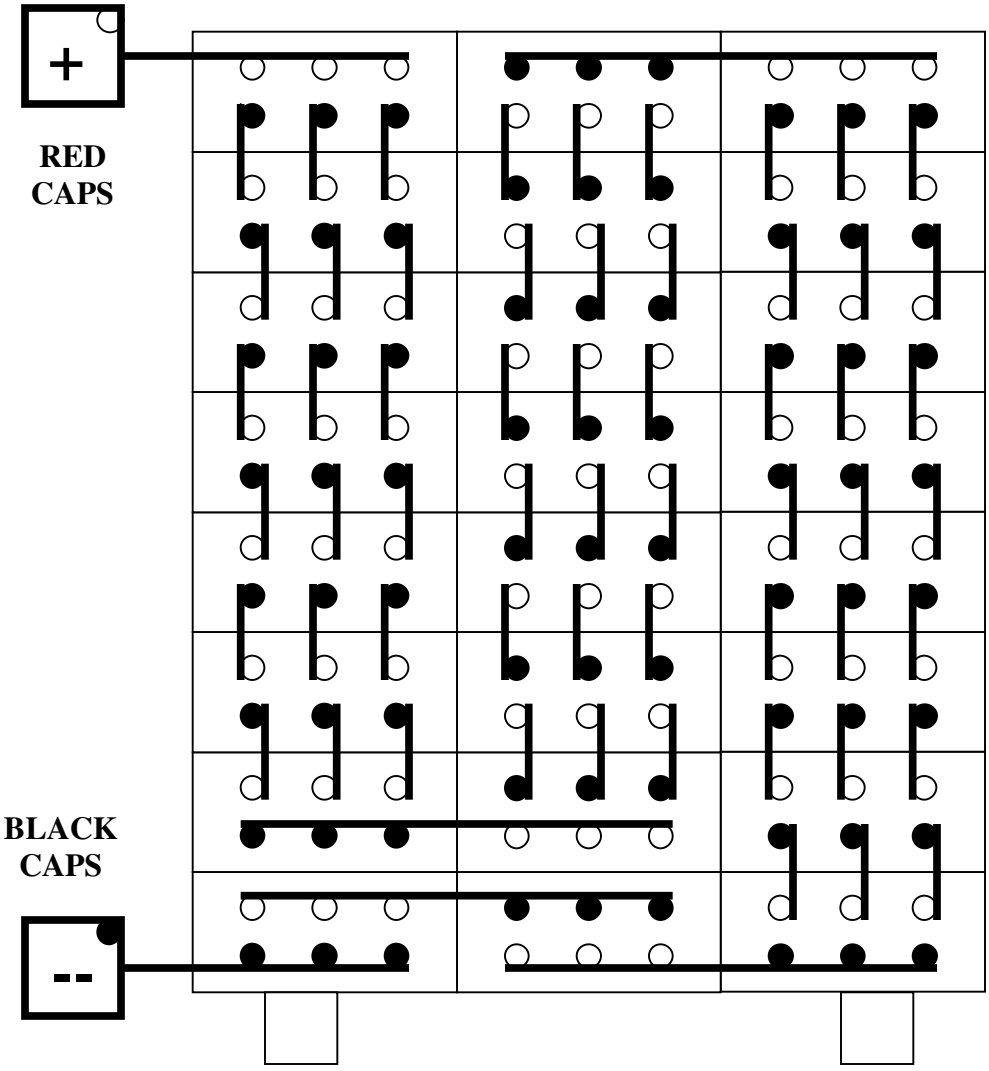
RISK OF INJURY

1. **READ THE BOOK FIRST.**
2. **CELLS ARE FULLY CHARGED.**
3. **SHORTS TO A SINGLE CELL OR MULTIPLE CELLS WILL MELT AND/OR WELD TOOLS, STRAPS, BOLTS, ETC. AND CAN BURN YOUR FINGERS, HANDS, OR FACE.**
4. **REMOVE ALL METAL RINGS, WATCHES, BELT BUCKLES, AND OTHER METAL FROM YOURSELF.**
5. **INSULLATE ALL METAL TOOLS BY WRAPPING WITH BLACK ELECTRICAL TAPE.**
6. **LEAVE ALL RED AND BLACK PLASTIC PROTECTIVE COVERS ON TERMINALS AS LONG AS POSSIBLE.**
7. **STRAP FROM THE TOP DOWN TO MINIMIZE SHORTS FROM FALLING TOOLS, STRAPS, ETC.**
8. **FOLLOW ATTACHED DRAWING FOR STRAPPING.**
9. **RED CAPS ARE POSITIVE (3 PER CELL). CELL IS STAMPED WITH A + SIGN.**

   BLACK CAPS ARE NEGATIVE (3 PER CELL)
10. **IN EVERY CASE, STRAP NEGATIVE (-) OF ONE CELL TO POSITIVE (+) OF THE NEXT CELL.**

GNB 100A33 BATTERY STRAPPING

PARROT PEAK, CHINA LAKE, CA



- **INSULLATE ALL METAL TOOLS BEFORE USING ON CELLS.**
- **READ INSTRUCTIONS BEFORE STRAPPING CELLS.**
- **BATTERIES ARE CHARGED – 1600 AMPERE-HOURS**
- **24 CELLS x 2.16 VOLTS/CELL = 51.8 VDC.**
- **STRAP ALL THREE STACKS THE SAME WAY.**

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ANDREW WAVEGUIDE CONNECTION DIAGRAM