

**Microwave Setup for Zorro Ranch,
Stanley, New Mexico**

Information on the setup at Sandia Crest

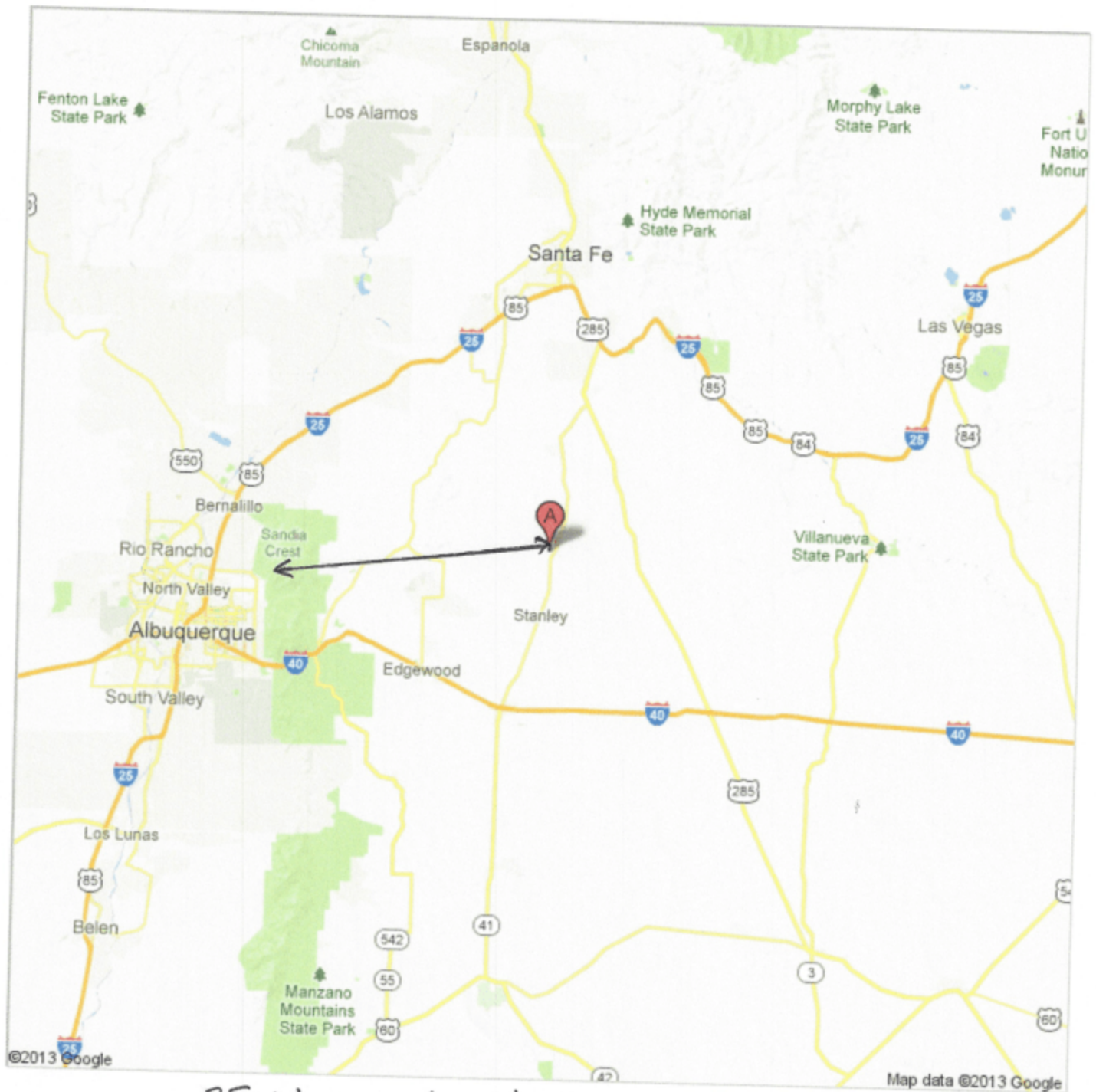
- The System information and layout at site
 - See Separate attachment, please note there is generator and battery back at sight
 - Height of current microwave in terms of attitude
 - 10,678 ft estimated
 - Approximate distance for line of sight
 - 35 miles estimated, see separate attachment
 - Specs of radio being used
 - Adran Tracer 4102
 - Number of units sharing the sight
 - Multiple
- Information on the setup at Zorro
 - The System information and layout at site
 - See separate attachment, please note there is no generator backup and only small APC backup at site
 - Height of current microwave in terms of attitude
 - 6,650 ft
 - Specs of radio being used
 - Adran Tracer 4102
 - Number of units sharing the sight
 - No other units
- Environmental conditions
 - Frequency, Magnitude, and types of Storms
 - Snow, thunder and dust storms
 - Any obstructions in the line of sight
 - None
 - Any above ground High Volt systems or utilities
 - No



Address **49 Zorro Ranch Rd**
Stanley, NM 87056

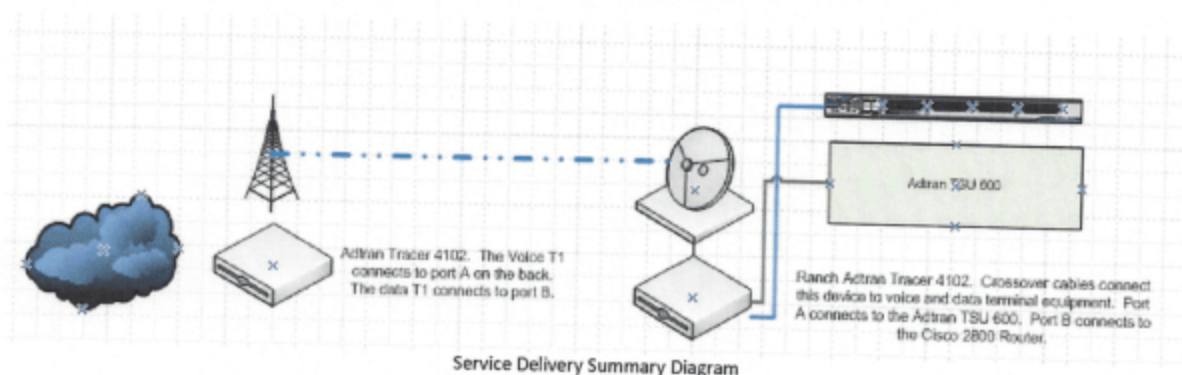
Get Google Maps on your phone

Text the word "GMAPS" to 466453



35 miles estimated.

Telephone service is currently delivered to Zorro Ranch through two different mechanisms. There are several copper quest lines that deliver service as well as an analog T1 circuit that is multiplexed with a data T1 circuit from Transmitter shack 75 on Sandia Crest. The multiplexed T1's are using a pair of dish antennas connected to Adtran Tracer equipment that transmits the circuits over an unlicensed wireless link to the ranch. Internet access is distributed throughout the ranch using a number of wireless devices and antennas. The diagram below is a summary of service delivery to the ranch.



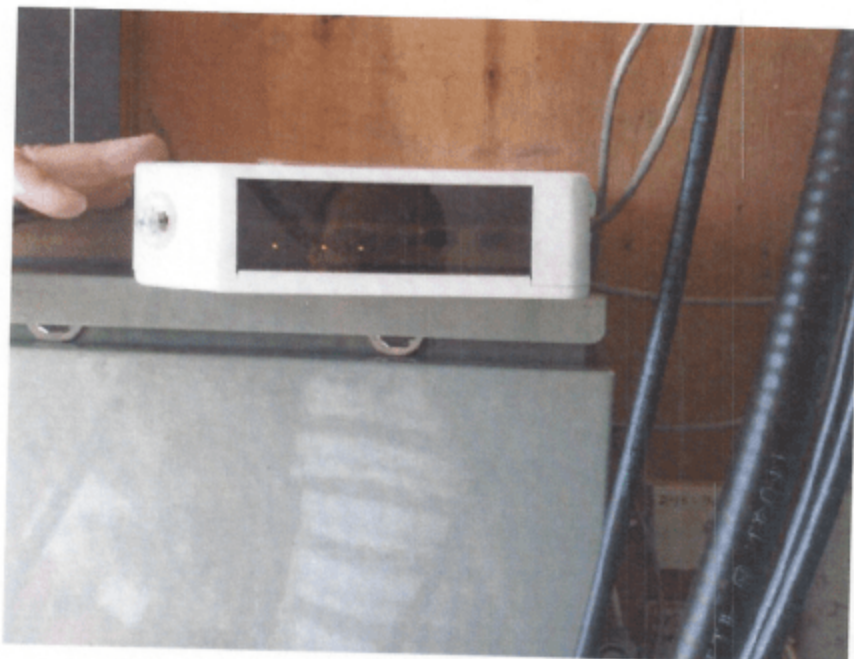
Below are pictures identifying all equipment involved in this delivery. In the event of an outage, loopback plugs could be placed in port A or B of the Adtran Tracer located at Zorro Ranch. If the service provider (Qwest/Sprint) can see the loopback to this point, all communications from Sandia Crest are operational.



The Adtran Tracer T1 Multiplexer takes signal from the voice and data T1 jacks and transmit these circuits wirelessly to the sister radio and antenna at Zorro Ranch.



This image is the back of the rack where the Adtran Tracer is located at Sandia Crest. The voice jack is the upper one located on the board. The data jack is the one loose resting on the chassis of the Adtran Tracer. The grey cables with RJ-45 terminations (8-pin plastic termination) connect the jacks to the A and B ports on the back of the Adtran Tracer. The jacks are extended from the T1 cards in the generator room. Loopback plugs could also be placed in each of these jacks to verify provider equipment all the way up to our equipment. This would be the point where provider equipment ends and our equipment begins. The T1 cards and jacks should be considered part of the cloud image in the summary diagram at the beginning of this document.



Sprint data T1 card in the generator room of transmitter shack 75 at Sandia Crest. Notice that all lights on the front are green. In the event of an outage, you will want to note if there are any amber or red LEDs illuminated on either of these cards.



Voice T1 card in the generator room of transmitter shack 75 at Sandia Crest.



This is the back of the Adtran Tracer where the voice and data T1 circuits are connected. T1A connects to the voice jack (the upper one on the board in the image above) and the data jack connects to T1B.



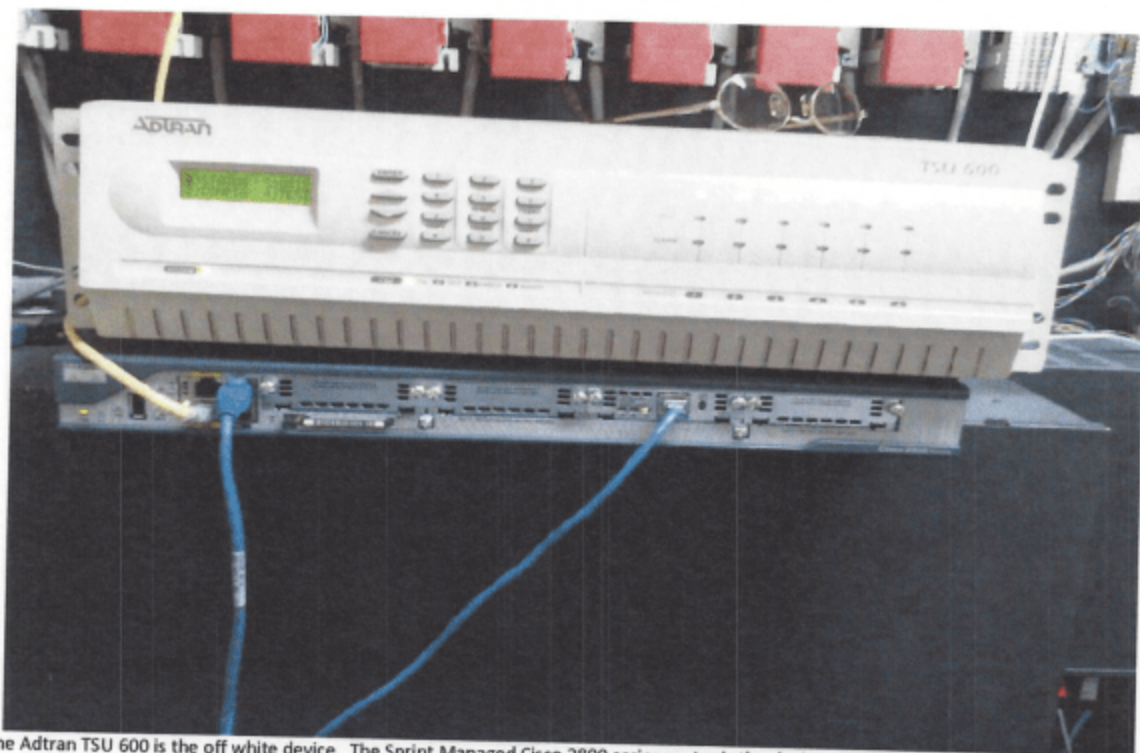
The Adtran Tracer connects to the dish antenna mounted on the radio tower outside transmitter shack 75 at Sandia Crest. Our dish is the one with the ice shield over it (basically the only 'dish' in this picture).



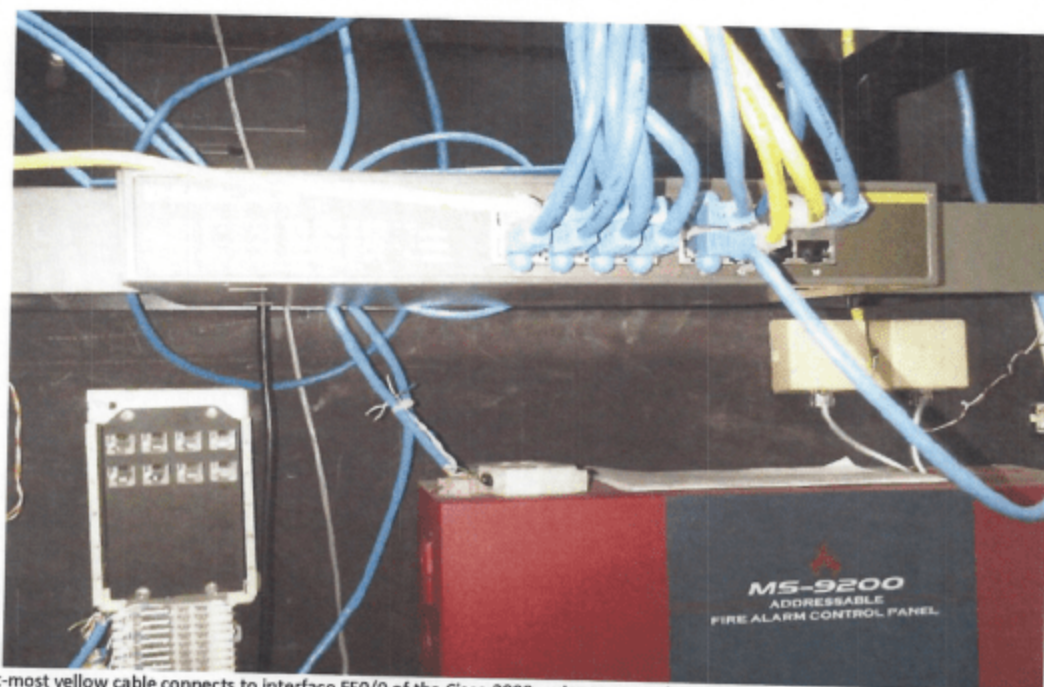
Wireless signal from Sandia Crest is received at this dish antenna outside the HVAC room at Zorro Ranch. The black coax cable running down the pole connects to the companion Adtran Tracer above the entrance of the HVAC building.



This is the Adtran Tracer above the entrance of the HVAC building. The dish antenna outside the building connects to this device where the T1 services are de-multiplexed into their respective voice and data T1s. T1A on the back of this device would connect to the Adtran TSU 600 in the control room of the main house. T1B connects to the T1 card of the Sprint managed Cisco 2800 series router.



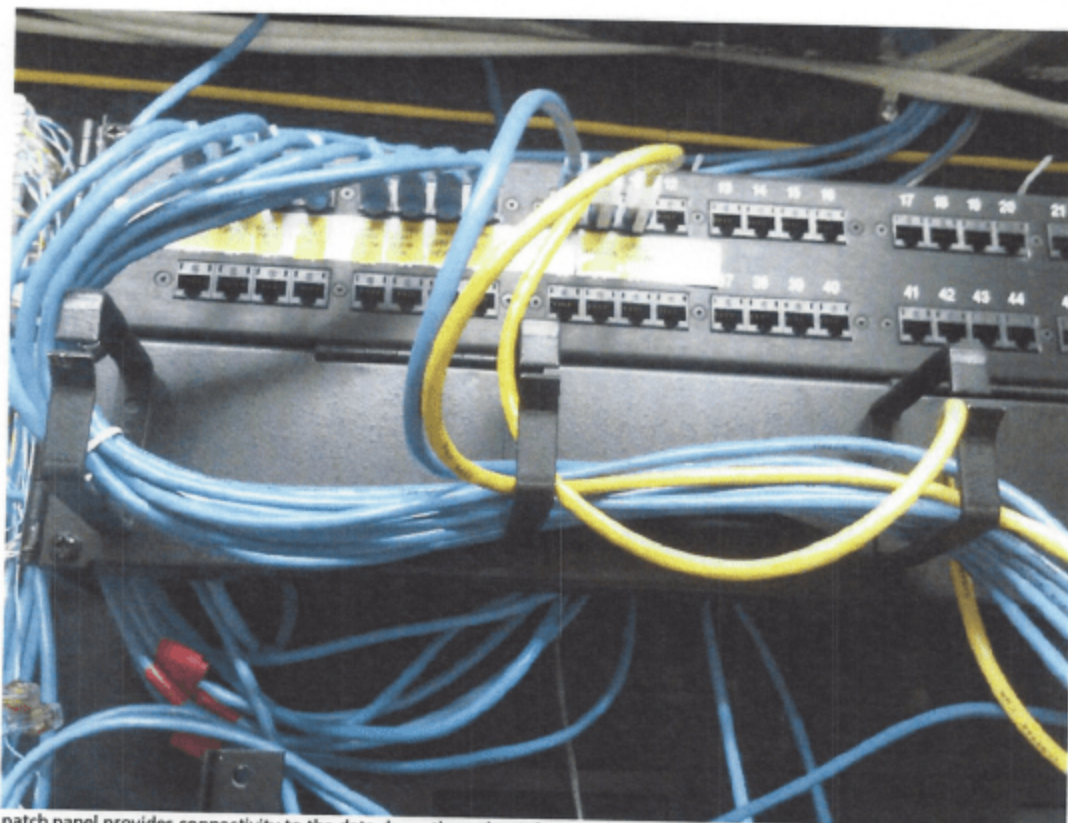
The Adtran TSU 600 is the off white device. The Sprint Managed Cisco 2800 series router is the device with green trim underneath the Adtran TSU 600. The right-most blue cable connects the T1 card on the Cisco Router to the Adtran Tracer in the HVAC room. The yellow cable on the left (Interface FE0/0) connects to the D-Link switch. The D-Link switch is what provides internet access to the network drops throughout the main house.



The left-most yellow cable connects to interface FE0/0 of the Cisco 2800 series router. The patch cables in the remaining ports connect to the patch panel below or to wireless devices that distribute internet access to the ranch. The following equipment is not part of the service delivery infrastructure; rather their purpose is to distribute Ethernet to various locations across Zorro Ranch and should be considered part of the distribution infrastructure.



The omni-directional antenna is located above the entrance of the HVAC room. The manager's cottage, lodge and fire station steeple access points all receive Ethernet service from this device. This device is connected to the D-Link Ethernet switch in the control room.



This patch panel provides connectivity to the data drops throughout the main house. The labels indicate where the data drop is physically located. Connecting these ports to the D-Link switch will "light" a drop with internet access.



Lodge Wireless Access Point located at the apex of the roof. This device receives service from the omni-directional antenna above the entrance of the HVAC building.



Wireless Access Point at the Manager's Cottage. This device receives service from the omni-directional antenna above the entrance of the HVAC building.



RANCH CENTRAL OFFICE