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COASTAL ENVIRONMENTAL SYSTEMS

COASTAL AWARDED CONTRACT FOR EMERGENCY LANDING STRIP WEATHER STATION BY ANTARCTIC AVIATION SERVICES (SPAWAR).

Seattle, WA: Coastal was awarded a contract to design and build an aviation weather station to operate on a desolate strip of ice/snow in the Antarctic, which can be used for emergency landings when the weather turns bad at McMurdo station.

The Problem:
Flights leaving Christchurch New Zealand (the jumping-off point for McMurdo) take between 5 and 8 hours to arrive at McMurdo (depending on the thickness of the ice, which dictates the weight and type of aircraft that can be used). A very hazardous situation can occur when weather turns bad and the plane is already past the halfway point. There are no other places to go! Oh yes, and the system is needed in a couple of months……

The Solution:
Set up an emergency landing field far enough from McMurdo to be in a different micro-climate.

So how do you find out what the weather is at that spot -- where nothing exists except ice, snow and a flat place to land? One solution is to put in a weather station that can operate with no AC power, work through the long Antarctic winter, survive the cold, the ice, the wind, etc., *and* get data to a point 150 miles away (McMurdo).

"Not simple – but possible," replied Coastal's engineering team. "You set up one of our aviation weather stations, seal it up really good – but still make it easy to get to for repairs and maintenance. Make it really smart so it can intelligently dole out only the absolute required power but provide maximum information. Then find a lofty peak to relay a radio signal 150 miles."

Continued… . . . . . .

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The station will only have solar power available, so a large number of batteries will be needed to run continuously through the long dark winter. To make this practical the **ZENO®-3200** (the brain of the system) will shut down the optical sensors (ceilometer and visibility) during the winter months. These sensors have heaters that would require too much power from the available battery array.

To meet the short delivery schedule, a solution to relay the signal using Meteorburst radios was proposed. This radio is currently in use in the Antarctic and, theoretically, could send data the 150 miles needed – given a location on top of a nearby mountain.

It was decided in the end however, that an untried solution was not a good idea, and an ARGOS (satellite) radio was quickly designed in with the ability to upgrade to the radio the following year. ARGOS is a good short-term solution, as McMurdo has its' own downlink station. But because it is a polar orbiting satellite, it does have data "holes" that can be as large as 3-4 hours and only a very limited set of data can be sent through when the satellite is in view.

The station will measure wind speed, direction, gust, relative humidity, dew point, air temperature, pressure/altimeter, visibility and cloud height. It will be sealed in an O-ring sealed canister and connect to the sensors with very rugged underwater type connectors.

The **ZENO®** will be programmed to apply power only when absolutely necessary to warm sensors up for sampling or to defrost a lens on the visibility sensor or ceilometer. It will operate on solar power in summer and batteries in the winter. Data will be sent every 120 seconds, but can only be relayed to McMurdo when a satellite is in view. The station will be installed and ready for the "summer season" which begins in November.

For Immediate Release . . . . . .