Channel Island Addendum

Table of Contents

Satellite Coverage Revised map

1	Santa Barbara Ranger station	33°28'49.70"N	119° 1'46.08"W	N	1	G16 / AMC-21 Satellite
2	Anacapa Island Generator Building	34° 0'55.73"N	119°21'48.14"W	N	1	G16 / AMC-21 Satellite
3	Anacapa Island GSM Payphone Kiosk	34° 0'56.25"N	119°21'44.52"W	N	1	G16 / AMC-21 Satellite
4	Anacapa Ranger Station	34° 0'56.60"N	119°21'47.79"W	N	1	G16 / AMC-21 Satellite
5	San Miguel Ranger station	34° 2'17.71"N	120°21'6.42"W	N	1	G16 / AMC-21 Satellite
6	San Miguel Marine Mammal Research Facility	34° 1'53.80"N	120°26'1.36"W	N	1	G16 / AMC-21 Satellite
7	Santa Cruz Scorpion Housing area	34° 3'1.07"N	119°33'42.15"W	N	1	G16 / AMC-21 Satellite
8	Santa Cruz Scorpion Abode	34° 2'55.95"N	119°33'30.00"W	N	1	G16 / AMC-21 Satellite
9	Santa Cruz Scorpion Bathroom	34° 2'56.71"N	119°33'28.06"W	N	1	G16 / AMC-21 Satellite
10	Santa Cruz Prisoners Harbor day use area	34° 1'9.63"N	119°41'04.19"W	N	1	G16 / AMC-21 Satellite
11	Santa Cruz Del Norte ranch	34° 0'30.30"N	119°39'20.67"W	N	1	G16 / AMC-21 Satellite
12	Santa Cruz Smugglers Abode (olive tree)	34° 1'23.14"N	119°32'41.84"W	N	1	G16 / AMC-21 Satellite
13	Santa Rosa Island Main Ranch	34° 0'18.75"N	120° 3'6.38"W	N	1	G16 / AMC-21 Satellite
14	Santa Rosa campground	33°59'28.68"N	120° 2'52.60"W	N	1	G16 / AMC-21 Satellite
15	Santa Rosa Air Quality shed	34° 0'6.00"N	120° 2'53.46"W	Y	1	G16 / AMC-21 Satellite
16	Santa Rosa Maintenance Office	34° 0'11.09"N	120° 03'35.74"W	N	1	G16 / AMC-21 Satellite
17	Santa Rosa Johnson's Lee House	33°54'20.40"N	120° 06'26.76"W	N	1	G16 / AMC-21 Satellite
18	Santa Rosa housing	33°59'56.80"N	120° 3'55.10"W	N	1	G16 / AMC-21 Satellite
19	Santa Rosa Power station	34° 0'11.21"N	120° 3'6.23"W	N	1	G16 / AMC-21 Satellite

Santa Rosa Island

Figure 1 – Clarification on Solar panel at Santa Rosa Maintenance Area

In the Original document, Figure 19-B (page 39) we did not clearly state the existence of solar panels at the Maintenance area. This is a close up of the solar panels behind the tanks.

Santa Cruz Island – Smugglers Adobe Additional Pictures

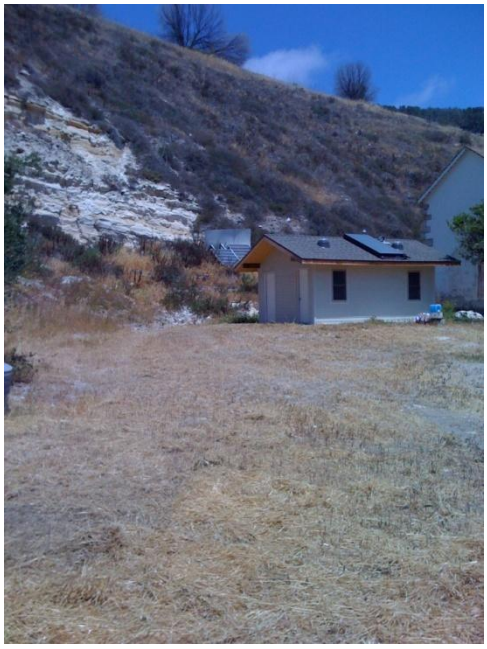


Figure 2 – Smugglers Bathroom building next to Historic Abode

The pictures are taken during our second visit. We were unable to land during our first visit due to darkness. Unlike the originally proposed telecommunication system (Figure 26, page 52), the proposed telecommunication system would be installed on the smaller maintenance building instead of the larger building.

New Equipment:

1. VSAT – 1.8M dish
2. Antenna – Yagi /Omni directional
3. Telecom box for Pico cell is below solar panel is mounted on the building
4. Solar panel – a solar power system utilizing 176Watt panels will be added to the existing solar arrays behind building
5. GSM payphone can be mounted on the building

This site is occasionally used as a spike camp for projects in the area. It is not regularly staffed. Boaters come ashore here and sometimes have problems landing in the surf. Having a pay phone or emergency phone at the adobe or down near the beach and outhouse facility would be an asset for visitor safety.

The surrounding environment will not be disturbed and there will be no new ground disturbances, all equipment staging will be made on existing infrastructure with minimal or no environmental disturbances.

There is a new bathroom building next to the historic Adobe building. There are solar panels on the hill behind the new bathroom building.

Figure 3 – Solar Panel behind Smugglers bathroom Building

We are going to augment the solar panels and put in panels for us next to the existing panels.

Figure 4 – Closet located on the back of Smugglers Bathroom Building

We propose to place the batteries, inverter, and power controller in one of the closet behind the bathrooms. The Sat dish and the omni-direction can be mounted on the back wall.

Figure 5 –Back wall of the Smugglers Bathroom building

An additional phone should be put on the bathroom wall. (Only one will be installed.)

Figure 6 – Kiosk near Beach at Smugglers

A solar GSM payphone should be put on the Kiosk near the beach.

Santa Cruz Island – Scorpion

Figure 7 – Existing Solar panel at Scorpion

We are proposing to augment the solar panels and put in panels for us next to the existing panels.

Figure 8 – Exiting shed/cabinet at Scorpion

Our controller, Sat dish, Pico cell can be mounted to the existing shed/cabinet. The inverter and controller batteries can be added to the existing shed/cabinet.

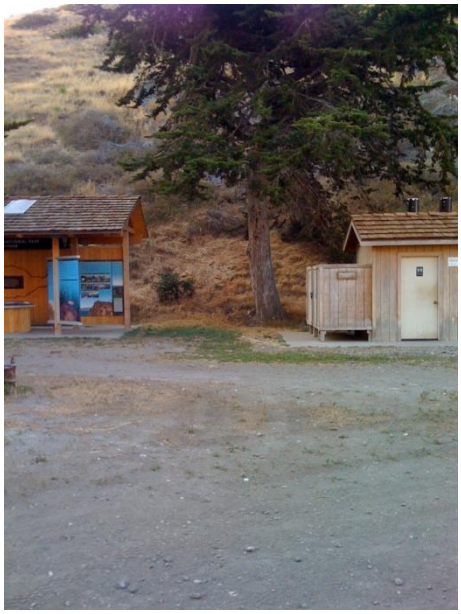


Figure 9 – Visitor Kiosk and Bathroom (Scorpion Kiosk & Bathroom)

Figure 10 – Scorpion Bathroom

New Equipment:

Package 1 – Full Package outside Pico Cell coverage

1. VSAT – 1.8M dish
2. Antenna – Yagi and/or Omni directional
3. Telecom box for Pico cell is below solar panel
4. Solar panel – add a 176Watt solar system
5. Solar powered pay phone

Package 2 – Payphone with power and within coverage area of Pico Cell

1. Solar powered pay phone

Notes: Ms Ann Huston of the NPS had a question concerning the installation of the telecom equipment at Scorpion. There are two possible packages that can be installed at Scorpion and full package or Solar powered only GSM package. As an alternate site to the kiosk shelter at Scorpion (Channel Island, Figure 29, pages 58-59), we would install a GSM solar payphone at the bathroom at Scorpion. All new equipment will be attached to the existing infrastructure requiring a ladder, screws and brackets. The surrounding environment will not be disturbed and there will be no new ground disturbances, all equipment staging will be made on existing infrastructure with minimal or no environmental disturbances.

Santa Cruz Island – Del Norte Clarification

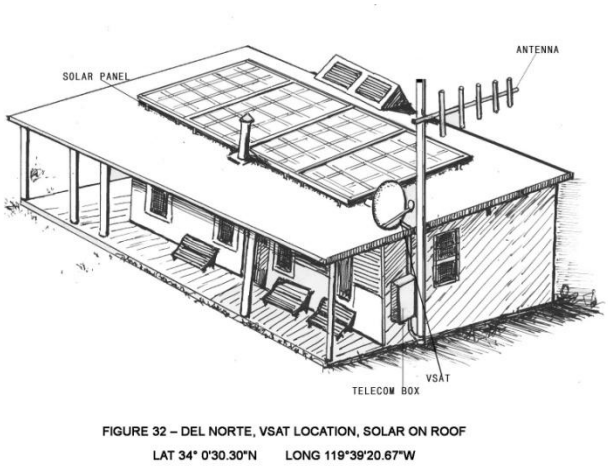


Figure 11 – Clarification for Del Norte Solar Panel on Roof

This is a clarification of the mounting of the equipment and solar panel on the roof of the building. Unlike to original picture, we will not be installing a Yagi direction antenna at this location.

Figure 12 – Clarification for Del Norte on Second Trip

Figure 13 – Prisoner's Harbor Day Use Area (1)

Figure 14 – Prisoner's Harbor Day Use Area (2)

Figure 15 – Prisoner's Harbor Day Use Area (3)

Figure 16 – Prisoners Harbor Day Area[1]

New Equipment:

Payphone with power and within coverage area of Pico Cell

1. Solar powered pay phone – can be installed on the Kiosk on the right side of Figure 10 and Figure 11.

[1] Picture from http://www.travbuddy.com/travel-blogs/37130/photos/view/1/0

Figure 17 – Kiosk Bulletin Board at Prisoner's

Anacapa Island Addendum

Coordinates: 34.015705,-119.362556

Anacapa Island Addendum

There are total for six structures on Anacapa Island. Starting from the left, (1)Ranger House, (2)Generator Building, (3) Solar/fuel Building, and (4) Visitor center.

Figure 18 – Anacapa Buildings 1

Figure 19 – Anacapa Buildings 2

The water building is on the far right. We are going to be putting up one Pico tower on an existing mast outside the Generator Building.

Figure 20 – Anacapa Generator Building
Lat 34° 00’ 55.73” N, Long 119° 21’ 48.14” W

We are going to move/realign the solar panels on the Solar/fuel building and then add our own panels and batteries.

Figure 21 – Anacapa Solar Panels at Solar Building
Lat 34° 00’54.60” N, Long 119° 21’ 48.45” W

There is room on ten more panels. The existing solar panel system comprises of a 110 Watt at 10 amps Mitsubishi panels. The panels are 56 inches by 25.5 inches.[2]

We will have to move two plants. They are currently blocking the solar panels and we need to move their small panels to the bottom to make room for ten more big panels.

[2] Notes: Some of the existing solar arrays on the Channel Islands have gaps and older 55 Watts panels. The picture in Figure 7 depict a complete solar array with newer 176 Watts panels supporting two autonomous solar systems: (1) powering appliances for NPS and (2) powering the added telecom equipment.

Figure 22 – Anacapa Solar Panel

Figure 23 – Anacapa inside location for equipment

According to the NPS, the telecommunication (Pico Cell Box, inverter, Solar controller) can be mounted on this wall and we can move the cabinet.

This is their existing batteries are located outside and we can put our batteries outside in a cabinet to the right.

Figure 24 – Anacapa Battery Bank Outside

We will put our batteries outside and to the right of the existing batteries.

Figure 25 – Anacapa location for our batteries

Figure 26 – Anacapa Kiosk near Visitor Center

We are going to install the GSM solar payphone can be installed on this kiosk. It is outside the visitor center.

There is conduit between the Ranger house and the Generator building that has space in it. We will put one or two Cat5 in there. There is conduit between the Solar and Generator building and between the Generator building and the Visitor center. We will put in conduits between those places and follow the same path. Hand trenching is needed to connect our wires to the existing conduit.

Figure 27 – some existing conduit between solar panels and Generator Building on Anacapa

New Equipment exterior:

1. VSAT – 1.8M dish
2. Antenna – Yagi /Omni directional
3. Solar panel – a solar power system utilizing 176Watt panels

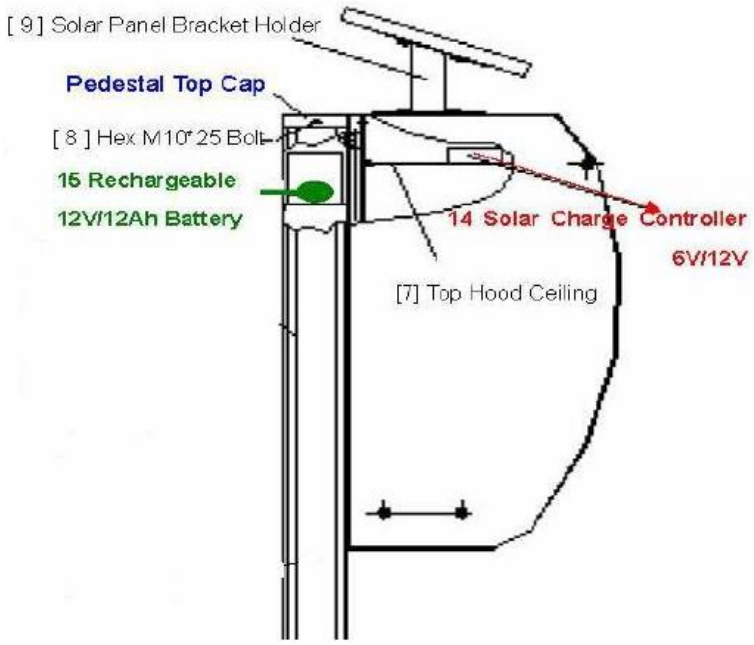
New equipment interior:

1. Outback Controller
2. Batteries
3. Battery rack
4. Inverter
5. Pico Cell telecom box

Solar Payphone

The Sungia solar payphone[3]: the payphone can be deployed as a standalone unit or integrated into an off grid solar system. The payphone can generate 15Watt to 35Watt depending on its geographical position. The panel is used for recharging a 12V battery, and it can charge, on average, 4Ah per day to a 12V battery for a standard fixed line payphone or a wireless GSM payphone power consumption about 3Ah per day. The Sungia Solar Panel module/panel is assembled by lamination. The four holes on the metal frame make mounting easy and provide a strong fixing of the modules to the supporting structure. The modules can withstand winds over 200 km/h.

[3] **solar_ap_w07 instal directions.pdf**


[9] Solar Panel Bracket Holder
Pedestal Top Cap
[8] Hex M10*25 Bolt
15 Rechargeable
12V/12Ah Battery
14 Solar Charge Controller
6V/12V
[7] Top Hood Ceiling

Battery[4]

Figure 28 - Battery

[4] **8G8DLTP-DEKA.pdf**

Battery Rack[5]

Figure 29 – Indoor/Outdoor Battery Rack

Figure 30 – Outdoor Battery Rack with Cover

[5] **battery_rack.pdf**

Controller

Figure 31 – Battery Solar Controller

FLEXmax 80 Specifications

- Nominal Battery Voltages 12, 24, 36, 48, or 60 VDC (Single model - selectable via field programming at start-up)
- Maximum Output Current 80 amps @ 104º F (40ºC) with adjustable current limit
- Maximum Solar Array STC Nameplate 12 VDC systems 1250 Watts / 24 VDC systems 2500 Watts / 48 VDC systems 5000 Watts / 60 VDC Systems 7500 Watts
- NEC Recommended Solar Array STC Nameplate 12 VDC systems 1000 Watts / 24 VDC systems 2000 Watts / 48 VDC systems 4000 Watts / 60 VDC Systems 5000 Watts
- PV Open Circuit Voltage (VOC) 150 VDC absolute maximum coldest conditions / 145 VDC start-up and operating maximum
- Standby Power Consumption Less than 1 Watt typical
- Power Conversion Efficiency 97.5% @ 80 Amps in a 48 VDC System - Typical
- Charging Regulation Five Stages: Bulk, Absorption, Float, Silent and Equalization
- Voltage Regulation Set points 10 to 80 VDC user adjustable with password protection
- Equalization Charging Programmable Voltage Set point and Duration - Automatic Termination when completed
- Battery Temperature Compensation Automatic with optional RTS installed / 5.0 mV per °C per 2V battery cell
- Voltage Step-Down Capability Can charge a lower voltage battery from a higher voltage PV array - Max 150 VDC input
- Programmable Auxiliary Control Output 12 VDC output signal which can be programmed for different control applications (Maximum of 0.2 amps DC)
- Status Display 3.1” (8 cm) backlit LCD screen - 4 lines with 80 alphanumeric characters total
- Remote Display and Controller Optional Mate or Mate2 with RS232 Serial Communications Port
- Network Cabling Proprietary network system using RJ 45 Modular Connectors with CAT 5e Cable (8 wires)

- Data Logging Last 128 days of Operation - Amp Hours, Watt Hours, Time in Float , Peak Watts, Amps, Solar Array Voltage,
- Max Battery Voltage Min Battery Voltage and Absorb for each day along with total Accumulated Amp Hours, and kW Hours of production
- Hydro Turbine Applications Consult factory for approved Turbines
- Positive Ground Applications Requires two Pole Breakers for switching both positive and Negative Conductors on both Solar Array and Battery Connections (HUB-4 and HUB-10 cannot be used for use in positive ground applications)
- Operating Temperature Range Minimum -40° to maximum 60° C (Power capacity of the controller is automatically de-rated when operated above 40° C)
- Environmental Rating Indoor Type 1
- Conduit Knockouts One 1" (35mm)on the back; One1" (35mm) on the left side; Two 1" (35mm) on the bottom
- Warranty Standard 5 year
- Weight - Unit 12.20 lbs (5.56 kg)
    - Shipping 15.75 lbs (7.10 kg)
- Dimensions - Unit 16.25" x 5.75" x 4" (41.3 x 14 x 10 cm) - (H x W x D)
    - Shipping 21" x 10.5" x 9.75" (53 x 27 x 25 cm)
- Options Remote Temperature Sensor (RTS), HUB 4, HUB 10, MATE, MATE 2
- Menu Languages English & Spanish